HOLME-NEXT-THE-SEA

NEIGHBOURHOOD PLAN 2016-2036

REPORT ON ENVIRONMENT, LANDSCAPE & BIODIVERSITY

Evidence Base: Research Report

20 March 2017 (**Updated** 20/12/2017; 14/2/2018; 03/06/2018; 31/01/2019, **09/02/19**)

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A NOTE ON THE USE OF THIS REPORT

Consultation with parishioners has shown that the natural and historic environment is of central importance to their life in Holme. That is why both residents and many second home owners have property here and why they place such a premium on its management and protection.

Given the stunning beauty of the environment, its Protected Sites and its international renown this can comes as no surprise. However, Holme faces major challenges which could change it for the worse unless they are addressed. It also offers huge opportunities that will change it for the better if they can be exploited sensitively. The NDP needs to recognise all of these and promote policies that will contribute to conserving and enhancing Holme's environment over the lifetime of the Plan.

This report aims to identify the problems and opportunities and inform the NDP policies so that they contribute to the best and most sustainable future possible. It has evolved iteratively to reflect consultation feedback and to inform policy development so that it is focused on key issues and identifies the most likely and the best outcomes.

This evidence based, iterative approach has meant that clear environmental objectives could be developed and policies could be built that are tailored to achieve them. Where policies fail to meet these objectives they have been rejected. As well as enabling effective policy formulation this approach promotes a basis for understanding and managing the impacts of these policies on the Protected Sites – a legal requirement for the Plan. In the event that SEA and HRA are required for the Plan much of the basic information needed will be contained here.

ACKNOWLEDGEMENTS

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Sophie Barker from the Norfolk Ornithologists Association and Gary Hibberd from the Norfolk Wildlife Trust have provided valuable information and local expertise as well as support for field work. They have helped to make sure that our data could be collected without disturbance to breeding birds whatever the weather and despite the attention of inquisitive herds of grazing cattle in the marshes.

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1 INTRODUCTION AND PURPOSE OF THE REPORT

1.1.1 The NDP Designations Report highlights the environmental sensitivity of Holme-next-the-Sea and it reviews the nature of its Protected Sites and their implications for the NDP. Similarly the Economy Report demonstrates the importance of these sites and the environment more generally to the Parish and to the local economy. Consultation exercises have shown the very high value attached to the environment by parishioners.

1.1.2 These consultations have revealed strongly held local concerns about environmental degradation and a strong wish for positive environmental management aimed at halting its decline.

1.1.3 Given this background and the very sensitive nature of Holme's natural and historic environment, it is important that the NDP has a strong, positive environmental impact. It must also meet all of the regulatory requirements associated with the various landscape designations in the Parish.

1.1.4 For the NDP to achieve this, four things are required:

- Identification of the important features of Holme's natural environment and assembly of baseline information defining their current status.
- An understanding of current influences on these features and an indication of whether their status will improve, remain stable or deteriorate in the absence of an NDP.
- Identification of the main environmental problems and opportunities facing the Parish.
- Clear environmental objectives based on an understanding of this information that can inform and underpin NDP policies leading to positive improvements.

1.1.5 This report will aim to provide this information. Key environmental objectives will be highlighted in green within the text.

2 APPROACH, METHODOLOGY AND STRUCTURE

2.1.1 The report has been developed iteratively alongside the formulation of NDP policy so that it has both informed policy and evolved as policy ideas have developed. This ensures that its content is relevant to the final set of NDP policies and that these policies are justified on environmental grounds.

2.1.2 Section 3 will review the relevant planning policy background including current Government objectives for the Environment. It will consider the key legislative requirements that the NDP must comply with and set out a position on the uncertainty arising from Brexit and the resultant, ongoing restructuring of the legislation. It will also consider how the NDP will relate to existing, adopted plans and programmes, including the BCKLWN Local Plan and the East Coast Shoreline Management Plan, both of which will have an environmental impact on Holme. This, alongside local knowledge and field investigation will assist in the identification of important issues that that the NDP will need to address.

2.1.3 Section 4 will go on to review key aspects of the environment to establish their basic condition – deteriorating, stable or improving. The environmental features[1] that have been selected for analysis in this report are:

- Land Cover and Habitats
- Landscape Structure
- Geodiversity & Soils
- Water resources and water quality
- Drainage and flood risk
- Landscape connectivity and wildlife corridors
- Views, footpaths and the AONB landscape
- Air Quality
- Biodiversity

2.1.4 The quality of these environmental features in Holme is the underlying reason for the numerous landscape designations enjoyed by the Parish. The analysis of Natural Capital and Ecosystem Services conducted in the Economy Report relied on these broad designations. The analysis here based on the above features effectively treats this Natural Capital in more detail and will provide an indication of whether it is growing, static or declining.

2.1.5 This methodology is thus entirely consistent with the Natural Capital Approach advocated by the Government (and the NPPF) and is guided by the Natural Capital Committee's Workbook (NCC, 2017). It relies on a simplified approach to evaluating the key indicators – all of which are considered in Section 4.

2.1.6 Notwithstanding that the NDP for Holme only 'covers a very small area at local level', it is very likely that any plan for Holme is likely to require at least a Strategic Environmental Assessment (SEA)and quite possibly a Habitats Regulations Assessment (HRA) because of its landscape designations, protected status and sensitivity.

2.1.7 In anticipation of this requirement, the features listed in 2.1.4 above have been selected to broadly correspond with those contained in Schedule 2 of the 2004 Regulations for Assessment of Plans and Programmes (HMSO, 2004). This means that the analysis and the conclusions reached will be directly relevant to SEA and HRA if they are required.

2.1.8 In addition to the features listed above, Schedule 2 also includes Population, Cultural/Archaeological Heritage and Climate. The first two of these features are considered to be of such importance that they have been dealt with separately in the Evidence Base Socio-Economic Report and the Heritage Report. In addition the likely impacts of Climate Change are dealt with in the Environment Agency's Shoreline Management Plan so in this report it will be considered in the context of other plans and programmes relevant to the NDP.

2.1.9 It should be stressed that the findings are specific to the Parish of Holme – and should not be taken as suggesting that they might apply to wider areas.

[1] Sometimes the literature refers to these as 'topics' or 'SEA Topics' and sometimes they can be confused with 'environmental indicators'. For clarity, they will be called 'features' in this report and this can be taken as a synonym for 'SEA Topics'. The word 'indicator' is used in its generally accepted, broader sense.

3 POLICY BACKGROUND

3.1 Environment and sustainability

3.1.1 Ensuring *enhancement and protection* of our natural, historic and built environment alongside improving biodiversity is one of the three fundamental principles of sustainable development (NPPF 8, 2018).

3.2 The NPPF and the 25 Year Plan for the Environment

3.2.1 The Government's recently published 25 Year Environment Plan identifies the importance of such policy to ensuring a prosperous economy and healthy, thriving society (Her Majesty's Government, 2018). Still further emphasis to the importance of environmental policy is given by the 2018 revision to the NPPF (Ministry of Housing, Communities and Local Government, 2018) which strengthens and extends the environmental policies contained in the 2012 version.

3.2.2 In the face of increasing levels of pollution, falling biodiversity and growing concerns about environmental security, the emphasis in the 2018 version of the NPPF goes beyond protection and specifically requires that planning policy and decisions should "***contribute to and enhance the natural and local environment***" (Ministry of Housing, Communities and Local Government, 2018, Section 15, para 170). The text of Section 15 is included in Appendix 1 for ease of reference. *Clearly, to meet the requirements of the NPPF it is not sufficient for policies to be neutral or only to avoid negative environmental impacts.*

3.2.3 The same paragraph sets out key requirements for plans as follows:

- Protecting and enhancing valued landscapes, sites of biodiversity ...and soils in a manner commensurate with their statutory status.
- Recognising the intrinsic character and beauty of the countryside and the wider benefits from natural capital and ecosystem services...
- Maintaining the character of the undeveloped coast, while improving public access to it where appropriate.
- Minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks that are more resilient to current and future pressures
- Preventing new and existing development from being put at risk by soil, air, water and noise pollution. Taking account of relevant information such as river basin management plans.
- Taking account of the international, national and local network of conservation sites when allocating sites for development and taking a strategic approach to 'maintaining and enhancing networks of habitats.... and planning for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

3.2.4 NPPF 172, 2018 also notes that 'Great weight should be given to conserving and enhancing landscape and scenic beauty in ...Areas of Outstanding Natural Beauty' and that 'the scale

and extent of development should be limited within these designated areas. In areas of Heritage Coast outside of the areas noted above, planning policies must be consistent with maintaining the special character of the area and its conservation status'.

3.2.5 In order to protect and enhance biodiversity and geodiversity plans should 'identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of biodiversity, wildlife corridors and stepping stones that connect them.' (NPPF 174, 2018).

3.2.6 NPPF Paragraph 175 places controls on the way that local authorities determine planning applications to ensure protection of biodiversity, Protected Sites and habitats and requires that planning applications that conflict with these objectives should be refused. It also encourages measures to improve biodiversity around development especially where this can result in net gains of biodiversity.

3.2.7 It also notes (Paragraph 176) that 'sites identified... as compensatory measures for adverse effects on habitats sites' should be given the same level of protection as those sites. This policy is of particular significance within the context of any scheme to mitigate the impacts of the SMP on the Parish.

3.2.8 Given the Parish's AONB status and the extensive area of internationally designated conservation/protected sites it is clear from the NPPF that policies restricting development in Holme may be appropriate where this is necessary to achieve the NPPF objectives set out above.

3.3 The Local Plan

3.3.1 A revision of the BCKLWN Local Plan is ongoing. The existing version of the Core Strategy predates both the 2012 and 2018 versions of the NPPF. The SADMP also predates the 2018 version of the NPPF.

3.3.2 The recently published Site Allocations and Development Management Strategy (SADMP) is more focused on individual development sites/areas but does contain strategic policies concerned with the environment. Of particular note:

- Policy DM11 seeks to protect the AONB by steering holiday accommodation/ development to areas outside its boundaries.
- Policy DM15 requires protection of the environment in the context of a range of issues including impacts on heritage, noise pollution, odours, air quality, light pollution, contamination, water quality and visual impact of development.
- Policy DM19 makes specific financial provision for assisting the North Norfolk Protected Sites with funding for mitigation measures to alleviate pressure caused by housing development in the Borough
- Policy DM20 provides protection for Protected Sites from possible impacts of renewable energy installations.

3.3.3 As all of Holme is in the AONB and over 40% of its area is covered by Protected Sites these Policies are particularly important for the NDP.

3.3.4 It is very clear that both the NPPF and the Local Plan policy framework require a very positive approach to conserving, protecting and enhancing the natural environment – especially internationally designated sites and the AONB landscape. This must be a guiding principle in the formulation of NDP policy for Holme that will be effective at the local level.

3.4 The legislative framework and the Protected Sites

3.4.1 In addition to the environmental policy framework the NDP must also comply with the legal framework dealing with (i) impacts on the environment and (ii) impacts on the integrity of European Protected Sites (see Designations Report).

3.4.2 As of the date of this report (October 2018) EU Council Directives 2001/42/EC (the Strategic Environmental Impact Assessment Directive), 92/43/EEC (the Habitats Directive) and 2009/147/EC (the Birds Directive) have been at the centre of this framework since they were agreed – in the case of the original Birds Directive almost 40 years ago.

3.4.3 The Strategic Environmental Impact Assessment (SEA) Directive was transposed into UK Law by the Environmental Assessment of Plans and Programmes Regulations, 2004. The SEA Regulations require that all plans and projects are assessed to see if they are likely to have significant environmental impacts.

3.4.4 The Birds and Habitats Directives were transposed into UK law by the Conservation of Habitats and Species Regulations 1994 (updated in 2010). These regulations have been regularly revised since then and the changes have now been consolidated into the Conservation of Habitats and Species Regulations, 2017 ('the Habitats Regulations'). The main purpose of the Habitats Regulations is to ensure that any plan or project will not have a detrimental impact on the conservation status of a European Protected Site.

3.4.5 In the context of Neighbourhood Plans, responsibility for assessing impacts on the Environment and on Protected Sites falls to the 'Competent Authority' (in this case BCKL&WN).

3.4.6 It is the responsibility of the Qualifying Body (in this case Holme-next-the-Sea Parish Council) to 'provide such information as the competent authority may reasonably require for the purposes of assessment under Regulation 105 (of the Habitats Regulations) or to enable it to determine whether that assessment is required'.

3.4.7 In December 2018, Paragraph 1 of Schedule 2 to the Neighbourhood Planning (general) regulations 2012 was amended to read "In relation to the examination of Neighbourhood Development Plans the following basic condition is prescribed for the purpose of paragraph 8(2)g of Schedule 4b to the 1990 Act(2)- The making of the neighbourhood development plan does not breach the requirements of Chapter 8 of Part 6 of the Conservation of Habitats and Species Regulations 2017(3)".

3.4.8 As a consequence, if no likely significant effect is foreseen then the Neighbourhood Plan can proceed. If it is decided that the NDP might cause a significant effect on a Protected Site – '*either alone, or in combination with other plans and projects'* then a full assessment under the Regulations (Habitats Regulations Assessment or HRA) is required.

3.4.9 The decision on whether an HRA is required is arrived at via a process of screening in which the BCKL&WN approaches the statutory authorities (Natural England, Historic England and

the Environment Agency) for their views. In order to comply with 3.4.6 above it has been agreed that the Parish Council must provide a completed plan including the supporting evidence documents. This report forms a key evidence document in relation to the HRA screening process.

3.5 Post Brexit uncertainty in legislative requirements

3.5.1 It is very likely that post- March 2019 the legislative position for Neighbourhood Plans in respect of environmental responsibilities will be uncertain and possibly undefined. The Regulations are predicated on the existence of EU Protected Sites and these sites may no longer be protected under EU law which may well cease to have jurisdiction in the UK.

3.5.2 Whilst the UK Government has committed to maintaining the level of protection for these sites post-Brexit, it is far from clear how this will happen. It has been suggested that references to EU Protected Sites in current UK legislation will be appropriately replaced – but it seems likely that this will be far from straightforward if the intention of the legislation is to be preserved.

3.5.3 The EU (Withdrawal) Act 2018 required that by the end of December 2018 the Secretary of State would publish draft legislation establishing *inter alia* that the existing underpinning principles of EU environmental protection will be upheld and an 'independent watchdog' with appropriate legal powers to prosecute would be created (See https://consult.defra.gov.uk/eu/environmental-principles-and-governance/). However, that would leave just three months for legislation to pass through Parliament which is possible but very unlikely. Furthermore, there can be no guarantee that new legislation will confer the same levels of protection on the same sites.[2]

3.5.4 Dealing with this situation is extraordinarily difficult for the NDP. Given that there is substantial justification for current protection levels and notwithstanding protection under the wing of other designations, it is concluded that at least the same level of protection for the Sites' qualifying features and protected species should be afforded by NDP Policy even if there is no possibility of recourse to legal action should the Policy be breached.

3.5.5 This implies the same requirements for EIA, SEA and HRA should the circumstances arise and refusal to enable plans or projects to proceed should it be concluded that they will damage the environment – i.e business as usual as far as is possible. In the event that new legislation turns out to carry the same implications as the EU legislation then nothing will change. If protection is strengthened then this will be over and above the NDP provision.

3.6 Government objectives and strategy for Environment and Biodiversity

3.6.1 The Government's ambitious objectives for Environment and Biodiversity are set out by DEFRA (2011) in their document Biodiversity 2020: A strategy for England's wildlife and ecosystem services. The strategy is informed by the UK National Ecosystems Assessment (2011) and UK National Ecosystems Assessment: Follow-on (2014). These accompany the

[2] The draft bill was published on 19 December 2018. It makes provision for an 'Office of Environmental Protection' which has the power to enforce environmental law. It requires the government to have an 'Environmental Improvement Plan' and a policy statement saying how they will interpret and apply environmental principles. It appears that the 25 Year Plan for the Environment is/will become the first Environmental Improvement Plan.

equally ambitious 25 Year Plan for the Environment (2018) and are presented as a long term commitment to continuing and improved support for the environment (i.e. post-Brexit).

3.6.2 There is now widespread agreement that growth of population and development in the UK is putting unprecedented pressure on our environment which is in decline when examined across many key indicators. In short, the nation's natural capital is diminishing and its capacity to deliver the ecosystem services necessary to support our growing population is also decreasing (Hayhow et al, 2016), UK National Ecosystems Assessment, (2011).

3.6.3 The aim of government strategy is to turn this situation around and "to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people" (DEFRA, 2011).

3.6.4 Four areas of action are identified as central to achieving this strategy:

- a more integrated large-scale approach to conservation on land and at sea
- putting people at the heart of biodiversity policy
- reducing environmental pressures
- improving our knowledge

3.6.5 The National Ecosystems Assessment (2011) and the Biodiversity Strategy (Defra, 2011) recognise that the UKs reliance on piecemeal, designated conservation sites is not sufficient to achieve the environmental improvements necessary to stop diminishing biodiversity and address the social and economic needs of today's society.

3.6.6 Its conclusion

"That England's collection of wildlife areas (both legally protected areas and others) does not currently represent a coherent and resilient ecological network capable of responding to the challenges of climate change and other pressures. The review concluded that establishing such a network would effectively conserve biodiversity and ecosystem services, delivering many benefits to people, while also making efficient use of scarce land and resources"

is of particular relevance to Holme given the likely impact of the SMP and the levels of visitor pressure on the Proteceted Sites (see below).

Environment Objective 1: The NDP must aim to conserve, protect and enhance the Environment in line with Government Strategy and UK Planning Policy in order to facilitate Sustainable Development. It should aim to ensure that as a minimum, the current levels of environmental protection enjoyed as a result of EU Directives and current (2018) legislation are maintained.

3.7 Environmental effects of other plans and projects affecting the Parish of Holme

3.7.1 In order to design an NDP that achieves the environmental targets described in previous sections it is important to identify the main opportunities for progress in the Parish alongside the main environmental problems. Furthermore, in order to understand the

'direction of travel' for Holme's environment it is necessary to understand how it will be affected by other projects, plans and programmes in the absence of a Neighbourhood Plan.

3.7.2 Potentially there is a very large number of existing plans and programmes that will affect Holme's environment during the NDP's lifetime. Some are potentially of huge importance (e.g. the Non-proliferation of Nuclear Weapons Treaty, 1968) but of little ***direct*** significance. A comprehensive list has been assembled containing those which are judged to be most important and this is included in Appendix 1.

3.7.3 For the purposes of this report two were judged to be of great significance:

- The North Norfolk Coast Shoreline Management Plan (SMP) – Environment Agency (2010)
- The BCKLWN Site Allocations and Development Management Plan (SADMP, 2016)

Both of these plans raise environmental issues that are of significance to management of Holme's environment.

The Shoreline Management Plan

3.7.4 The Shoreline Management Plan (Environment Agency, 2010) proposes to adopt a policy of managed realignment for the dunes sea defence frontage in Holme (Designations Report). It

Will the SMP policy result in a change in the condition of international sites?	*The SMP policy in this super-frontage allows for the natural development of the frontage (dune habitat) while allowing the landward migration of intertidal habitat (through realignment in 1C). Also, the realignment at Holme will increase the tidal prism in Thornham harbour channel and help to maintain a mosaic of sublittoral and intertidal habitats. The managed realignment units within this unit would, however, lead to the loss of reedbed and grazing marsh habitat that is essential habitat for geese species. This unit would have an adverse effect on the North Norfolk Coast SPA and the Wash SPA and Ramsar sites and the effect is considered major negative.*

Figure 1: *Extract from SMP Strategic Environmental Assessment relating to the North Norfolk Protected Sites.*

concludes in its SEA that this policy will have a 'major negative' impact (Figure 1) .

3.7.5 The Plan anticipates a substantial area of the Parish (245 hectares – over 40% of its existing land area) reverting to intertidal zone. In addition to habitat destruction over 80 houses will be lost. For a full account see the Designations Report.

The BCKLWN Site Allocations and Development Management Plan

3.7.6 Increasing visitor pressure on Norfolk's Protected Sites has been a recognised issue for many years. Visitors are a very important contributor to the economy but visitor pressure has a broad range of negative environmental effects which must be balanced against this. Ultimately, over-expansion of visitor numbers becomes self-defeating in economic terms because the resulting congestion and damage makes places unattractive to visit. Equally,

Environment Objective 2: The NDP must adopt a precautionary planning approach aimed at minimising the negative economic, social and environmental impacts of Climate Change and Sea Level Rise that is consistent with the SMP. It must aim to promote resilience in the face of the changes anticipated in the SMP thereby protecting the Parish's Natural Capital – especially its infrastructure, heritage, landscape quality and biodiversity.

failure to exploit valuable natural capital represents a missed economic opportunity.

3.7.7 It was recognised during preparation of the SADMP that approved housing allocations in the Borough would contribute to increased visitor numbers at EU Protected and that this could result in a significant damaging effect at some of the Borough's more sensitive locations.

3.7.8 As a consequence the Borough Council commissioned an HRA to assess the likely impact (Wild Frontier Ecology, 2015) of the SADMP housing allocations. For the Wash and North Norfolk Coast SPA, the sites at Hunstanton (333), Docking (20) and Burnham Market (30) were identified as possible contributors (total 383 houses) while for the SAC the sites at Hunstanton (333), Heacham (66), Snettisham (34), Ingoldisthorpe (10), Dersingham (30), Sedgeford (10) and Burnham Market (32) contributing 515 houses were deemed significant.

3.7.9 The assessment concluded that because these housing allocations would be within 8km of the Sites they would have a significant effect on their qualifying features - *both birds and habitats- in combination with other effects from outside the Borough* 'because of the mixed nature of users (local, day trippers and tourists)'.

3.7.10 As a result, a package of mitigation measures was agreed which included:

- Supply of alternative, natural green space (SANGS) adjacent to new developments, aiming to give householders an attractive alternative to visiting the Protected Sites.
- Site Level HRA's for larger developments
- A mitigation fund to assist with visitor management at the Protected Sites
- Ongoing monitoring to identify and rectify any negative impacts

3.7.11 By definition, the HRA implies that, in the absence of mitigating measures, there is a risk the carrying capacity of the North Norfolk Coast Sites will be exceeded in terms of visitor pressure. At Holme Dunes Natural England are already imposing seasonal and permanent restrictions on visitor access to significant areas of the site and it is clear <u>any</u> additional development of housing ***close to these sites*** without mitigation will contribute cumulatively to this damage. This is a fundamental challenge for achieving even very modest growth in Holme and one which the NDP must evaluate and overcome.

3.7.12 Furthermore, the SADMP HRA only considers housing impacts *and the NDP must consider all impacts* including those from within the Borough not due to housing and those from outside the Borough referred to but not evaluated in the HRA.

3.7.13 Since the HRA was completed it has been recognised that visitor pressure arising from housing development potentially threatens many Protected Sites across the entire County of Norfolk and that more evidence is needed to devise strategies for protecting them. Panter et al. (2016) have conducted a study of the likely contribution of housing allocations to visitor pressure at all of Norfolk's Protected Sites based on detailed visitor surveys (hereafter referred to as the Visitor Survey).

3.7.14 Their results suggest that under current development plans and in the absence of mitigation measures there will be an average 14% increase in access to the County's Protected Sites by Norfolk Residents. Across the County, this was just lower than the increase in house numbers (16%). The effects of infill and windfall sites were not considered but for survey locations at the Wash sites (Snettisham and Holme) they conclude an increase of visitor numbers of 6% resulting from allocations across the entire County.

3.7.15 Whilst the survey was designed to provide a snapshot of access patterns at selected access points to Protected Sites it was not designed to give accurate estimates of visitor numbers for particular sites. This makes it difficult to translate its findings into an ***impact*** on just Holme Dunes for a number of reasons including:

- The Sites at Holme Dunes and Snettisham were combined for much of the analysis.
- Only one of four main access points at Holme Dunes (the Golf Course/Beach Car Park) was surveyed. This excludes very large numbers accessing the Firs Visitor Centre by car along Broadwater Road and significant numbers accessing the site on foot via the Coast Path from the west; Redwell Marsh/Busseys Lane; Thornham Harbour, Drove Orchards/Drove Lane from the east.
- The analysis has no baseline number of visitors to work with.
- Factors other than housing growth are at play which may well have greater impacts – especially growth in tourism. These include direct vehicle access to the beach at The Firs, provision of adjacent toilets/restaurant, cheaper car parking at the Firs Visitor Centre and substantial growth at Drove Orchards.
- The sampling scheme was designed to deliver conclusions for the entire County and sample sizes may be too small to enable more detailed conclusions for some sites.

3.7.16 Nevertheless, in the absence of more detailed data and bearing in mind these constraints, the Visitor Survey results can help generate valuable insights into what may be happening at individual sites.

3.7.17 For example, Figure 2 shows SADMP Site Allocations (white rectangles showing the planned number of houses) in relation to the Parish and the Reserve (area to the north of the A149 – shown in yellow). In both the HRA and the Visitor Survey the catchment area within 8-10km is deemed to be very important for visitor generation. From the Figure it can be seen that a total of c. 500 planned new houses could be relevant to visitor growth at Holme Dunes.

3.7.18 The total population of this catchment based on 2011 Census for the settlements with allocations (Hunstanton, Heacham, Sedgeford, Docking and Snettisham) is 14,553. A 2.5 occupancy rate for the new housing (as per the HRA) would add 1250 residents equating to population growth of c. 8%. According to the Visitor Survey, trips to the reserve would be expected to grow by a similar amount. The HRA (following White, 2012; NWT Fact File, *undated*) indicates an annual visitor total for Holme Dunes of 100,000 (recorded in 2010). Based on the Visitor Survey 53% of summer visitors and 89% of winter visitors are on a ***short distance*** visit from home (Table 14). A very modest assumption therefore, would be that around 50,000 of all visits would be generated by people travelling from home.

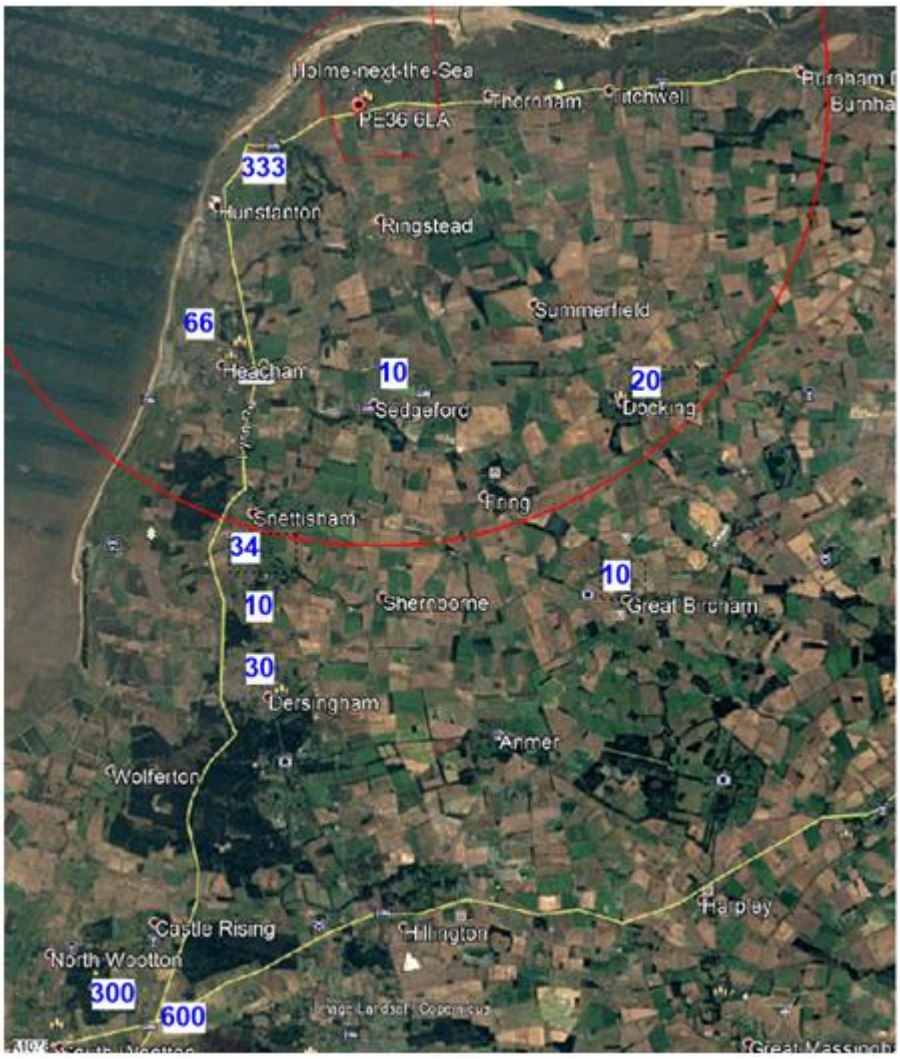

Figure 2: *SADMP site allocations indicating the approximate locations and number of houses which will be built close to the Protected Sites in Holme. The red circle is 8km from Holme.*

3.7.19 Based on 8% growth in population from new housing this implies an additional 4,000 visitor trips to Holme Dunes per year which averages out at just over 10 visits per day. It excludes the impact of mitigation measures embodied in the SADMP and only relates to housing allocations. Despite some fairly gross assumptions, the figure has a rational basis and feels intuitively reasonable. However, it excludes growth in visitors from all other sources – including tourist related trips.

3.7.20 The impact of an additional 10 visits to Holme Dunes per day does not, on its own, seem unmanageable. However, in the absence of solid data, the growth in tourist related trips is much more difficult to predict. The Visitor Survey suggests that the median trip length to Holme for all respondents in summer was 85km and indicates a national catchment.

3.7.21 Since the 100,000 visitors pa reported for 2010 (White, 2012; op cit) there have been significant changes at Holme Dunes – not least expansion of the Firs Visitor Centre to include toilets, a cafe and ample car parking adjacent to an outstanding but otherwise relatively inaccessible beach - all in the heart of a site designated as SSSI, SAC, SPA, RAMSAR, Heritage

Coast and AONB. A brief check on TripAdvisor confirms that the tourist catchment is truly national.

3.7.22 Intuitively, it seems likely that tourist related growth in visitor numbers to Holme Dunes can be expected to be significantly greater than that from SADMP housing allocations. As the Visitor Survey indicated that around 75% of visitors to the Protected Sites arrive by car and the only road to the Car Parks on the sites is through Holme Village this is a major issue for the NDP and the Parish.

3.7.23 It is interesting to note that the West Norfolk Destinations Management Plan 2016-2020 seeks to maximise growth in tourist numbers, stay length and visitor spend. Whilst recognising the attractiveness of the coastline as a resource, it makes no reference to management of the resource or of Protected Sites although it does recognise their 'sensitive nature'. It has no SEA.

3.7.24 All of the above leads to the key question of where the very modest housing development envisaged for Holme fits into the wider scheme of things. The SADMP HRA regards the impacts of infill as being too small to be significant. However, an allocation of five or maybe six houses is envisaged for Holme aimed at satisfying a recognised and very important social need. On top of this there is expected to be continuing organic growth based on the local plan infill policy.

3.7.25 Clearly, against the background of the above, organic growth of housing and this small allocation can be expected to have an incremental impact on the Protected Sites and some form of mitigation will be needed. That implies a need to understand the scale of the impact and identify appropriate mitigation measures.

3.7.26 Figure 3 is based on data from the Visitor Survey (Appendix 6) and suggests, subject to sampling error, that a minimum of 25% of visitor trips to Holme originate within a distance of 2km and at least 50% within 4km. This implies that the majority of these visits are home or stay holiday based. It suggests that development *very close* to the Site is likely to have a significant effect with regard to visitor pressure.

3.7.27 It is worth noting that every car-based visit requires two trips through Holme village.

3.7.28 Furthermore, the Survey also suggests (again subject to sampling error) that 21% of all visitors to the Wash sites (Holme and Snettsiham) from home only were likely to visit 'daily or most days' and a further 16% were likely to visit 1 to 3 times per week.

3.7.29 This would suggest that for every additional 100 new visitors to Holme Dunes arising from local housing development, 21 could be expected to visit daily throughout the year implying an additional ~7,600 visitor trips pa. This is a large and somewhat unexpected number especially when viewed against the estimate of the average number of new visitors generated by allocation sites within 10km (4000).

3.7.30 The reason for this would seem to be that even small amounts of development, very close to sites (especially within walking distance) has a disproportionately large impact. It is probably for this reason that sites where there is extreme pressure (eg the Dorset Heaths) have been subject to significant mitigation levies (up to £350/new dwelling) and have implemented 400m development buffers to try and control the problem (Borough of Poole *et al*, 2015).

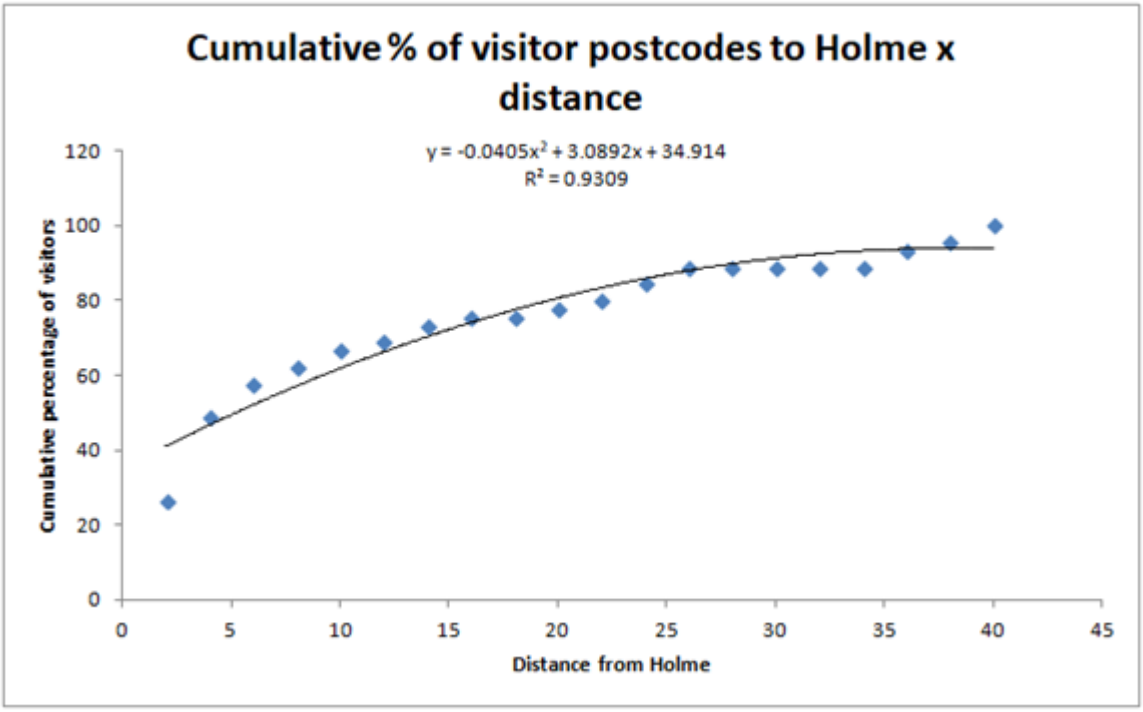

Figure 3: *Relationship between distance and visitor numbers to Holme Dunes indicating that 25% of trips originate within 2km and 50% within 4 kms based on Panter et al, 2016.*

3.7.31 At present there is no way of reliably establishing the number of **actual visitors** to Holme Dunes that new houses in its catchment will generate so there is no way of calibrating a conventional gravity model to robustly predict visitor numbers.

3.7.32 However, in Combination with the Local Plan infill Policy, the NDP's anticipated growth for Holme could be expected to generate an increase of around 40 new residents over the Plan period residing less than 750m (a short stroll) from the Protected Sites. From Figure 3 it seems inconceivable that the vast majority of these would not visit very frequently so the above calculation implies that this development could result in an additional 3000+ trips per year which would have a significant, incremental effect in terms of visitor pressure.

3.7.33 In this context it is worth noting that new allocations within Hunstanton (approaching 400 Houses) are all within 4km of Holme Dunes and the village of Thornham has direct pedestrian access via Thornham Harbour.

3.7.34 Despite uncertainties in data it thus seems very clear that visitor pressure is set to grow at Holme. The housing planned in the SADMP looks as though it will have a small but significant impact and it has a mitigation strategy. The HRA implies that further development without mitigation will be damaging. The greatest concern has to be tourist development for which there is little hard data and which to date has been somewhat uncontrolled. The modest development envisaged in the NDP must be viewed against this background and can be expected to have a surprisingly large impact due to its very close interconnectedness with the Site. This will be significant cumulatively.

3.7.35 As Panter et al (op cit) suggest, devising an effective mitigation strategy for dealing with this pressure may not be that straightforward for sites like Holme where there are already

wardens and the source of the pressure is so close to the site that SANGS are unlikely to have much effect.

3.7.36 Given the range of factors contributing to visitor pressure and assuming significant levels of growth during the NDP period it will be necessary to gain more understanding of its specific impacts, the capacity of the environment to absorb them and the range of options available to deal with them. As there is growing evidence of noticeable environmental degradation it seems not unlikely that some radical changes will be needed to prevent significant damage to the village and to the Holme Dunes part of the North Norfolk Coast Protected Sites.

Environment Objective 3: To control and diffuse visitor pressure from the village and Protected Sites recognising that without significant intervention the problem will continue to grow and cause damage to the environment and undermine the integrity of the Protected Sites which are at or near the limit of their carrying capacity. Recognising that very small levels of development within walking distance of the sites can have a significant impact sufficient new headroom must be created to accommodate the very modest development anticipated in Holme for which there is a recognised need.

4 EVALUATION OF HOLME'S NATURAL CAPITAL

4.1 The status of Holme's natural capital

4.1.1 The previous section in this report indicated that in the absence of an NDP the environment in Holme faces major threats that will lead to decline - thereby justifying parishioners concerns in the NDP consultations. The two most significant of these are Climate Change plus associated rises in sea level (SMP, 2010) and growth in visitor pressure. This section will consider Holme's natural environment in the light of these threats and aim to identify any other issues which need to be addressed in planning for the most sustainable future possible.

4.1.2 To date, Natural England's assessments of the North Norfolk Coast Protected Sites indicates that their status is predominantly 'favourable' with small areas identified as 'unfavourable recovering' (https://designatedsites.naturalengland.org.uk). However, for the 70 units within this site, the last assessments are dated between 2009 and 2012 and are likely to be in need of updating[3]. At this time, almost all of these were deemed to be in 'favourable' condition (97.5%) although a small area to the North of Broadwater Lagoon in Holme was judged to be 'unfavourable recovering' as a result of the need to control incidence of Sea Buckthorn (Hippophae Rhamnoides).

4.1.3 Bearing in mind this background and in light of the pressures outlined above, this section will consider the current status of the environment in Holme in the context of natural capital. The approach adopted is guided by the Natural Capital Committee's workbook (NCC, 2017) and relies on evaluating key features – including Land Cover/habitats, soils, air,

[3] Since the completion of this NDP report Natural England have completed a wide ranging review of the North Norfolk Coast environment (November 2018), released February 2019. Its findings are broadly consistent with those of this report.

water, species biodiversity and landscape structure. In broad terms, the extent and quality of these features control environmental quality and they are fundamental in determining the status of the Protected and Designated Sites.

4.1.4 Particular attention will be given to biodiversity which is of key economic importance because of the numbers who visit Holme to enjoy its wildlife and because of its importance to the membership of local wildlife conservation organisations.

4.1.5 Alongside Heritage and material assets which are considered in the Heritage and Housing reports these headings broadly follow those identified as being important in the 2004 regulations for the assessment of Plans and Programmes (Schedule 2). As a consequence this report will underpin any future SEA/HRA for the NDP should they be needed.

4.2 Land cover and habitats

The need for and creation of a land cover map

4.2.1 It has long been known that habitats are the single most important determinant of species performance – and hence of biodiversity (Farina, 1998). Destroying habitats invariably results in the destruction of species while improving habitats usually improves species performance.

4.2.2 Land Cover closely reflects habitats and most species show distinct preferences for particular land cover assemblages (see for example, Fuller et al, 2005). In order to try and manage the environment generally and biodiversity in particular it is crucial to have an understanding of land cover.

4.2.3 Various options were considered for acquiring a land cover map of the Parish. Both the Centre for Ecology and Hydrology's Land Cover Map 2015 and a more detailed land cover map provided by NBIS offered opportunities. However, neither were specifically designed to meet the purposes of this work and both would have required significant amounts of effort to remove errors – especially in the coastal zone. Neither offered high quality information on hedgerows, trees and copses.

4.2.4 Accordingly, a map based on a combination of 25cm aerial photography, 1m Lidar data, OS mapping and field checking/local knowledge was created (Figure 4). The Lidar data added a third dimension to the process by enabling height/morphology to be used to guide the classification in the complex coastal areas and also provided a basis for estimating the height of trees, copses and hedgerows which are extremely important measures of habitat quality.

4.2.5 The map has 22 land cover classes and the total area covered by each is shown in Figure 5. It clearly reveals several important features of Holme's land cover.

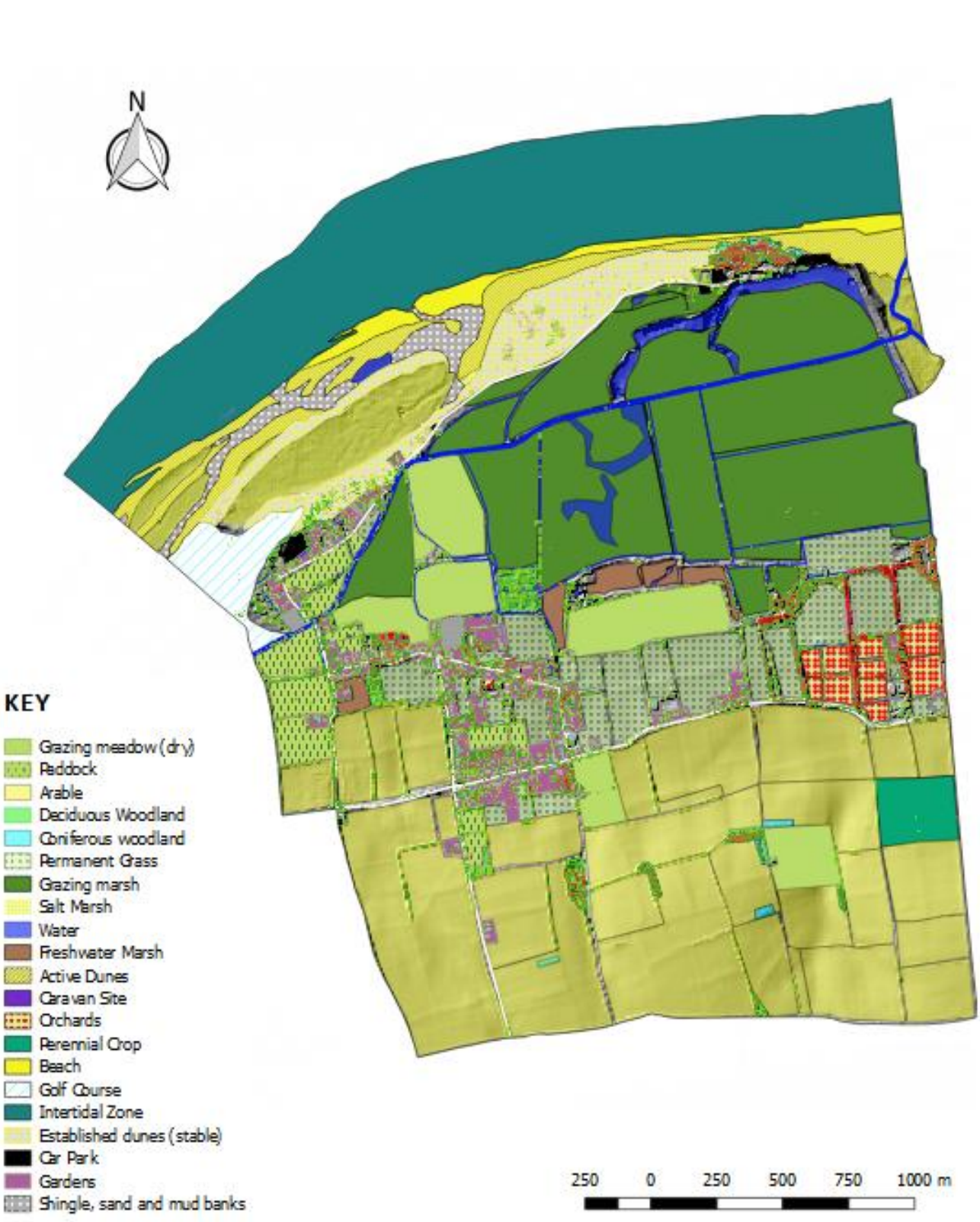

Figure 4: *Land cover map of Holme-next-the-Sea Parish.(Designed to be viewed at A1 size – Colours may otherwise appear distorted).*

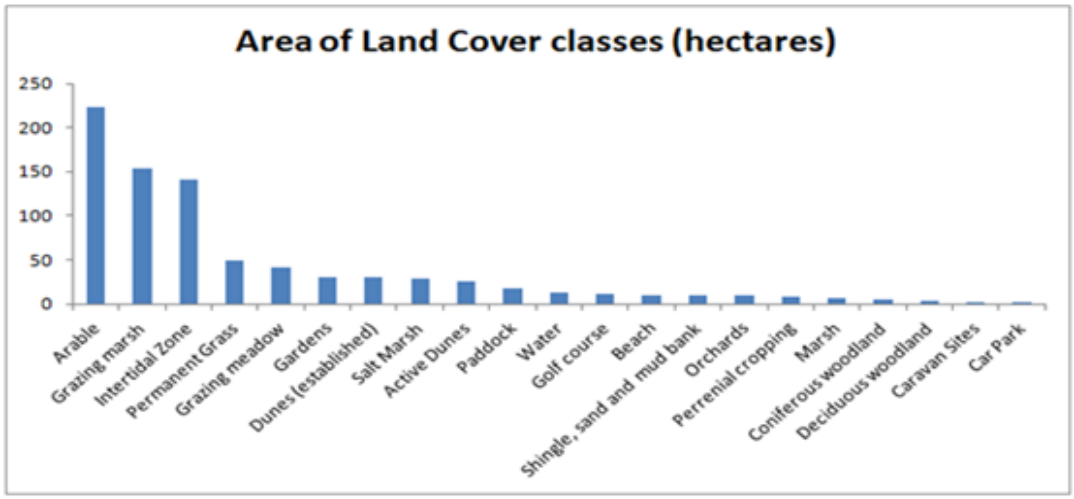

Figure 5: *Areas of land cover in the Parish. The map shows buildings but the area totals are excluded because they are so small in relation to total cover.*

Important features of land cover in the Parish of Holme-next-the-Sea

4.2.6 Firstly, land cover classes have a strong E/W orientation. They change as the land slopes down to the north from the top of the scarp along Green Bank in the South.

4.2.7 Arable land occupies the higher areas but actually only occupies c. 25% of the Parish. In general arable land has seen the greatest reductions in biodiversity across the UK especially in Lowland East of England (Robinson and Sutherland, 2002).

4.2.8 A little lower down is a belt of grassland which is interrupted by the village. This entire area is well wooded, especially in village gardens and in shelter belts surrounding the relatively small fields. The southern margin of this grassland gets wetter as altitude falls and there are significant areas of freshwater marsh on its northern margins.

4.2.9 Further north still are substantial areas of grazing marshes formed after the construction of Holmes Sea Defences (see Heritage Report). These formed the flood plain of the River Hun before it was canalised and relict meanders and oxbow lakes can clearly be seen. The area is now criss-crossed by drainage ditches – but even so, in summer these fields still tend to be wet. As they are at or below sea level the water is slightly brackish.

4.2.10 To the north of the Marshes is the coastal zone which is generally accreting. There is a complex belt of dunes, sand bars and spits – some well established and some very active both in terms of formation and episodic erosion events (primarily in the east). Initially the dunes were encouraged to form by construction of a clay bank with timber supports (Steers, 1936) and they were also artificially deepened during the wars to act as military defences. In the east Holme enjoys a fine beach along their northern margin and to the west of Gore Point there is a complex pattern of spits, shingle/sand banks and salt marshes.

4.2.11 Finally, there is an extensive intertidal zone which actually covers some 16% of the Parish. It consists of extensive sand bars, pools and areas of eroded peat – all of which are visible at low tide.

4.2.12 A number of the land cover features in the grazing marshes and the coastal zone are qualifying features for the area designated as SAC in the Parish (see Designations report) and the species assemblages within each land cover type all contribute directly to the Parish's biodiversity.

4.2.13 However, the grassland, water features, freshwater marshes, grazing marshes, dunes and intertidal zones occupy some 70% of the Parish. They offer rich habitats for a broad spectrum of wildlife, especially birds. This diversity of land cover types means that Holme can attract avian species from all of the major groups – Marine, Coastal, Wetland, Grassland, Woodland and Farmland birds. *The **diversity of cover and habitats** is thus a major factor influencing the remarkable levels of biodiversity in the Parish.* The relatively small proportion of arable farmland is also important because it reduces the exposure to agrochemicals and fertilisers.

4.2.14 Many of these habitats are either Biodiversity Action Plan Priority Habitats or Habitats of principal importance listed in the Natural Environment and Countryside Act (2006). Full details of these designations can be found on the DEFRA MAGIC website and an overview map is included in Appendix 2 for reference.

4.2.15 Holme's strategic location on the East Atlantic Bird Migration Flyway means that as long as these habitats remain in good condition there will be a plentiful supply of takers – even though many birds are just passing through on their Arctic/Southern Europe/North and West African migration routes. This location makes Holme a strategic node in the Natura 2000 Conservation Network.

Environment Objective 4: To conserve, maintain and enhance the diversity of Holme's habitats – especially those that are listed as BAP priority or NERC (2006) Act habitats of principal importance and to ensure that they remain fit for purpose in terms of meeting NATURA 2000 commitments.

4.2.16 Even relatively small changes in cover can be important. For example, the area of Shingle, sand and mud banks is very small (c. 1 hectare) but is vital to the survival of the tiny colony of Little Terns in the Parish. It is reported that this species has already disappeared from Titchwell and Brancaster (Natural England, 2016).

4.2.17 Hedgerows, isolated trees and small thickets are at a level of detail too fine to reliably record from the aerial photography used for the land cover map. As a consequence they have been mapped separately using Lidar data which not only gives an excellent indication of their extent but also enables mapping of their height and density. As a consequence the map only includes the significant parcels of woodland and should be used with the Lidar data shown in Figure 6.

4.2.18 Woodland features, trees and hedgerows are of key importance for biodiversity because they provide the shelter and corridors of movement that are such an important element of wildlife habitats. They also make a major contribution to the attractiveness of the landscape and its AONB status. The NDP thus needs to promote conservation and extension of these

features if it is to be successful in making a positive contribution to biodiversity and the ecosystem services delivered by this aspect of Holme's natural capital.

4.2.19 The impact of Climate Change (see Designations Report) on habitats will be substantial and is significantly under-estimated in the SMP's SEA/HRA. Land cover affected will include grazing marshes and lagoons as outlined in the SMP. However, it will also include areas of grassland, orchards, freshwater marsh, woodland, ditches/ponds and hedgerows.

Environmental Objective 5: To anticipate the impacts of Climate Change as set out in the SMP on habitats, biodiversity and amenity and aim to minimise and mitigate these impacts by identifying, protecting and promoting compensating habitat development and management in parts of the Parish beyond the areas at risk.

4.3 Landscape structure

4.3.1 Whilst the availability and diversity of habitats is vital to the environment the arrangement and structure of those habitats is also of great significance to the Parish's scenic quality and biodiversity.

4.3.2 Landscape structure is the arrangement of land cover and habitats in the landscape measured, *inter alia,* in terms of their altitude, size, shape, juxtaposition, fragmentation and connectedness. It is well known that these landscape features are strongly related to geodiversity and are fundamental in determining biodiversity (Foreman, 1995).They make a major contribution to determining landscape character – not least because they define landscape views and 'scenery' (see DEFRA, 2013 and 2014). In other words, alongside man made features they determine the special natural qualities of the AONB in Holme.

4.3.3 Terrain height and geology are of particular importance because of their strong influence on all of these factors and the consideration of landscape structure presented here will use a three dimensional 'terrain model' derived from Environment Agency Lidar data as a basis for examining Geodiversity, landscape connectedness and views (Figure 6).

4.4 Geodiversity, drainage and Soils

4.4.1 The terrain model in Figure 6 is 'illuminated' by a light source (equivalent to the sun) located in the north. It shows that the landscape is dominated by an east/west escarpment which slopes from high ground in the south of the parish down to the marshes, dunes and intertidal mudflats in the north. This escarpment is the dominant geomorphological feature of the area.

4.4.2 It consists of sedimentary, chalk rocks laid down in shallow, warm seas during the Cretacious Period between 70 and 100 million years ago. In Holme the escarpment reaches a height of around 40 m (130 ft). It offers excellent views across the Wash and forces onshore breezes to rise giving air currents that are particularly enjoyed by hunting raptors – a characteristic feature of the landscape.

4.4.3 Dry valleys running south to north are cut into the chalk and filled with sand, clay and gravel deposits. Both Chalk Pit Lane and the Peddars Way are examples. At times of heavy rain both Peddars Way and Chalk Pit Lane can become a short lived torrent that flows down

these roads into the marshes (Figure 7). Outwash from these valleys is mixed with other deposits in the flat areas to the north.

Figure 6: *Terrain model showing landscape structure of the Parish. Water features, hedgerows, copses and woodland. Pale green denotes vegetation heights of 0-1m; darker green 1-4m; brown 4-8m; pale red 8-12m; dark red 12-16m and black >16m (Source EA Lidar data, Composite DTM, 0,25m).*

Figure 7: *Short lived torrents running down Peddars Way (left) and Chalk Pit Lane (right) after heavy rainfall. These flash floods have resulted in flooding of properties in Holme located outside the flood risk zones on relatively high ground (with thanks to Holme Village Information Network).*

4.4.4 The face of the escarpment is dotted with chalk pits which provided the now characteristic building materials that are typical of the area. A substantial example exists in Holme at the top of Chalk Pit Lane.

Environment Objective 6: To ensure that new development in Holme contributes to effective surface water drainage and does not result in increased flood risk either within or beyond the areas that are included in Flood Zones 2 and 3.

4.4.5 During the Quaternary Ice age the scarp formed a barrier to southerly movement of ice sheets which rarely exceeded 30m (~100 feet) in thickness. The lower slopes were thus subject to a wide range of periglacial processes leading to a complex pattern of superficial material deposits and landforms. Running east to west on either side of Main Road the Holkham Series was laid down c. 2m years ago. This is a complex mix of clays, sands and gravels that underpin much of the existing grassland in the Parish.

4.4.6 Periglacial landforms such as Hunstanton Park Esker are classic features of this environment. In areas where there are clay deposits and poor drainage ponds are a common feature and these make a valuable contribution to biodiversity although many are being filled in to make way for development.

4.4.7 Moving further north still, sands and silts that have been reworked by tidal processes form the superficial deposits in the reclaimed marshes which are separated from the intertidal mudflats by the lines of sand dunes.

4.4.8 Active coastal processes coupled with human intervention have made these dunes one of Holme's defining features (see the Heritage Report). The lagoons and marshes they enclose and the offshore sand bars contribute to making this one of the world's finest barrier coastlines (Pye, 1992)

4.4.9 These deposits contribute to productive soils which contribute to areas of both Grade 2 and Grade 3 agricultural land. Regrettably, significant areas of land in the Parish are being acquired for speculative development and this land is sometimes taken out of farming.

Environmental Objective 7: To protect the best quality soils in the Parish and maintain their viability for agricultural production.

4.5 Water resources and water quality

4.5.1 In principle, the underlying chalk geology should support pure ground water resources and chalk streams that are rich in wildlife. Where the Holkham deposits are low enough to reach sea level a row of chalk fed springs are important landscape features feeding small ponds

and a network of ditches. In Hunstanton Park to the west these springs are the source of the River Hun. These water features are of great significance for wildlife and biodiversity.

4.5.2 Unfortunately, over-abstraction and pollution against a background of Climate Change is damaging these resources. The canalised River Hun is heavily polluted with nitrates. These originate from a wide range of spatially diffuse sources including fertilisers, livestock farming, traffic, air pollution and animal urine/faeces (including birds and pet dogs). Sewage discharge is a particular issue with sources including sceptic tanks and pumping station overflow discharged under license from the Smugglers Lane Pumping Station.

4.5.3 The Water Quality Report explores these issues in greater detail. It seems clear that there are direct hydrological linkages between development in villages along the coast (including Holme) and impacts on the Protected Sites. Sewage overflows from Smugglers Lane enter the Hun and flow back along the river placing the Sites' qualifying features at risk.

4.5.4 In theory these discharges will be diluted by excess water and quickly flushed through the river into the sea. In practice they are contributing to sedimentation and nutrient enrichment in the river channel and because water is taken from the Hun to control levels in the marshes and lagoons, they are also contributing to pollution of these sensitive environments. Phosphorous in the lagoons is a particular concern because it binds itself to sediments and plant material and is persistent through time. 'Cleaning up' can be costly and difficult (see Figure 8). It may well originate in part from Phosphorous pollution in the Hun at peak flows when the local sewage discharges occur.

4.5.5 As climate change progresses, the frequency of extreme events will increase leading to more pollution and damage to these Qualifying Features of the Protected Sites. This is a key issue for the NDP which needs to do everything possible to facilitate reduced levels of pollution and improve water quality.

Figure 8: *Algal bloom on the Broadwater Lagoon. The inset shows water samples from the lagoon (taken in 1918) and the river Hun. Particles of algae are found throughout the water column in the Lagoon (centre bottle).*

4.5.6 Holme's geodiversity thus contributes to its special character and sense of place in many different ways. Diversity of terrain height, geology, soils and water resources are key factors. However pollution, especially from sewage is starting to damage that geodiversity and negative impacts on protected landscape features are becoming clear for all to see – especially in the Hun and its adjacent Lagoons.

4.5.7 The impact of water pollution on people, habitats and wildlife is all pervading. In Holme it is being reinforced by the loss of small ponds which are increasingly being filled in to make way for development projects. These ponds are of significance to biodiversity and the success of protected species in the Parish and their continued loss will be damaging.

4.5.8 Surface water quality in the River Hun and Broadwater Lagoon falls well below Water Framework Directive quality standards. As a result it may carry implications for public health and it certainly threatens ecosystem integrity. Pollution of water resources is a serious environmental problem and poor water quality status in Holme place this issue alongside the SMP and visitor pressure as a major issue to be addressed by the NDP.

4.5.9 In natural capital terms these environmental impacts are externalised costs of development taking place within and beyond the Parish. If not addressed they will cause lasting damage to the environment and weaken the local economy. The NDP cannot exert a great deal of influence over what happens outside the Parish but it can include policies to help control and reduce pollution within the Parish.

4.5.10 Such policies should include minimising additional new connections to the sewage network until emergency discharges are no longer required with the exception of those replacing sceptic tanks. This can be achieved by prioritising the very limited amount of new housing needed in the Parish (see housing report) and resisting additional holiday accommodation which is not needed. In environmental terms five caravans are capable of placing the same load on the sewage network as five houses and public toilets can have a massive impact.

4.5.11 Further, where new development creates additional WCs and there is no mains sewage disposal then NDP policy must insist on upgrade of sceptic tanks to the latest package plant/disposal technology.

4.5.12 Alongside these measures initiatives are needed to identify innovative ways to manage nutrient flows in the environment both from sewage and from agriculture. This might be achieved by community projects which recognise the problems and can harness local expertise from stakeholder organisations (including *inter alia* landowners, Parish communities, the Environment Agency, Anglian Water, the IDB, NOA, NWT, NCP, Natural and Historic England).

Environment Objective 8: To improve water quality throughout the Parish and ensure that it reaches/remains within widely accepted standards such as those set out in the Water Framework Directive thereby ensuring public safety and the integrity of the Parish's ecosystems.

4.6 Air Quality

4.6.1 Clean air is an important element of Natural Capital that plays a role in several ecosystem services including health and well-being, sense of place and biodiversity. Negative impacts of polluted air include poor health in local populations and nutrient deposition across the landscape which can in turn result in acidification of soils, eutrophication of water bodies and acceleration of plant growth. All of these effects impact negatively on the environment.

4.6.2 Given the sensitivity of the environment in Holme and the fact that there is clear evidence of excess nutrients impacting on the Protected Sites it is important to consider the possibility that air pollution might play a role.

4.6.3 The Air Pollution Information System (APIS) created by the Centre for Ecology and Hydrology provides a basis for gaining information about likely impacts and risks from air pollution. Using wide area models it can estimate the deposition of major pollutants (Nutrient Nitrogen, Acidity, Ammonia, Oxides of Nitrogen and Sulphur Dioxide) from the atmosphere. Estimates are available for point locations or as averages for particular sites – including SSSIs.

4.6.4 The system also provides estimates of so called 'critical loads' or levels of exposure to the atmospheric pollutants below which no harmful effects can be detected. Levels above these critical loads or 'exceedences' are potentially harmful for various reasons.

4.6.5 Local knowledge and field survey (see section on water quality below) suggests that nitrogen induced eutrophication of water sources in marsh pools and ditches has become a serious issue in Holme and its impacts in the form of accelerated growth of certain species can be seen in adjacent vegetation communities.

4.6.6 The NDP team examined APIS results for both the North Norfolk SSSI and a single point location in Holme Dunes. The results indicated that in general, deposition levels of atmospheric pollutants were below minimum critical loads for the SSSI qualifying land covers and species features listed in Appendix (2).

4.6.7 The one notable exception was within the sensitive dune and littoral habitats where nitrogen exceedances were generally above the minimum (and sometimes maximum) critical load in quite a number of cases. The qualifying features identified as being likely to suffer impacts most from change in these habitats were primarily Terns (Sterna spp). However, there are also many sensitive plans in these habitats which are also at risk of damage.

4.6.8 Interestingly, the three main sources of Nitrogen indicated by APIS were long range transport from Europe (30%), Livestock (22%) and international shipping (10%). The remainder was attributed to a large number of very small, diffuse sources including road traffic, fertiliser and domestic/commercial heating systems.

4.6.9 Bearing in mind the advice of Jones *et al* (2016) on the dangers of interpreting both the very generalised deposition and critical load estimates it would be wrong to add too much significance to these findings. ***However, given the self evident problems of nitrification on the site it would seem absolutely right to ensure that NDP policy includes measures to minimise emissions from traffic and domestic heating systems within the Parish.***

4.6.10 ***Local impacts*** of growing traffic volumes in the Parish, especially those moving in slow gear through the middle of the Protected Sites on the Broadwater/Firs approach roads could reasonably be expected to have a much more significant impact than the generalised APIS modelling would suggest (see Devereux et al. 2005). The road runs immediately along the southern edge of the sensitive dune systems referred to above. ***Minimising traffic, especially within the Protected Sites should be a consideration for the NDP.***

Environment Objective 9: To minimise Holme's contribution to air pollution and greenhouse gas emissions – and maintain/improve air quality standards to the best level possible over and above existing air quality standards.

4.7 Landscape connectivity and wildlife corridors

4.7.1 Clearly Holme's distinctive patterns of geology and geomorphology give rise to the strong zonation patterns in land cover and habitats highlighted in the last two sections. They contribute to the diversity of habitats that are such an important feature of the Parish. Land cover parcels are sufficiently large to offer viable habitat but sufficiently small to give a good mix of covers over short distances.

4.7.2 Figure 6 shows that hedgerows have largely been retained and there are many outstanding examples across the Parish. It also shows the pattern and quality of these landscape features. Pale green denotes vegetation heights of 0-1m; darker green 1-4m; brown 4-8m; pale red 8-12m; dark red 12-16m and black >16m. Drove Orchards in particular is seen to have outstanding coniferous and deciduous woodland corridors – originally planted for shelter but now contributing to excellent habitat for wildlife.

4.7.3 This locally characteristic diversity and structure in the landscape is excellent for wildlife and biodiversity. The hedgerows, woodland corridors and watercourses allow wildlife to move between patches of habitat and contribute to relatively low levels of competition. The pattern of interaction also encourages diversity in selection of breeding partners for wildlife and this, in turn, promotes genetic diversity and stronger populations.

4.7.4 Adjacencies or boundaries between cover types are also very important. Woodland/ grassland boundaries for example are very important for species that hunt in grassland but roost/sleep in woodland. Owls and hawks are classic examples.

4.7.5 Roads and buildings – (the main barriers to wildlife movement) are also shown in Figure 6 in white. Both corridors and barriers have been drawn very slightly larger than their actual size according to the scale of the map in order to aid visualisation. Vegetation has been drawn after barriers to illustrate where it overhangs. In some places this may slightly exaggerate the continuity of hedgerows but the map gives a very good impression of the amount of protective cover for wildlife in the landscape.

4.7.6 Several conclusions can be drawn from the map.

- *Firstly, the Parish has an excellent network of wildlife corridors linking high quality patches of habitat*. It also has relatively few barriers to movement that fragment

habitats. Holme's environmental assets make it a very good place for promoting wildlife and biodiversity.

- Secondly, the village's gardens are very well vegetated with excellent numbers of large, mature, broadleaved trees. These, along with its open form, tend to soften the roads as barriers to wildlife movement and mask the impact of houses and development. ***This is an important feature of Holme that contributes substantially to its distinctive environmental quality as well as its biodiversity indicating that NDP policy should seek to retain these features***. A policy of linear infill for housing and buildings will protect the open form of the settlement but may lead to pressure to remove hedges and trees. This should be addressed by requiring new planting where removal is unavoidable. Such planting does not necessarily have to be on the same site.

- Thirdly, whilst the A149 is clearly the main barrier to wildlife movement it is also noticeable that the Firs approach road has issues. Slow moving traffic in low gear adds to emissions which contribute to pollution of highly sensitive, protected environments on either side of the road. There is no high vegetation alongside the road to mask its impacts and even slow moving traffic is a significant risk to many species – most notably protected amphibians – including Great Crested Newts and Natterjack Toads. Traffic mortality is known to be a major factor in the demise of this species. It is regrettable that this happens in such a heavily protected place.

Environment Objective 10: To maintain and where possible enhance the Parish's network of wildlife corridors by promoting effective management of woodland, trees and hedgerows including those in gardens. To minimise the introduction of new barriers to wildlife movement.

4.8 Views, footpaths and the AONB Landscape

4.8.1 Holme's north facing escarpment offers outstanding views across the AONB countryside and the Wash (Figure 9). Using the EA terrain model shown in Figure 6 it is possible to evaluate these views.

4.8.2 A desire for protection of views figured particularly strongly in feedback from NDP consultations and the NDP team struggled to find an approach to delivering a strategy that would satisfy the community's demands whilst at the same time protecting and enhancing biodiversity. A particular issue was the wide range of views that people wanted to protect. The most popular view that of Great St Mary's Church followed by views from Green Bank across the village to the sea beyond (See NDP Questionnaire Results: Points of View).

4.8.3 Further issues revolved around what exactly 'protecting a view' means and how viewpoints could be agreed. After some experimentation creating so called 'viewsheds' from popular, individual locations the following strategy was devised.

4.8.4 A sequence of viewpoints was identified along circular walks around the Parish which are commonly used. The walks included the National Trail, Green Bank, Chalk Pit Lane, the Launditch and the Coastal Paths through the marshes and dunes. Some 32 viewpoints were identified in total. Points within the village were not considered. A 'composite' viewshed was then constructed showing landscape visibility from all of the points considered. The result is shown in Figure 10.

Figure 9: *The north facing, chalk escarpment offers outstanding views over Holme village and The Wash to Lincolnshire. Very little development is visible and walkers using the paths on the scarp enjoy the sense of peace, tranquillity and remoteness from development that underpins the AONB designation. At night it is an astonishing vantage point for enjoying truly stunning, dark skies.*

4.8.5 The result shows that the walks have extensive landscape views across the entire Parish. Remarkably, however, the areas of existing development in the village and at Drove Orchards are largely invisible. The reason for this is the number of mature trees along roads and in gardens surrounding property in the village and at Drove Orchards. These trees and shrubs within the village can be seen in Figure 10 as red speckling intermingled with buildings. From many vantage points glimpses of mellow terracotta, pantiled roofs can be spotted – but generally the landscape appears green and without development.

4.8.6 The one exception to this rule is the church tower. Remarkably, this can be seen from 30 of the 32 viewpoints and it seems very likely that this is the result of the original planning of its location and care with its design ensuring it stands as a beacon and reference point for people in the surrounding countryside.

4.8.7 Equally, Figure 10 also shows that those areas that are hidden in the view sheds are those areas where the proposed NDP zoning system (see Zones report) would enable modest development to take place – ie within the development envelope.

4.8.8 The view sheds thus offer an important management tool for ensuring that Holme can continue to develop into the future in a way that preserves its AONB landscape character and its biodiversity.

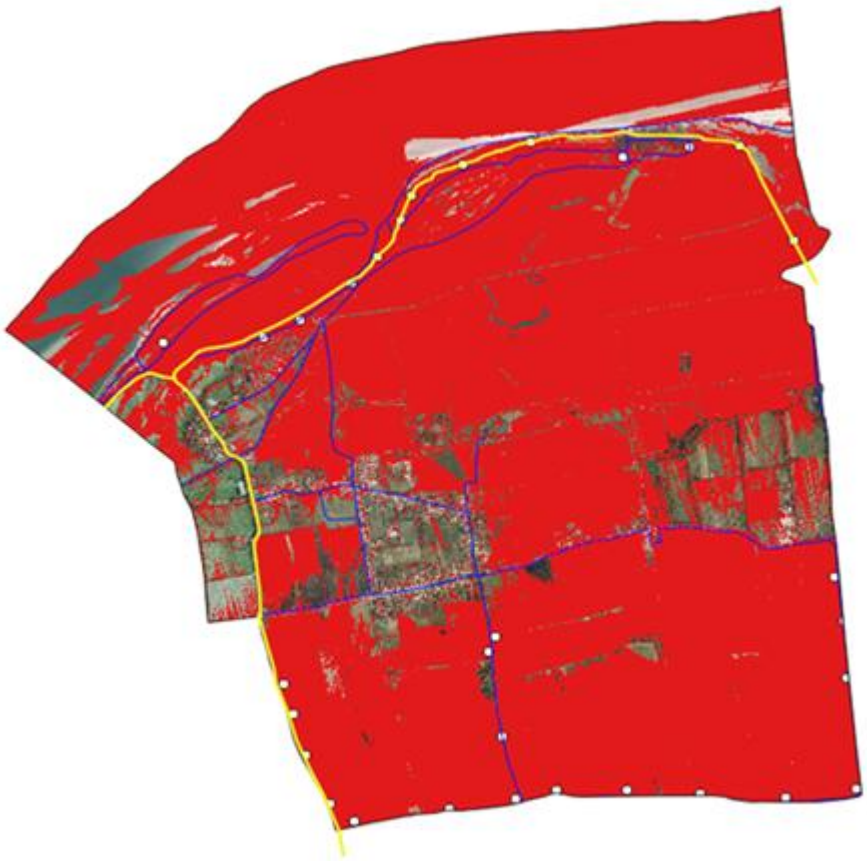

Figure 10: *Viewshed analysis from locations on Holme's most popular walks. White dots show viewpoints and areas shown in red are visible from at least 1 location. Most locations are visible from multiple viewpoints. In locations where the aerial photography can be seen (i.e. no shading) the landscape is not visible from any of the selected locations.*

4.8.9 They also indicate that the main development policy of infill only in both the NDP and the Local Plan is consistent with maintaining the AONB landscape as long as development proposals conserve existing, mature vegetation and/or make provision for additional planting – especially trees.

4.8.10 Maintenance of the existing footpath network and the unspoiled views they enjoy offers a basis for satisfying the need to protect ***all*** of the broad range of views selected by the community as being important, preserve the character and feel of the AONB landscape and protect a significant area of landscape from development and visitor intrusion. It also meets the requirement for protecting views of Great St Mary's Church.

4.8.11 The footpaths that offer these views are clearly special in that they provide walkers, cyclists and horse riders with the opportunity to 'get away from it all' and visit a place that feels remote from development where peace, tranquillity and a sense of wilderness can be enjoyed and abundant wildlife can be seen. Dark night skies allow outstanding views of the Cosmos (see Appendix 5).

4.8.12 Conservation of these views thus requires development to take place within the Development Envelope and careful management of vegetation – especially trees and hedgerows. This proposed NDP approach has two further benefits. Firstly, vegetation has a baffling effect on the propagation of noise – so the views policy will also contribute to limiting noise pollution and preserving tranquillity. Secondly it also limits the spread of light pollution. If coupled with use of appropriate lighting standards in all development, it will also contribute to minimising light pollution.

Figure 11: *Holme's existing network of footpaths and bridleways offers an outstanding resource for walkers, cyclists and riders to enjoy the health promoting benefits of exercise in a rural and peaceful*

4.8.13 Preservation of trees and hedgerows in this way will thus contribute to the sense of peace, tranquillity and remoteness enjoyed by the Parish. It will also help in promoting biodiversity by protecting wildlife from intrusion and disturbance – especially if linked to a carefully managed programme for use of footpaths and walks. The proposed views policy is thus entirely consistent with preservation of the AONB landscape and the policies in the NCP Management Plan.

4.8.14 It follows that the existing footpaths (Figure 11) are a very important feature of Holme's natural capital. They offer a place where people can enjoy the health promoting benefits of

walking, cycling and riding in a place that offers a sense of isolation from development and which offers a sense of peace, tranquillity, wilderness and outstanding views.

4.8.15 It has to be noted that offshore wind farms do impact on the sense of remoteness and their lighting contributes some pollution particularly in the context of Dark Skies. They have become a feature of Norfolk's offshore environment as a sustainable source of clean energy. Their impacts are justified as being in the Overriding Public Interest.

4.8.16 Norfolk County Council have been working to integrate Holme's footpaths into 'Cicular Walks' linked to the Coastal Path and National Trail. ***The NDP can support these initiatives through Policy that will protect their special nature and the views they offer. It can also seek to promote new footpaths to extend the network and exploit the opportunity they provide for reducing visitor pressure on the Coastal Area and Protected Sites.***

Environment Objective 11: To maintain and enhance Holme's outstanding AONB landscape and to ensure that its footpaths and bridleways continue to provide outstanding views for residents and visitors. To ensure that Holme remains a place where people can come to enjoy the health and well-being benefits of recreation in a peaceful and tranquil setting free of disturbance, noise and light pollution and where abundant wildlife can be seen and enjoyed.

4.9 Traffic growth and parking

4.9.1 The Heritage Report demonstrates that Holme has an attractive built environment with a distinctive form, a strong sense of history and a strong relationship with its natural setting.

4.9.2 There is now clear evidence that growing levels of traffic and associated parking pose a serious threat to this special character. These are the most obvious signs of 'visitor pressure' discussed earlier. As well as generating pollution, traffic is contributing to a general degradation of the settlement fabric and parking is becoming a contentious issue that is impacting negatively on local character and the community. Complaints are a regular occurrence at Parish Council Meetings.

4.9.3 Traffic and parking in the Protected Sites (Figure 12) is not consistent with the conservation objectives of these places (Figure 12A). Whilst the Beach car park has sufficient capacity to meet demand for most of the year (Figure 12B) it does overflow occasionally at busy times in the peak season. The village lanes (much enjoyed by walkers) do not have pavements and they are too narrow to allow for parking of cars (Figure 12C). Large vehicles don't have sufficient room to pass (Figure 12D) and they cause significant damage to otherwise well tended verges (Figure 12E). This damage can be caused in seconds but the substantial costs and time for repair falls entirely on homeowners and the Parish Council.

4.9.4 In addition to verges, gates, walls and fences are also being damaged. Traffic growth along Main Road is also becoming an issue as this is an important link for access to the Bus Stop and for walkers enjoying the short, circular route around the village and on the footpaths to the south. Intensification of use along this stretch for enlarged houses with provision for more cars is leading to concerns about pedestrian safety. There have been road traffic accidents as well as damage to property.

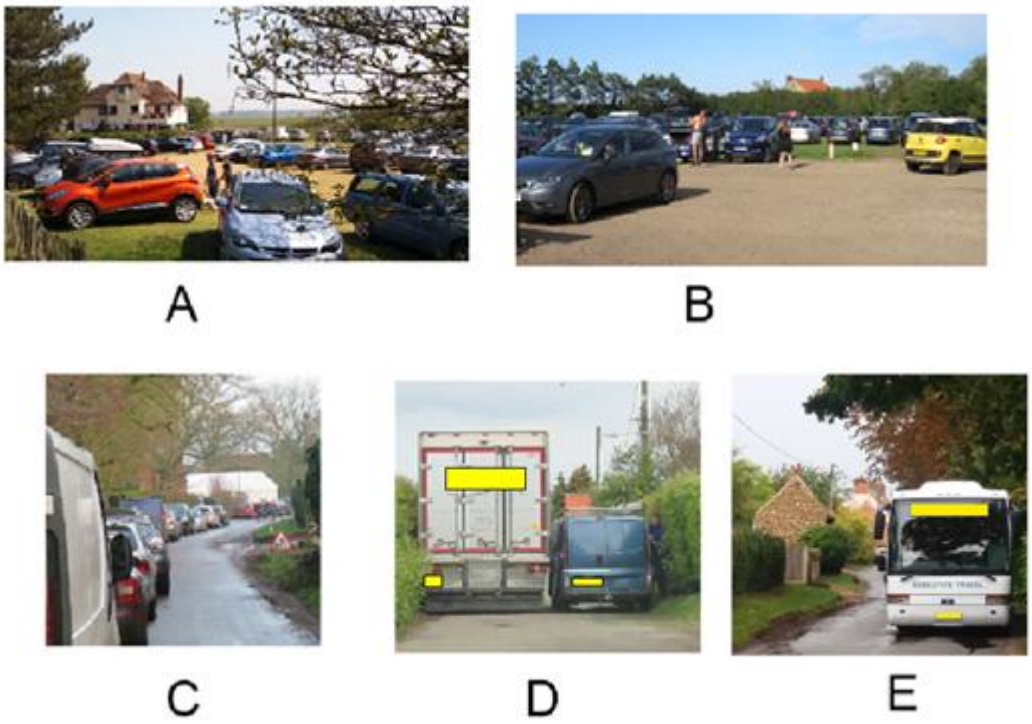

Figure 12: *Traffic and parking are growing problems in both the village and the Protected Sites.*

Figure 13: *Left – a Natterjack Toad killed by a passing vehicle on Marsh Lane in Holme village. Traffic mortality is known to have played a key role in the decline of this protected species across Europe. Their spring mating calls are no longer prominent in the village. Right – Parking tickets are an unfortunate feature of inadequate parking facilities and do nothing towards making Holme a place that visitors can come to enjoy.*

4.9.5 Parking issues are one aspect of traffic generation being out of balance with infrastructure. This was recognised as long ago as 1995 when the AONB Management Plan classified Holme Dunes as a 'red zone' noting that '*fragile habitats*' of '*almost wholly international importance*' were under '*considerable visitor pressure*'.

4.9.6 The Management Plan suggested that red zone sites should not be promoted and that car parking at or near them should be reduced. In practice the opposite has happened (see White, 2012 and Yaxley, 2015) with extension of parking facilities and the opening of toilets and a cafe at the Firs. These have significantly increased the attractiveness of the Firs and adjacent beach as a visitor destination bringing more visitors and traffic. In turn the increases have led to inevitable problems (Figure 13).

4.9.7 The main traffic generators in Holme are the NWT Visitor Centre, Drove Orchards, the Pub, the caravan sites, and the beach. These are shown in Figure 14. *A particular problem is, that with the exception of Drove Orchards, the only access to the main visitor attractions is along the narrow village lanes* shown in red on the map. These are shared with pedestrians, cyclists and horse riders.

4.9.8 Traffic is, of course, just one aspect of Visitor Pressure but others are equally important. People travel by car to Holme for a variety of reasons. Top of the list are walking, wildlife (especially bird) watching, enjoying the beach, picnicking and exercising dogs. All of these activities can, to a greater or lesser degree, conflict with the basic conservation objectives of the Protected Sites. Equally, they make an important contribution to the local economy (see Economy Report).

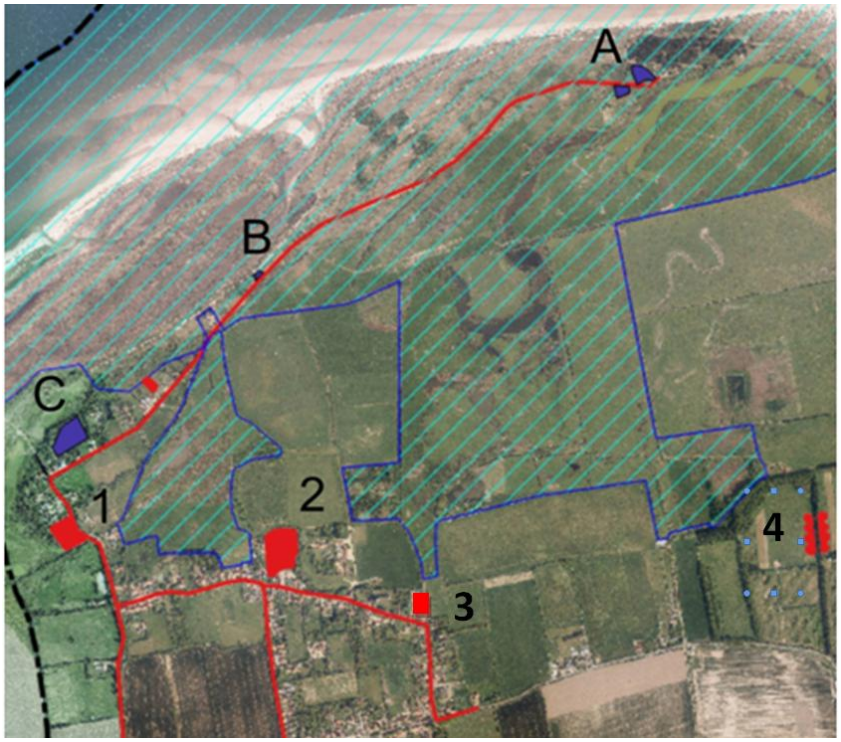

Figure 14: *Car parks, access routes and traffic generators in Holme and the Protected Sites. A is the Firs, B is a small car park just inside the NWT Reserve and C is the Beach Car Park. Caravan Site 1 is the Riverside, 2 is the pub, 3 is Sunnymede and 4 is Drove Orchards*.

4.9.9 If economic and conservation needs are to be balanced, the requirements and impacts of these user groups need to be understood and effectively managed in a way that enables tourists to enjoy their visit without compromising the environment or one anothers' enjoyment and return in the future (Figure 13). Failure to do this will damage both.

4.9.10 The conflicts are well known. Walkers are a disturbance factor for wildlife. Walkers with dogs on a lead are a slightly greater disturbance factor and walkers with unleashed dogs are a very significant disturbance factor. In all cases they can contribute to negative effects on wildlife (foraging, breeding performance, predation) and trampling and erosion of sensitive habitats. This is of special significance in Holme where the dunes are particularly vulnerable both by virtue of their fragility and rare species. They are also the Parish's sea defence (no longer protected against rising sea levels).

4.9.11 Unfortunately, unpleasant conflicts between bird watchers, horse riders and dog walkers are not unknown. Dealing with dog fouling and waste is becoming a recurrent issue for the Parish Council which is finding itself under pressure to fund increasing numbers of dog bins.

4.9.12 In theory the issues caused by visitor pressure on conservation sites are well known (see for example Coppes and Braunisch (2013) and solutions are well rehearsed. For example English Nature outlined solutions for managing the impact of dogs as long ago as 2005 (Taylor et al, 2005). The practicalities of implementing these solutions however seem to be far more complex. In part this may be due to the differing interests of stakeholders and their divided responsibilities.

4.9.13 However, the evidence presented here in relation to pollution, traffic and visitor pressure when viewed alongside the numerous monitoring surveys that have been carried out along the coast indicates that there is a need for decisive action in addressing these problems. Self evidently, the current development trajectory is now undermining the very things that Holme is valued for – peace, tranquillity, wildlife, recreation and the restorative benefits of visiting the countryside for recreation. This trajectory needs to be reversed.

4.9.14 The NDP alone cannot do this. However, it can and should create a policy framework that will support and enable the necessary and sometimes radical solutions to be implemented. At the core is acceptance that more high quality and better organised space is needed to diffuse visitor pressure from the Protected Sites. Policy that will limit and ideally reduce traffic in both the village and the Protected Sites is clearly needed.

4.9.15 Resolving these problems requires a long term policy approach that involves exploiting the exceptional qualities of other areas in the parish to provide an alternative attraction for visitors and crucially, maintaining the amenity of residents. Existing levels of visitor numbers and future growth needs to be focused on these areas via appropriate policies for footpaths, traffic management and education. Thought needs to be given to different types of user in implementing these policies which must support stakeholder initiatives and command the ongoing support of the local community via consultation and participation.

4.9.16 Interestingly, expansion of habitats to create larger and more coherent spaces for wildlife is exactly what that the National Ecosystem Services Assessment (op cit) recommends. Availability of high quality space for leisure is also the prescription that many people need in our increasingly pressured society. The problems being experienced in Holme are exactly those anticipated in the NPPF(2018) (Section 3 above). Equally, the basis for solutions is also

set out in the NPPF(2018) and the National Ecosystems Assessment (see especially 3.6.6 above.

Environment Objective 12: To limit the generation of traffic and on street car parking together with its impacts on the village and the Protected Sites and to limit conflict between cars and other road users including pedestrians, cyclists and equestrians.

4.10 Biodiversity, fauna and flora

4.10.1 The diversity and quality of habitats in Holme described in the previous sections underpin its long standing reputation as a place for bird watching, wildlife observation and outdoor leisure.

4.10.2 This abundance and variety of wildlife in Holme is central to its attractiveness as a visitor destination and a place for people to live. The broad array of species that can be seen in the Parish is a major part of its natural capital. Set alongside the Government's ambitious objectives for the environment and biodiversity (section 3 above) it is important that the NDP policy is formulated on the basis of strong baseline information on this topic. The Land Cover map goes some way towards providing this but information about the species supported by Holme's diverse array of habitats is also needed.

Wildlife abundance in Holme Parish -Fauna

4.10.3 Holme is a well known destination for bird watchers who visit from far and wide. Not unsurprisingly there are extensive records of bird sightings and these, alongside moths and butterflies, tend to dominate records of wildlife in the Parish. However, the volume of records is strongly biased towards the most popular locations and the NOA observation points so it is very difficult to build a systematic profile of wildlife *across the entire Parish*.

4.10.4 The reason for Holme's popularity with bird watchers can be found in the systematic records of bird sightings/counts collated by the Norfolk Ornithologist's' Association (NOA) at their observatory in Holme Dunes. Annual summaries have been published for many years together with counts of birds captured under their ringing programme. The 2010 annual report (NOA, 2010) reveals that 242 distinct species were recorded but by 2015 this had declined to 224 (NOA, 2015).

4.10.5 These totals mean visitors have a very high chance of seeing unusual birds in large numbers. The birds and Holme's other wildlife are a key part of Holme's natural capital that provides ecosystem services to visitors (see economy report) and underpins the Parish economy. The numbers listed above imply a 7% reduction in recordings between the two years in question.

4.10.6 This fall is consistent with concerns expressed by many organisations (eg Hayhow et al., 2016) of declining species numbers and falls in the number of migratory birds visiting the UK. The Warden of the NOA confirms that there is a clear downward trend in Holme.

4.10.7 In order to try and get a broader indication of the abundance of wildlife in Holme a search of the Norfolk Biodiversity Information Service data base was conducted for all Taxa recorded in the Parish during the ten years between 2004 and 2014. Data is submitted to the database by both members of the public and professionals. All submissions are checked and verified by County Recorders to ensure the integrity of the data that is available.

4.10.8 It is telling that the initial search caused a data overflow in the NBIS system and the search had to be reduced to five years (2010 to 2014) to achieve a manageable result. Taxa returned included Birds, Insects (including moths), Butterflies, Terrestrial Mammals, Amphibians and Reptiles, and Marine Species. Records were delivered in a standard GIS format with most being located to the nearest 1km square. Some, primarily Insects, were recorded to the closest 100 metres.

4.10.9 The search returned over 20,000 individual observations across all Taxa, with many of these recording multiple numbers of the species in question. This confirms the abundance of wildlife in Holme and the Parish's importance as a place where it is observed by large numbers of people.

4.10.10 Within these 20,000 + observations some 750 distinct species were recorded. The majority were moths (403). Birds also figured very strongly (286) with the remainder including other insects (41), Terrestrial Mammals (16) and Marine Mammals (4). Remarkably, these observations relate to an area of just 14 km^2.

4.10.11 From this it can be concluded that despite recent decline, Holme is special by any standards in terms of its abundance of wildlife and its rich biodiversity. However, halting the decline and reversing the trajectory in biodiversity as required by Government policy and objectives is likely to be very challenging.

The Flora of Holme-next-the-Sea

4.10.12 Data describing the flora of Holme is rather more sparse but nevertheless there are significant records. The search of NBIS returned 76 distinct species observations in the period 1978-2016 of which almost all were flowering plants. Of these 25 had some sort of conservation designation including Red Data List, Pink List, Conservation In Trade of Endangered Species, NERC Section 41 and BAP. Many of the plants observed were designated on account of their rarity or the extent to which they were/are endangered.

4.10.13 As with the Fauna, observations within the Holme Dunes NNR and the littoral zone dominate the data reflecting uneven reporting levels across the Parish. Unlike the Fauna however, the pattern of reporting is extremely sporadic with the majority of observations being made in just two years – 2005 and 2006. It is thus impossible to try and infer any trends through time from the data.

4.10.14 Also included in the NBIS data was a field survey carried out in Hunstanton and Holme (OS grid squares TF64 and TF74) by the Botanical Society of the British Isles which recorded some 573 Flowering plant species. Of these, 132 were designated (23%) by virtue of rarity and/or level of threat.

4.10.15 Building a profile of Holme's Flora would require resources well beyond those available to the NDP team but there is sufficient data available to suggest that in the relatively recent past there has been a rich and varied set of flowering plants.

4.10.16 Current status is also hard to determine but it is well known locally that there are many important Orchid species to be seen and a rich diversity of interesting plants. The Parish Council has not infrequently found itself in the centre of arguments about their conservation and unfortunate impacts resulting from inappropriate mowing regimes and trampling by

unwitting walkers. Fortunately, invasive species have yet to become a serious issue thanks to the watchful eyes of residents and the efforts of the NOA and NWT wardens.

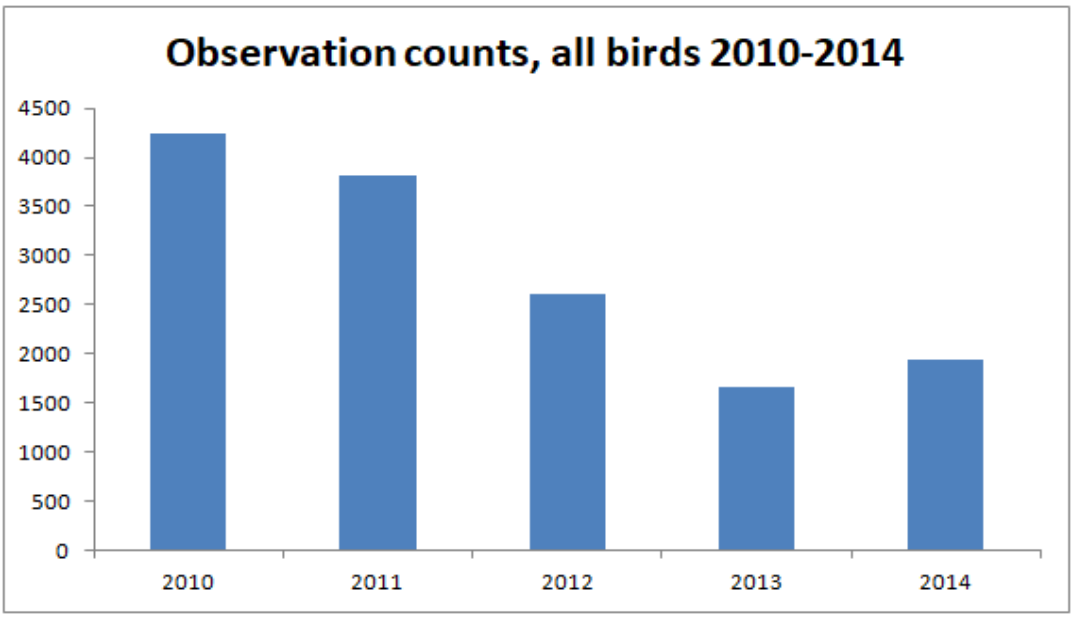

Figure 15: Counts of the number of bird species observed in Holme Parish 2010-14 (Source of data, Norfolk Biodiversity Information Service).

Patterns in biodiversity through time

4.10.17 Against a background of ever increasing concern about falling biodiversity it is interesting to look at how species numbers ***observed in NBIS*** have changed through time. As birds are the most directly important element of Holme's natural wildlife capital, counts of all bird species recorded for Holme in NBIS were aggregated. The result is shown in Figure 15.

4.10.18 Between 2010 and 2014 there was a 54% decline in the number of bird species returned for the Parish. This was the result of a steep downward trend ending with a slight recovery in 2014. This fall in reporting coincides with a well documented rise in visitor numbers.

4.10.19 There is a range of possible explanations for this including a change in visitor reporting patterns, an increase in levels of under-reporting and data errors. It is also known that the County recorders who validate submissions are under extreme pressure to deal with the number of bird observations they receive and there can be a substantial backlog of reports that have been submitted but not gone live on the system.

4.10.20 Notwithstanding these factors it seems very likely that the counts reflect a general decline in the bird populations in the Parish consistent with those reported by the NOA, other reports from throughout the UK and beyond. This is clearly a matter of concern that must be considered in policy formulation for the NDP.

4.11 Conservation status of Holme's wildlife

4.11.1 This trend becomes even more worrying when the conservation status of Holme's wildlife is considered.

4.11.2 The qualifying features for Holme's Protected Sites (listed in **Appendix 4**) give one indication of why Holme's wildlife and habitats are important. However, in terms of the Parish's overall biodiversity these represent just the headline features.

4.11.3 Overall, some 43% of all species recorded for Holme had some form of conservation designation – either national or international. Figure 16 shows the most significant of these. Just less than 12% were designated as priority species in the pre-2010 UK Biodiversity Action Plan and slightly fewer were found to be recorded in the lists for Section 41 of the Natural Environment and Rural Communities Act (2006). 7% were found to be listed/protected in Annexe 1 to the EU Birds Directive and almost 18% were protected under the Bern Convention.

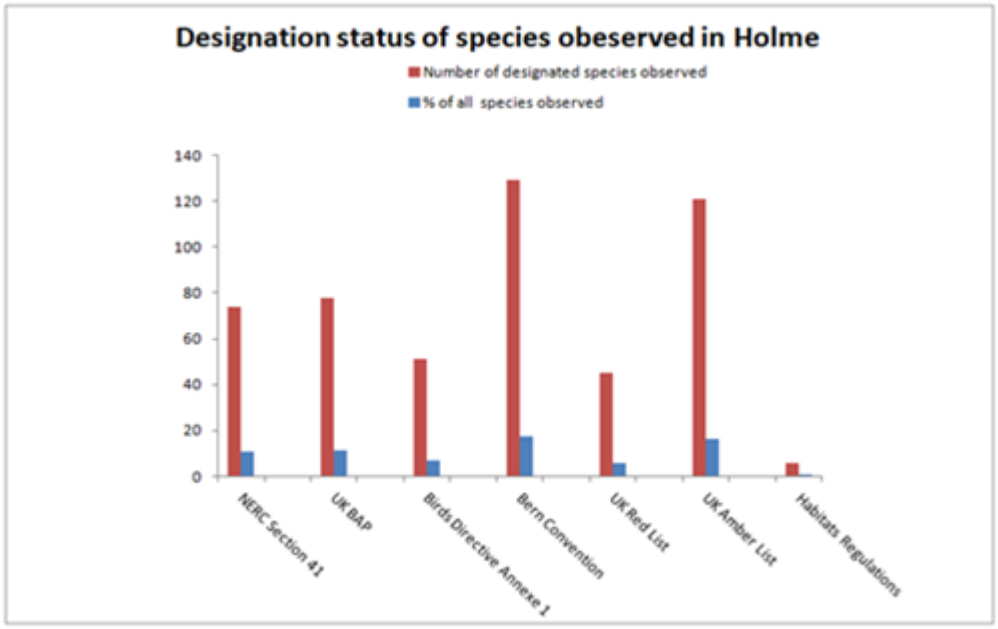

Figure 16: *Designation status of species recorded in Holme Parish based on NBIS data 2010-2014* (Source of data, Norfolk Biodiversity Information Service).

4.11.4 Six species protected under the EU Habitats Regulations were also found. These were:

- Natterjack Toad (*Epidalea Calamita*)
- Common Porpoise (*Phocoena Phocoena*)
- Pipistrelle Bat (Pippistrellus Nathusii)
- Bottle nosed Dolphin (*Tursiops Truncatus*)
- Grey Seal (*Halichoerus Grypus*)
- Common Pipistrelle (*Pippistrellus Pippistrellus sensu strict*)

4.11.5 A part of the attraction of Holme for nature lovers generally and bird watchers in particular is the potential for seeing rare species. Given declining numbers in general it is interesting to see how these rare and protected species have fared in the Parish.

4.11.6 The 2009 Red and Amber lists containing Birds of Conservation Concern are relevant to the 2010-2014 period covered by the NBIS data. Cross referencing these lists against species reported in NBIS for Holme revealed that 71% of the UK Red List Birds had been reported in the Parish and a remarkable 86% of the Amber List.

4.11.7 Furthermore, these were not just odd sightings. To illustrate Figure 17 shows the counts for Red List species for the five year period. It shows that many of these species were seen frequently. Given that each sighting might well have involved multiple birds it indicates that Holme has significant numbers of these increasingly rare birds and is thus an important place for their conservation.

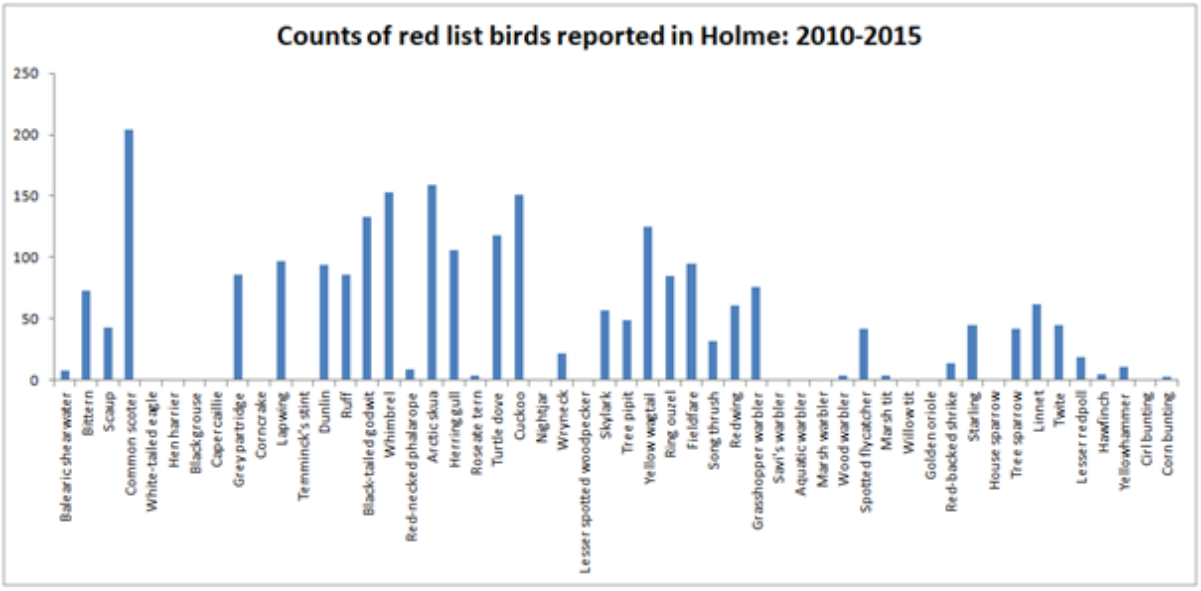

Figure 17: *Counts of red listed birds reported in Holme: 2010-2015* (Source of data, Norfolk Biodiversity Information Service).

4.11.8 However, looking at numbers reported through time also suggests a picture of decline mirroring the pattern of reporting decline in overall numbers. The number of Red List birds returned fell by 54% across the period and Amber list by 53%. Figure 18 shows the pattern of this decline.

4.11.9 Despite the caveats expressed above, there is a very strong likelihood that the pattern of decline in reported numbers reflects a significant fall in real population numbers. This is further cause for serious concern. If critically endangered species are falling in numbers to this degree in a heavily protected environment such as Holme, the prospects for their overall performance in the UK and beyond seem distinctly bleak.

4.11.10 Self evidently, there is an urgent need to halt these declines and NDP policy must play a key role if it is to be consistent with the demands of NPPF (2018) and the requirements of the EU Birds and Habitats Directives in respect of Natura 2000 sites. Having said that, it must be recognised that whilst land use planning and development control can play a vital role, there are many other factors in play that may be exerting an influence in places distant to the Parish and which are beyond the influence of the NDP.

4.11.11 Given the importance attached to conservation by the local community and these rather bleak statistics, this reinforces the conclusion that Holme is at a crossroads in environmental terms. It still enjoys exceptionally high levels of species abundance and biodiversity. It is still an important place for threatened bird species of conservation concern.

4.11.12 However, as in much of the rest of the UK, populations appear to be under extreme pressure and experiencing worrying decline. To halt this decline will require out of the box thinking and very strong measures coupled with a genuine desire to give the place a sustainable future on the part of all stakeholders

4.11.13 The decline in biodiversity described here means that important parts of Holme's natural capital are falling in value with a consequent decline in the ecosystem services they generate. Unless addressed this will have negative economic consequences both for the Parish and the region.

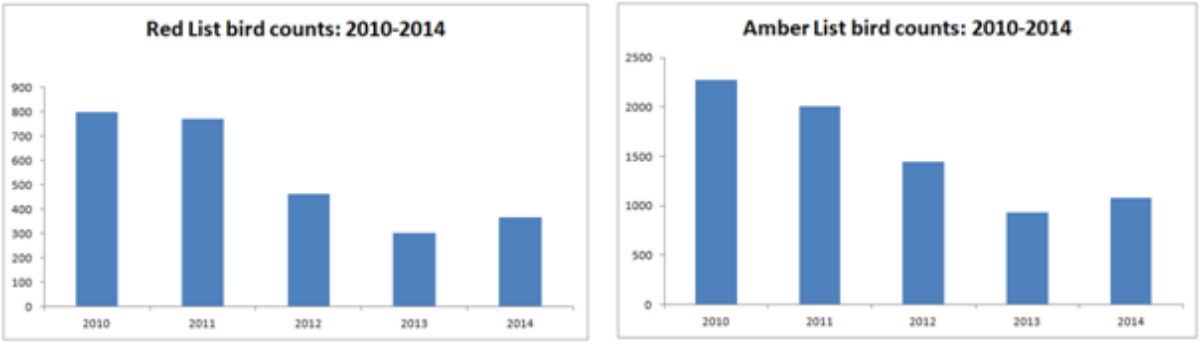

Figure 18: Counts of *Red and Amber Bird List species observed in Holme Parish through time, 2010 – 14* (Source of data, Norfolk Biodiversity Information Service).

Environment Objective 13: To halt and reverse the decline in biodiversity observed over the last five years and to establish Holme as a place where threatened species can thrive and be enjoyed by residents and visitors alike for generations to come.

5 SUMMARY OF ENVIRONMENTAL STATUS AND DIRECTION OF TRAVEL

5.1.1 NDP consultations have consistently revealed that the Parishioners of Holme place a very high value on their local environment. They reveal deep seated concerns about decline in environmental quality arising from inappropriate development and they express a strong wish for positive environmental management.

5.1.2 This report has examined the key features of Holme's natural environment with a view to providing a baseline record of their current status and direction of travel. It has followed a Natural Capital-based approach and has identified a set of environmental objectives relevant to the features considered and their associated problems and opportunities.

5.1.3 Table 1 contains an overview of the findings for each feature considered. It includes an indication of status (excellent, good, average, poor, or very poor). It attempts to identify the

	Feature	Current status	Direction of Travel	Comments
1	Land cover & Habitats	Very good	Decline	Poor water quality is impacting negatively on important features - especially the Hun and its Lagoons. Climate change and Sea Level Rise are a significant threat, mounting visitor pressure is eroding sensitive dunes and trampling flora.
2	Landscape structure	Excellent	Stable but threat of major decline	Major changes in landscape structure are relatively rare and the result of major perturbations (e.g. The Enclosure Acts, general adoption of large scale farming mechanisation) or major development. The SMP envisages a major perturbation that will change Holme's landscape structure for the worse.
3	Geodiversity, drainage and soils	Good	Decline	Eutrophication and blockage of streams and drainage ditches is a growing problem with direct costs to land owners and the community. Loss of ponds to development and poor management of soils due to speculation on development is a growing issue. Localised flash flooding is a growing concern. Erosion of dunes and weakening of their flood protection function is a major concern. Impacts will grow as climate change progresses.
4	Water resources and water quality	Poor	Decline	Anglian Water confirm that they will maintain a balance between water supply and consumption. However, drying of ponds and ditches and loss of flow in the Hun are growing problems. Surface water quality is well below WFD standards in many places across the Parish due to pollution from multiple sources. Sewage disposal and its impact on the Protected Sites is a particular concern.
5	Air quality	Very Good	Stable	There is some evidence that air quality in the Borough is improving and with the exception of Nitrogen deposition affecting littoral environments - especially the dunes there are no obvious problems. Local hotspots where there is slow moving traffic, notably within the NNR will become an issue during the plan period if not addressed.
6	Landscape Connectivity and wildlife corridors	Excellent	Decline	Traffic growth and loss of mature trees will result in decline during the plan period if not addressed. Removal of ponds, hedgerows and trees is an increasing problem.
7	Views, footpaths and the AONB landscape	Excellent	Stable/improving	Improvements to the Coast Path and better signage initiatives carried out by Norfolk County Council represent significant improvements. Better user management is needed to ensure visitor pressure on the Protected Sites and in Holme doesn't exacerbate existing problems.
8	Traffic growth and parking	Poor	Decline	Problems are acute at peak visitor times against gradual growth in traffic and increased demand for parking. Impacts involving noise, loss of tranquillity and pollution will become a major issue unless addressed during the plan period. Material assets including verges, walls and footpaths are currently being damaged.
9	Biodiversity, fauna and flora	Excellent	Decline	Needs decisive and significant intervention during the plan period to reverse declining trend and meet Government objectives. Threats from non-native invasive species, visitor pressure and dogs impacting on wildlife populations – especially birds.
10	Population and material assets	Poor	Decline	Growth in second homes and buy to let plus demolition of small houses and replacement with large ones is driving residents away from Holme and its resident population is declining. Decisive intervention is needed to reverse this trend.
11	Cultural and archaeological heritage	Excellent	Stable/Improving	Care needs to be taken to conserve and enhance the properties of Holme's Conservation Area. Understanding and appreciation of Holme's heritage assets has benefited from a range of specialist studies and excavations. Losses on intertidal areas could be an issue. Heritage Explorer is a major Asset.

Table 1: *Key environmental features of Holme-next-the-Sea, their current environmental status their likely direction of travel.*

direction of travel (improving, stable with some improvement, stable, stable with some decline and declining) based on evidence presented in the report and a qualitative judgement based on local knowledge. Comments are included to explain the main reasons for the classification and to highlight any particular issues.

5.1.4 A consolidated list of the most important environmental objectives is included for reference in Appendix 3.

5.1.5 The overriding picture is that of a place with a very special environment that is starting to show the negative and often cumulative impacts of an array of growing environmental problems. The three most important problems identified in the review are:

- Climate change and Sea Level Rise
- Visitor Pressure
- Pollution of water resources

5.1.6 Many of the other issues noted during the report and in Table 1 are the outcome of these basic drivers. It would appear that the concerns of the local community with respect to environmental degradation expressed in consultations are well founded.

5.1.7 Nevertheless, Holme-next-the-Sea remains a place of particular environmental quality and biodiversity. Its underlying patterns of land use and habitats underpin this and make it a place of considerable environmental, economic and cultural value. The environment is unique and quite rightly subject to many designations which aim to protect it.

5.1.8 Despite the problems and issues listed above it is clear from this report that there are many opportunities for environmental improvement and if these are taken, there is no obvious reason why the problems that have been identified cannot be addressed. However, if not addressed now, current trends of decline will be very difficult to reverse.

6 MEETING THE CHALLENGES AND EXPLOITING THE OPPORTUNITIES FOR A SUSTAINABLE ENVIRONMENTAL FUTURE

6.1.1 The environmental challenges facing Holme are considerably greater than ever envisaged at the start of the NDP process and no single solution exists. Decisive action and a strategic approach is needed to deal with them. In particular, action needs to be taken now as part of a precautionary planning approach to addressing the challenge of Climate Change and the anticipated outcomes of the SMP.

6.1.2 As well as impacting on the environment these processes are also of great importance for the amenity of both residents and visitors. Action is needed now because the required changes will take a timespan of years to have an effect and the timescale for major climate change impact is unknown. Similarly, action is needed to manage the impacts of growing visitor pressure on the Protected Sites.

6.1.3 A major step towards addressing both problems can be made by identifying a suitable area of land which could be managed over the lifetime of the NDP to offset habitat loss and

damage to biodiversity that will result from climate change and which will also open up the possibility of diffusing visitor pressure on the protected sites and the village of Holme.

6.1.4 Figure 19 shows that it would be possible to identify an 'Adaptation and Resilience Zone' to the south of the A149 occupying an area of land almost exactly similar in area to that which is anticipated to revert to intertidal zone in the SMP. The area is shown in pale green on the map.

6.1.5 The proposed zone is almost entirely devoid of development and given similar levels of protection to the existing EU sites, it offers the excellent potential to develop an area of landscape dedicated to conservation and enhancement of biodiversity over the lifespan of the NDP. Its use for this purpose is consistent with its current use (agriculture) and would in no way conflict with the recognised development needs of the rest of the Parish. Specifically,

- It is close enough to the existing Protected Sites to offer the possibility of a larger scale, more integrated area for conservation and enhancement of biodiversity within the Parish which will not be affected by sea level rise.
- It is far enough away from the Protected Sites to be an effective area for diffusing visitor pressure.
- It adjoins Courtyard Farm – the area shown in pale green to the south East of the Parish in Figure 19. Courtyard Farm enjoys high levels of farmland biodiversity (see for example, Williamson, 2012). It was established by the late Peter Melchett as a place where Fauna and Flora can thrive alongside productive organic farming.
- As demonstrated earlier in this report the Zone has outstanding views from existing footpaths over unspoiled AONB landscape and is relatively underused by visitors. Footpaths within Courtyard Farm are currently enjoyed by the public and have good connectivity with those in Holme Parish.
- It enjoys peace, tranquillity and dark, night skies.

6.1.6 It will enable a more integrated, larger scale approach to conservation in Holme and will provide a basis for reducing some of the environmental pressures outlined in this report. It will enable people to connect with the local environment. To that extent it is entirely consistent with Government Environmental Policy (see Section 3.5 above) and is in line with both the recommendations of the National Ecosystem Services Assesment (2011) and the UK National Adaptation Strategy(2018) for dealing with Climate Change .

6.1.7 Protecting this area from development on its own will not actually change anything *in the short run* although it may contribute to halting the current decline in biodiversity. Nor will it offer a route to providing an adjacent area of directly 'compensating habitat' for the areas that will be lost under the SMP as required under current EU legislation. However, with support from stakeholders, community action plans and an imaginative and dynamic long term view – it will establish the basis for promotion of new and different habitats capable of supporting a rather different but equally important mix of species.

6.1.8 *Inter alia*, conversion of some fields to grassland, a different approach to drainage and water resource conservation, planting of more copses and hedgerows; encouragement of organic

arable farming and encouragement of grassland buffer strips around field margins holds tremendous potential for biodiversity protection and improvement. Some of these changes can be achieved over the long term by existing landscape stewardship schemes (assuming they continue) and some via community initiatives (a village trust, The Holleys Charity already owns a small area of land in the zone). The scale of the changes needed pales into insignificance when viewed against the achievements that brought about the existing habitats in the Protected Sites.

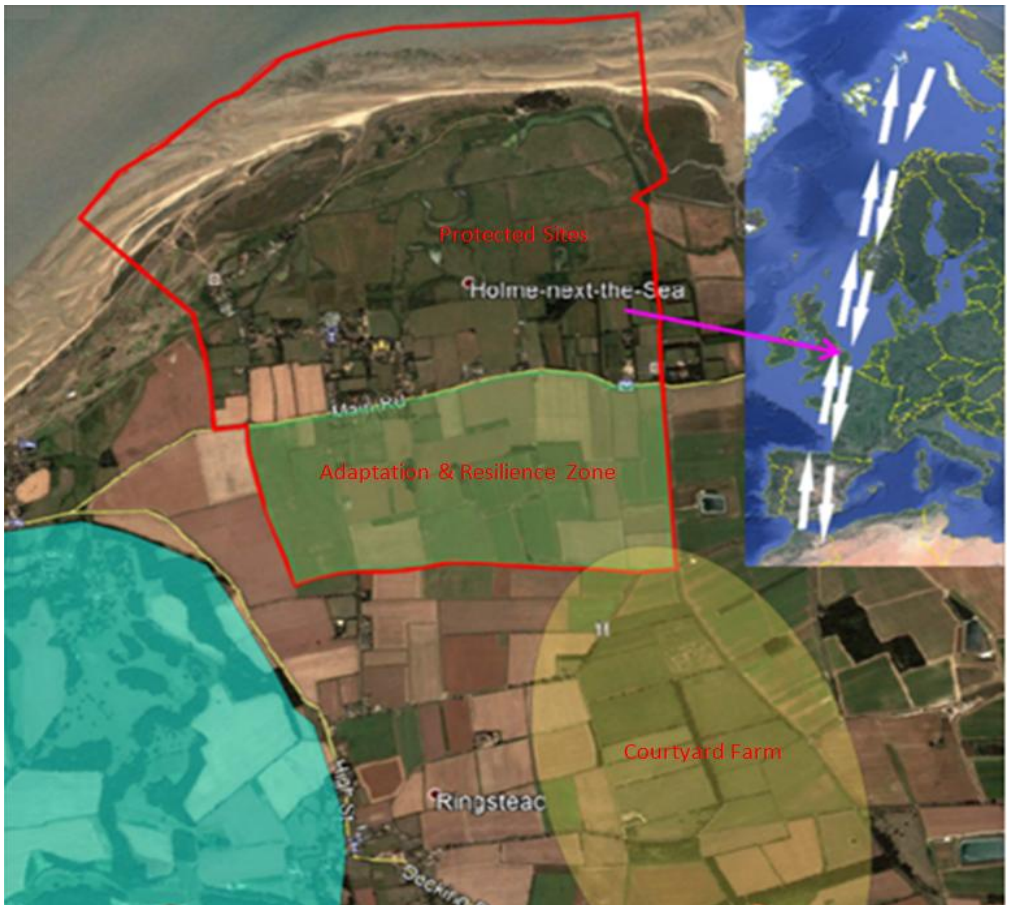

Figure 19: *Strategic view of Holme's landscape structure showing the proposed 'Adaptation and Resilience' Zone to the South of the A149. Courtyard Farm, an area of existing high biodiversity is shown adjoining its south east corner. The whole area is well sited strategically in relation to major routes for migration of birds. The inset shows the East Atlantic Bird Migration Flyway.*

6.1.9 Whilst these changes may offset some losses to water loving species (primarily geese) that will be affected by climate change the area where there is most potential for biodiversity improvement is farmland birds – i.e. those species that have been most hit by biodiversity decline.

6.1.10 Crucially, it will provide an opportunity to maintain the level of ecosystem services delivered by the existing environment which will be lost and which provides such important amenity to residents and visitors alike. Without this opportunity Holme and its wildlife faces a bleak future.

7 SUMMARY AND CONCLUSIONS

7.1.1 This report has identified the important features of Holme's natural environment which are relevant to the NDP. It has examined the status of these features in terms of quality and identified the main environmental opportunities and problems they offer. Based on this analysis it identifies a set of 'environmental objectives' for the NDP which, if met, will deliver a sustainable future for Holme's environment.

7.1.2 The study provides a baseline picture of status and gives an indication of how it would be expected to evolve in the absence of the NDP. In an area of such environmental sensitivity, it is highly likely that the NDP will require both an SEA and an HRA. The approach has kept both of these possibilities in mind and has been designed to provide much of the information required to complete these tasks. The features considered are broadly consistent with the topics for SEA set out in Schedule 2 of the SEA regulations(2004).

7.1.3 The relevant planning policy background is considered with reference to the NPPF and the Local Plan thereby define the planning framework for environmental considerations in the NDP. This is followed by a review of legislative requirements with special reference to the areas of EU Protected Sites aimed at facilitating NDP compliance with respect to environmental regulations.

7.1.4 It is noted that there is considerable uncertainty surrounding this legislation as a result of Brexit. The approach adopted has been to assume that the current legislative framework will remain in place for the foreseeable future. However, in order to deal with the uncertainty, a 'Brexit Policy' will be incorporated into the NDP which, in so far as is possible, confers a minimum level of protection on Holmes designated areas consistent with current legislation and the current position.

7.1.5 Consideration is given to current Government strategy for the environment and the objectives set out in the current Biodiversity Strategy and the recent 25 Year Plan for the Environment. Objectives for the NDP have been specified with this strategy in mind.

7.1.6 As part of the process of establishing a baseline picture of how Holme's environment would evolve in the absence of an NDP, initial consideration has been given to existing plans and programmes which might have an impact on the Parish. Two plans – the SMP and the Local Plan SADMP are identified as being particularly important.

7.1.7 Consideration of these plans highlights two major problems facing the Parish:

- The impacts of growing visitor pressure on Holme and its Protected Sites
- The loss to sea level rise of a significant area of land containing an important range of habitats.

7.1.8 The Local Plan recognises that Protected Sites in West Norfolk are at or near capacity in terms of visitor numbers and has established a mitigation strategy for the numbers of additional visitors that SADMP housing allocations will generate. However, it is clear that visitor numbers at the sites are driven by many factors and growth due to tourist development and facilities is likely to be far greater than that from new housing – especially at hot spots like Holme Dunes.

7.1.9 At present there is insufficient data to judge the exact magnitude of this growth and there is no mitigation strategy in place to deal with its impacts. Furthermore, recent visitor studies indicate that additional housing within walking distance of Protected Sites has a disproportionately large impact due to the (often daily) frequency of visits from even small numbers of individuals. This means that even the very modest levels of housing anticipated for Holme can be expected to have a significant impact and will need careful planning and appropriate mitigation in the NDP.

7.1.10 A review of water quality in the catchment of the River Hun reveals a third major problem facing the environment – pollution – which is causing clear and significant damage to biodiversity in general and the qualifying features of the Protected Sites in particular. Causes are from multiple, diffuse sources but clearly include pollution from sewage discharges into the drainage network.

7.1.11 Climate change/sea level rise, visitor pressure and pollution of water resources are thus identified as three major issues that the NDP must attempt to address.

7.1.12 The current status of Holme's environment was reviewed with the aid of a digital terrain model (DTM/DSM) of the Parish constructed from Environment Agency Lidar data and using a map of land cover derived from 0.25m, full colour aerial photography.

7.1.13 The land cover analysis identified 22 land cover classes and demonstrated that the Parish has an excellent diversity of land cover/habitats capable of supporting a wide range of animal and plant species. The relatively small proportion of arable farmland means that the majority of habitats have not been exposed to high levels of agrochemicals and pesticides. The large areas of grassland and surface water are particularly wildlife friendly.

7.1.14 Holme's underlying chalk geology results in its most prominent geological feature – the east/west escarpment dissected by dry valleys running S/N. Periglacial processes and outwash from the escarpment have resulted in a complex pattern of surface deposits at the foot of the scarp giving rise to some areas of high quality soil and a line of spring fed surface water features in the marshland areas to the north.

7.1.15 Today, the dry valleys are prone to flash flooding during extreme rainfall events and this problem is likely to increase as climate change progresses. Some homes have been flooded and managing surface water runoff is an issue for the NDP.

7.1.16 Further north still, significant areas of low lying land have been reclaimed in the late nineteenth century leading to the important dune, foreshore and sublittoral habitats. The grazing marshes enclosed by these sea defences are important for grazing cattle and also very important for wildlife.

7.1.17 Although in principle the underlying chalk geology should lead to excellent quality water draining into the marshes and the River Hun this is not the case. Water quality in both the river, local drainage ditches and the coastal lagoons is heavily polluted with nitrates and phosphates. Broadwater Lagoon, a qualifying feature for the North Norfolk SAC shows a persistent algal bloom due to excessively high levels of phosphorous and the River Hun itself suffers from Nitrate levels that are well above Water Framework Directive standards. This pollution has resulted in major damage to aquatic life.

7.1.18 Pollution sources have yet to be fully traced but they include a range of diffuse sources. Discharge of untreated sewage from the Smugglers Lane pumping station is one major concern.

7.1.19 The complex underlying geodiversity of the lowland areas in the Parish has resulted in a pattern of relatively small fields with an excellent network of hedgerows linking copses and small scale patches of woodland. The Lidar terrain model shows that these are generally in very good condition and contribute to a very wildlife friendly pattern of refuges and corridors. The well wooded and well planted gardens also contribute to this and development in the village makes an important, positive contribution to wildlife and prevent the village itself becoming a significant barrier to movement.

7.1.20 Holme has few Landscape barriers causing fragmentation of habitats – the main one is the A149. However, growing traffic on the Firs approach roads is a growing concern in this respect as it is known to be a route used by Protected Species – especially Natterjack Toads – between their foraging, breeding and hibernation areas.

7.1.21 The desire to protect views in the Parish figured particularly strongly in the consultation feedback – especially views of Great St Mary's church. Construction of a composite viewshed from points spaced along the main circular walks around the Parish revealed that the paths enjoy spectacular views almost entirely free of development although the steeple of Great St Mary's Church is visible from most of them. These views make a major contribution to the feeling of peace, tranquillity and remoteness enjoyed by visitors to Holme who use the local footpath network.

7.1.22 These views over unspoiled AONB landscape are well worthy of preservation which can be achieved without in anyway hampering sustainable development in the Parish for which there is a recognised need. The footpaths and bridleways are an important part of Holme's natural capital that also deserve protection and enhancement as a place where people can enjoy the benefits of exercise and observe abundant wildlife in an unspoiled natural setting.

7.1.23 Traffic and parking in Holme is growing rapidly and this is just one aspect of 'Visitor Pressure'. There is a range of attractors which, with the exception of Drove Orchards, require traffic to pass through the village on its narrow lanes.

7.1.24 These lanes do not have pavements and were not designed for road vehicles. They are too narrow for parking and access for delivery and service vehicles can be problematic. Conflict frequently arises between pedestrian users and road vehicles and damage to the verges, walls and fabric of the village is a growing problem. Costs of repair falls largely on the Parish community.

7.1.25 More effective management of visitors is needed to address these problems including recognition of different visitor interest groups, better access management and diffusion of visitor pressure away from the existing hot spots in the Nature Reserve and around the Beach.

7.1.26 The report used data from the Norfolk Biodiversity Information Service (NBIS) to assess current levels and trends in biodiversity. As expected, levels were found to be extremely high. However, evidence was found for worrying decline – especially in avian species during

the last five years. Although in part the level of observed decline might be exaggerated by data limitations it is judged that the decline represents a real decline in population numbers.

7.1.27 Although the Parish is rich in designated species in general and red/amber list bird species of national concern in particular substantial drops in recorded numbers of over 50% are still being recorded.

7.1.28 Self evidently, NDP policy must address the significant challenge of reversing these declining trends insofar as it is possible if it is to be consistent with the environmental policies and objectives set out by the Government and reviewed in this report.

7.1.29 Holme's excellent wildlife habitats and its exceptional levels of biodiversity need to be protected against the environmental issues identified in this report – sea level rise, growing visitor pressure and pollution of water resources. The NDP needs to have policies that will address these problems and where this is not possible mitigate and adapt to reduce their impacts.

7.1.30 It is judged that decisive action is needed to achieve this. The NDP alone cannot solve these problems but it can establish a *precautionary planning framework* for doing so and it is suggested that a key element of this framework is the creation of an 'Adaptation and Resilience Zone' that will:

- Provide an area similar in size to that envisaged as becoming intertidal zone in the SMP which can be protected from development for the conservation and enhancement of the AONB countryside and its biodiversity
- Managed over the duration of the plan to diffuse visitor pressure from the existing overheated areas – especially the village and the National Nature Reserve
- Maintain the levels of amenity enjoyed by residents of Holme both for themselves and for future generations.
- Alongside other NDP policies provide sufficient mitigation to cover the environmental impacts on the Protected Sites arising from the additional housing proposed for Holme and anticipated growth in Visitor Pressure from sources other than Local Plan Housing Allocations.

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9 APPENDIX 1: EXISTING PLANS AND PROJECTS RELEVANT TO THE NDP

	Plan	Purpose	Comments and evidence in support of NDP Policy
1	National Planning Policy Framework - 2012	Provides a framework of overarching planning policies for development based on Planning Policy Guidance (PPG) and Planning Policy Statements (PPS)	Revised in 2018 during preparation of the NDP. NDP has been revised for consistency with the revisions.
2	Localism Act, 2011	Aims to devolve power from Central Government to local communities – and sets framework for Neighbourhood Planning.	Clearly welcome – but balancing strategic v local decision making seems to be a long term issue for the Planning System hierarchy. Needs appropriate resourcing especially in existing LPAs that have to provide support.
3	BCKLWN Core Strategy 2011	Sets out planning policies for achieving sustainable development in Kings Lynn and West Norfolk	The NDP must be consistent with this framework which is currently being revised. The NDP team has worked with the Planning Policy Team to anticipate changes where possible – eg settlement boundaries
4	BCKLWN Site Allocations and Development Management Plan (SADMP)	Sets out policies for achieving sustainable development in Kings Lynn & West Norfolk – including allocation sites for housing and economic development.	The NDP must be consistent with the policies set out in the SADMP. It sets the current benchmark for dealing with visitor pressure on the Borough's EU Protected Sites.
5	BCKLWN Green Infrastructure Strategy, 2010	Sets out objectives for managing green infrastructure linked to development across the Borough	Notes the need to provide GI access to the east of Hunstanton towards Ringstead and the Peddars Way. This meshes closely with NDP policy.
6	Norfolk County Council Local Transport Plan 'Connecting Norfolk' 2011-2026	Sets out the strategy and policy framework for managing transport in the County. It aims to deliver sustainable growth by reducing the need to travel; enhancing strategic connections; reducing emissions; improving road safety; and improving accessibility.	A149 is an increasingly busy corridor of movement. Traffic growth and parking is identified as a major issue in the NDP. The LTP contains *inter alia* policies for dealing with important issues for Holme including emissions, biodiversity, sustainable tourism, poor accessibility, road safety, and disabled mobility.

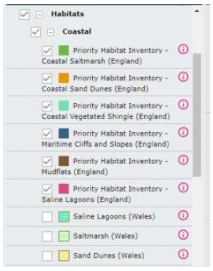
7	North Norfolk Coast AONB Management Plan, 2014-2019	Sets out a five year strategy for managing the AONB and an annually reviewed action plan. Aims to promote a shared vision for the future of the AONB that preserves the natural beauty and special qualities of its landscape, manages pressures for change, promotes local communities and monitors problems/progress.	The entire Parish of Holme is within the AONB and the management plan is of fundamental importance to the NDP. The NDP have worked hard to establish a good working relationship with the Norfolk Coast Partnership who are responsible for the AONB.
8	Norfolk and Suffolk Economic Strategy, 2017	Set out objectives for economic growth in the region including housing, jobs, employment, businesses, education and energy. Aims for 17.5 billion economic growth by 2036.	Economic prosperity for local people based on exploitation of Natural capital and ecosystem services to support tourism is a priority for NDP policy.
9	Norfolk Rural Development Strategy, 2013-2020	Aims to 'Achieve inclusive, sustainable rural areas which provide their inhabitants with a high quality of life through a dynamic economy, vibrant community and healthy natural environment'.	Several priority issues are relevant to Holme especially rural employment, broadband and mobile phone quality, education, affordable housing, environmental stewardship and private water storage capacity.
10	Norfolk Biodiversity Action Plan	A collection of 22 action plans for habitats and 15 action plans for species aimed at promoting biodiversity in Norfolk.	Many of the habitats and species are of central importance to Holme's environment.
11	Shoreline Management Plan, 2010	Sets out strategy for managing the coast and responding to climate change.	The plan makes provision for managed realignment of the coast in Holme and envisages the loss of c. 80 houses and over 40% of the Parish to intertidal mudflats. It has IROPI permission to proceed from the Secretary State.
12	BCKLWN Strategic Flood Risk Assessment, 2018	Provides detailed mapping of areas subject to flood risk and indicates probability of areas being subject to tidal and fluvial flooding as a result of climate change.	A large part of the Parish is in Flood Zones 2 and 3. There have been significant flood events in the Parish in the last 10 years.
13	West Norfolk Destination Management Plan, 2016-2020. West Norfolk Tourism Forum / BCKLWN	Provides a framework of objectives and actions for increasing the value that visitor spending can make to the local economy in West Norfolk	No SEA for this plan. Managing visitor numbers and pressure is a key issue for the NDP.
14	Ramsar Convention, 1971	Provides the framework for conservation and use of	Over 40% of Holme is part of the North Norfolk Ramsar Site.

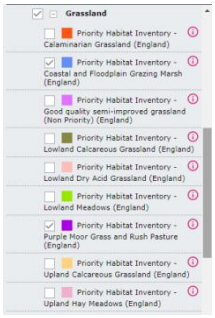
		wetlands and their resources. International Treaty aimed at protection of important wetland habitats from damaging development.	Wetland areas within and outside the site are of great importance to Holme's biodiversity.
15	EU Habitats Directive, 92/43/EEC, 1992	Conserve EU habitats, promote biodiversity & support Natura 2000 Sites network	Implemented through SACs in the UK
16	EU Birds Directive, 2009/147/EC, 2009 (amended)	Protect and promote wild birds – especially migratory and threatened species	Implemented through SPAs in the UK
17	EU Water Framework Directive, Europe 2000/60/EC,2000	Establish common standards and objectivesfor achieving good status ground and surface water throughout the EU	UK has seen improvements but standards are often not met. Citizen involvement is an important feature. NDP team research shows surface water quality is well below WFD objectives.
18	EU Air Quality Framework Directive, Directive 2008/50/EC	Aims to rationalise growing number of air quality directives following Kyoto protocol and ensure standards for clean air.	The NDP should play its role in promoting clean air.
19	Clean Air Strategy, 2018. Replaces National Air Quality Strategy, 2007. Draft revision, 2018.	Sets out air quality assessment, objectives and policies aimed at improving air quality, public health, the environment and quality of life.	The NDP should play its role in promoting clean air. Nitrogen emissions are seen to be having a small but growing effect on Holme's biodiversity.
20	EU Noise Directive 2002/49/EC	Aims to establish standards for the assessment and control of environmental noise.	Noise is one aspect of development and visitor pressure affecting sensitive conservation sites. Traffic noise is a growing issue in Holme.
21	UK Sustainable Development Strategy	UK response to Rio Agenda 21	Four basic objectives of inclusive social progress; effective protection of the environment; prudent use of natural resources and high/stable economic growth/employment are relevant to NDP
22	EU Sustainable Development Strategy	Sets out sustainability objectives for EU member states in order to improve quality of life in cohesive communities that use resources effectively and exploit synergies between a healthy environment and thriving economy.	Focuses on a number of key areas including, inter alia, climate change and clean energy, sustainable transport, sustainable production and consumption, conservation and management of natural resources.
23	European Climate change programme,	Aims to implement the Kyoto protocol by establishing pan	The NDP should play its part in helping limit Greenhouse gas

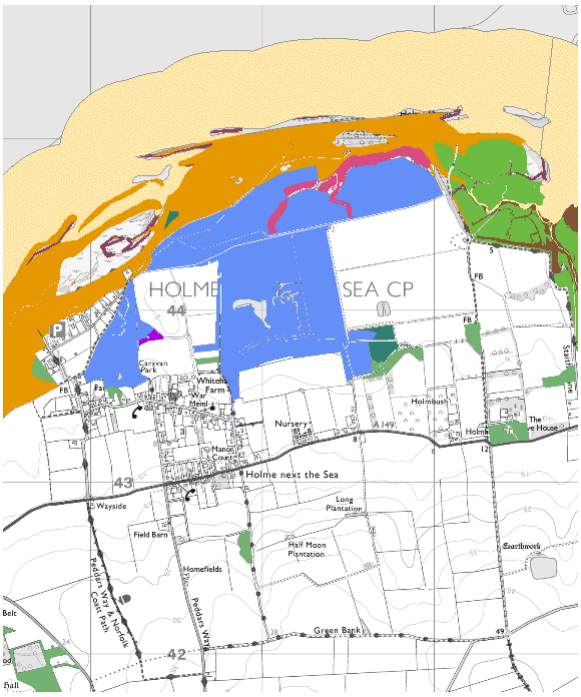
	2004	European policy to limit greenhouse gas emissions	emissions and improve air quality.
24	Climate Change Act,2008	Aims to convert the UK to a low carbon economy by 2050 by reducing greenhouse gas emissions. Established Climate Change Committee to ensure progress	Climate Change will have a major impact on Holme and the NDP needs to take account of the latest thinking.
25	The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, 2018	Forms part of the five-yearly cycle of requirements laid down in the Climate Change Act 2008 to drive a dynamic and adaptive approach to building resilience.	Addresses key impacts facing Holme – especially coastal change and sea level rise. Underlies thinking for Holme's Adaptation and Resilience zone.
26	The Wildlife and Countryside Act, 1981 + various amendments	Protection of animals, plants and habitats in Great Britain	Central to the protection of Landscape, habitats and Biodiversity
27	The Natural Environment and Countryside Act, 2006	To promote a rich and diverse natural environment and thriving rural communities and ensure that public/statutory bodies have regard for biodiversity	Section 41 requires the Secretary of State to maintain lists of habitats and species that are of principal importance for conservation of biodiversity
28	The Countryside and Rights of Way Act - 2000	Provides for right of access to a variety of different types of open land including registered common land	Aims to strengthen nature conservation and contribute to better management of AONBs
29	Biodiversity 2020: A strategy for England's wildlife and ecosystem services, 2011.	Sets out ambitious government aims for reversing falling biodiversity by establishing coherent ecological networks, more and better places for nature for the benefit of wildlife and people.	Underpins key elements of Holme NDP policy
30	A green future: Our 25 year plan to improve the environment, 155pp.	Sets out the Governments plans for halting UK environmental decline by promoting a more integrated, large-scale approach to conservation; putting people at the heart of biodiversity policy; reducing environmental pressures and improving knowledge.	Of particular importance given observed environmental problems in a place so important for landscape and wildlife. Stresses the importance of correctly valuing the environment in economic activities via a natural capital/ecosystem services approach. This underpins NDP environment strategy.
31	National Ecosystems Assessment 2011 and	Provides an evaluation of the state of the UK environment and	Fundamental to NDP proposals for diffusing pressure on

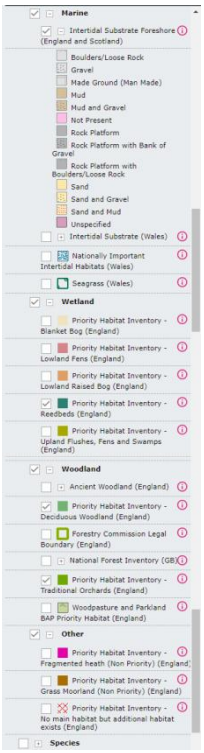
	follow on 2014.	inter alia, concludes current approaches to conservation are not fit for meeting the needs of current society – especially against a background of climate change. A more integrated, larger scale, landscape approach is needed.	Holme's protected sites and creation of an Adaptation and Resilience zone as a response to Climate Change impacts in the Parish.
32	Heritage Statement, 2017.	Sets out the Governments approach to conserving, enhancing and protecting heritage assets.	Heritage Assets are an important part of Holme's Natural Capital.
33	National Character Area Profiles 77, North Norfolk Coast and 76, West norfolk	Review the Natural Capital and Ecosystem services in these areas and set out statements of environmental opportunity for their exploitation and management	Provide important background information and guidance for developing NDP policy.
34	Anglian Water Revised Draft Water Resources Management Plan, 2019.	Sets out approach to managing water resources in a region that is water scarce, has a sensitive environment, is being impacted by Climate Change and is rapidly growing.	All aspects of water resource management are of great importance in Holme. Ensuring supply meets capacity and effective sewage disposal are identified as key issues.
35	The Wash and North Norfolk Marine Partnership Annual Management Plan.	Conducts a four part programme of monitoring, appropriate assessment, coordination of stakeholders and developing an action plan for the Wash and North Norfolk Coast Marine Site.	Protects, promotes and reports on local conservation designations which are of such importance in Holme. Especially relevant to offshore issues.
36	Snettisham Neighbourhood Plan	Sets out planning policies for Snettisham at the Parish Level	Will develop housing fractionally above that envisaged and mitigated for in the SADMP. Could have a very small incremental effect on Holme's levels of visitor pressure.
37	Hunstanton Neighbourhood Plan	Proposed policies for the town	Will develop housing fractionally above that envisaged and mitigated for in the SADMP. Will have a small incremental effect on Holme's levels of visitor pressure.

10 APPENDIX 2: MAGIC MAP OF HOLME'S BAP PRIORITY AND SECTION 41 LISTED HABITATS.









UK Biodiversity Action Plan Habitats (1992-2012) occurring in Holme-next-the-Sea from DEFRA MAGIC mapping system.

Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance

11 APPENDIX 3: CONSOLIDATED LIST OF ENVIRONMENTAL OBJECTIVES FOR THE NDP

Environment Objective 1: The NDP must aim to conserve, protect and enhance the Environment in line with Government Strategy and UK Planning Policy in order to facilitate Sustainable Development. It should aim to ensure that as a minimum, the current levels of environmental protection enjoyed as a result of EU Directives and current (2018) legislation are maintained.

Environment Objective 2: The NDP must adopt a precautionary planning approach aimed at minimising the negative economic, social and environmental impacts of Climate Change and Sea Level Rise that is consistent with the SMP. It must aim to promote resilience in the face of the changes anticipated in the SMP thereby protecting the Parish's Natural Capital – especially its infrastructure, heritage, landscape quality and biodiversity.

Environment Objective 3: To control and diffuse visitor pressure from the village and Protected Sites recognising that without significant intervention the problem will continue to grow and cause damage to the environment and undermine the integrity of the Protected Sites which are at or near the limit of their carrying capacity. Recognising that very small levels of development within walking distance of the sites can have a significant impact sufficient new headroom must be created to accommodate the very modest development anticipated in Holme for which there is a recognised need.

Environment Objective 4: To conserve, maintain and enhance the diversity of Holme's habitats – especially those that are listed as BAP priority or NERC (2006) Act habitats of principal importance and to ensure that they remain fit for purpose in terms of meeting NATURA 2000 commitments.

Environmental Objective 5: To anticipate the impacts of Climate Change as set out in the SMP on habitats, biodiversity and amenity and aim to minimise and mitigate these impacts by identifying, protecting and promoting compensating habitat development and management in parts of the Parish beyond the areas at risk.

Environment Objective 6: To ensure that new development in Holme contributes to effective surface water drainage and does not result in increased flood risk either within or beyond the areas that are included in Flood Zones 2 and 3.

Environmental Objective 7: To protect the best quality soils in the Parish and maintain their viability for agricultural production.

Environment Objective 8: To improve water quality throughout the Parish and ensure that it reaches/remains within widely accepted standards such as those set out in the Water Framework Directive thereby ensuring public safety and the integrity of the Parish's ecosystems.

Environment Objective 9: To minimise Holme's contribution to air pollution and greenhouse gas emissions – and maintain/improve air quality standards to the best level possible over and above existing air quality standards.

Environment Objective 10: To maintain and where possible enhance the Parish's network of wildlife corridors by promoting effective management of woodland, trees and hedgerows including those in gardens. To minimise the introduction of new barriers to wildlife movement.

Environment Objective 11: To maintain and enhance Holme's outstanding AONB landscape and to ensure that its footpaths and bridleways continue to provide outstanding views for residents and visitors. To ensure that Holme remains a place where people can come to enjoy the health and well-being benefits of recreation in a peaceful and tranquil setting free of disturbance, noise and light pollution and where abundant wildlife can be seen and enjoyed.

Environment Objective 12: To limit the generation of traffic and on street car parking together with its impacts on the village and the Protected Sites and to limit conflict between cars and other road users including pedestrians, cyclists and equestrians.

Environment Objective 13: To halt and reverse the decline in biodiversity observed over the last five years and to establish Holme as a place where threatened species can thrive and be enjoyed by residents and visitors alike for generations to come.

12 APPENDIX 4: QUALIFYING FEATURES OF HOLME'S PROTECTED SITES

Special Area of Conservation

(The description below is taken from the JNCC description published at http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0019838). It also uses the Natura 2000 Data Form content.

1150 Coastal lagoons *** Priority feature**

1220 Perennial vegetation of stony banks

1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)

2110 Embryonic shifting dunes

2120 Shifting dunes along the shoreline with Ammophila arenaria (white dunes)

130 Fixed coastal dunes with herbaceous vegetation (grey dunes) *** Priority feature**

2190 Humid dune slacks

1355 Otter (*Lutra lutra*)

1395 Petalwort (*Petalophyllum ralfsii*)

Special Protection Area

(The description below is taken from the JNCC description published at http://jncc.defra.gov.uk/default.aspx?page=2008. The site was classified on 20/1/1989). It also uses the Natura 2000 Data Form content).

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive

During the breeding season;

Avocet *Recurvirostra avosetta*, 177 pairs representing at least 30.0% of the breeding population in Great Britain (Count as at 1998)

Bittern *Botaurus stellaris*, 3 individuals representing at least 15.0% of the breeding population in Great Britain (Count as at 1998)

Common Tern *Sterna hirundo*, 460 pairs representing at least 3.7% of the breeding population in Great Britain (Count, as at 1996)

Little Tern *Sterna albifrons*, 377 pairs representing at least 15.7% of the breeding population in Great Britain (5 year mean 1994-1998)

Marsh Harrier *Circus aeruginosus*, 14 pairs representing at least 8.8% of the breeding population in Great Britain (Count as at 1995)

Mediterranean Gull *Larus melanocephalus*, 2 pairs representing at least 20.0% of the breeding population in Great Britain (Count as at 1996)

Roseate Tern *Sterna dougallii*, 2 pairs representing at least 3.3% of the breeding population in Great Britain (5 year mean 1994-1998)

Sandwich Tern *Sterna sandvicensis*, 3,457 pairs representing at least 24.7% of the breeding population in Great Britain (5 year mean 1994-1998)

Over winter;

Avocet *Recurvirostra avosetta*, 153 individuals representing at least 12.0% of the wintering population in Great Britain (Count as at 1997/8)

Bar-tailed Godwit *Limosa lapponica*, 1,236 individuals representing at least 2.3% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Bittern *Botaurus stellaris*, 5 individuals representing at least 5.0% of the wintering population in Great Britain (5 year peak mean 1993/4 - 1998/9)

Golden Plover *Pluvialis apricaria*, 2,667 individuals representing at least 1.1% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Hen Harrier *Circus cyaneus*, 16 individuals representing at least 2.1% of the wintering population in Great Britain (5 year mean 1993/4-1997/8)

Ruff *Philomachus pugnax*, 54 individuals representing at least 7.7% of the wintering population in Great Britain (5 year peak mean 1993/4 - 1998/9)

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

During the breeding season;

Redshank *Tringa totanus*, 700 pairs representing at least 1.2% of the breeding Eastern Atlantic - wintering population (Count as at 1998)

Ringed Plover *Charadrius hiaticula*, 220 pairs representing at least 1.4% of the breeding Europe/Northern Africa - wintering population (Count as at 1998)

On passage;

Ringed Plover *Charadrius hiaticula*, 1,256 individuals representing at least 2.5% of the Europe/Northern Africa - wintering population (5 year peak mean 1994/5 - 1998/9)

Over winter;

Dark-bellied Brent Goose *Branta bernicla bernicla*, 11,512 individuals representing at least 3.8% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6)

Knot *Calidris canutus*, 10,801 individuals representing at least 3.1% of the wintering Northeastern Canada/Greenland/Iceland/Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Pink-footed Goose *Anser brachyrhynchus*, 23,802 individuals representing at least 10.6% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 - 1995/6)

Pintail *Anas acuta*, 1,139 individuals representing at least 1.9% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Redshank *Tringa totanus*, 2,998 individuals representing at least 2.0% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1993/4 - 1997/8)

Wigeon *Anas penelope*, 14,039 individuals representing at least 1.1% of the wintering Western Siberia/Northwestern/Northeastern Europe population (5 year peak mean 1991/2 - 1995/6)

Assemblage qualification: A wetland of international importance.

The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl

Over winter, the area regularly supports 91,249 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Shelduck *Tadorna tadorna*, Avocet *Recurvirostra avosetta*, Golden Plover *Pluvialis apricaria*, Ruff *Philomachus pugnax*, Bar-tailed Godwit *Limosa lapponica*, Pink-footed Goose *Anser brachyrhynchus*, Dark-bellied Brent Goose *Branta bernicla bernicla*, Wigeon *Anas penelope*, Pintail *Anas acuta*, Knot *Calidris canutus*, Redshank *Tringa totanus*, Bittern *Botaurus stellaris*, White-fronted Goose *Anser albifrons albifrons,* Dunlin *Calidris alpina alpina*, Gadwall *Anas strepera*, Teal *Anas crecca*, Shoveler *Anas clypeata*, Common Scoter *Melanitta nigra*, Velvet Scoter *Melanitta fusca*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Sanderling *Calidris alba*, Cormorant *Phalacrocorax carbo*.

RAMSAR site

(The description is taken from the RAMSAR information sheet downloaded from https://rsis.ramsar.org/RISapp/files/RISrep/GB76RIS.pdf).

The complex holds internationally important numbers of breeding

Sterna sandvicensis (3,000 pairs in 1990)

S. albifrons (425 pairs in 1988),

wintering* *Anser brachyrhynchus* (9,576)

2. *Branta bernicla bernicla* (10,378)

Anas Penelope (8,978)

A. acuta (991)

Calidris canutus (8,566)

Limosa lapponica (1,072).

Several other species occur in nationally important numbers and the total number of wintering water birds regularly exceeds 20,000 individuals (63,417*). The area also incorporates several important botanical sites, provides breeding localities for the toad *Bufo calamita* and supports several nationally rare breeding birds such as

Botaurus stellaris

Circus aeruginosus,

Recurvirostra avosetta

Panurus biarmicus.

*Figures for wintering birds are average peak counts for the five winters 1987/88 to 1991/92.

Site of Special Scientific Interest

(The information is taken from the JNCC description of the site dated 3/5/2002).

Reasons for Notification:

The North Norfolk marshland Coast extends for some 40kms between Hunstanton and Weybourne. The area consists primarily of intertidal sands and muds, saltmarshes, shingle banks and sand dunes. There are extensive areas of brackish lagoons, reedbeds and grazing marshes. The coast is of great physiographic interest and the shingle spit at Blakeney Point and the offshore shingle bank at Scolt Head Island are of special importance. The whole coast has been intensively studied and is well documented.

A wide range of coastal plant communities is represented and many rare or local species occur. The whole coast is of great ornithological interest with nationally and internationally important breeding colonies of several species. The geographical position of the North Norfolk Coast and its range of habitats make it especially valuable for migratory birds and wintering waterfowl, particularly brent and pink-footed geese. The area, much of which remains in its natural state, now constitutes one of the largest expanses of undeveloped coastal habitat of its type in Europe.

Intertidal Sands and Muds
Extensive intertidal areas are present along the entire coast. Intertidal flats mostly consist of sand or mud and shingle and are unvegetated. Some mudbanks have seasonal growths Eel Grass *Zostera marina* and green algae (mostly *Enteromorpha* sp. and *Vaucheria* sp.) which provide valuable feeding grounds for wintering ducks and geese. The mudflats also have locally abundant concentrations of invertebrates of importance as wildfowl and wader food sources.

Saltmarsh
The saltmarshes are the finest coastal marshes in Britain and among the best in Europe. They have accreted in sheltered positions either behind sand bars such as on Scolt Head or on sheltered parts of the coast as at Stiffkey. Differences in marsh height reflect differences in age. The saltmarsh flora is exceptionally diverse and includes a number of uncommon species.

Succession is clearly shown from scarcely vegetated mud at the seaward boundary of the marsh to maritime grassland on the upper marsh. The foremarsh is characterised by colonising species such as glasswort *Salicornia spp.* and cord grass *Spartina anglica*.

Sea Aster *Aster tripolium* is often dominant on the lower marsh which in turn grades into the extensive areas of midmarsh. Sea lavender *Limonium vulgare* is dominant with sea purslane *Halimione portulacoides* lining the banks of the creeks. Other species occurring in this zone include sea plantain *Plantago maritima*, sea arrow grass *Triglochin maritima*, annual seablite *Suaeda maritima* and sea wormwood *Artemisia maritima*.

The upper saltmarsh is characterised by grasses such as sea couch grass *Elymus pycnanthus* and sea poa grass *Puccinellia maritima*. A shorter vegetation is often found on the upper marsh near the saltmarsh-shingle interface. It is diverse and includes two rare species; matted sea lavender *Limonium bellidifolium* and sea heath *Frankenia laevis*.

The saltmarshes, with their associated shingle structures, form a geomorphological unit of the highest importance for tracing the post-glacial evolution of the area.

Dunes

Dune systems occur at a number of localities along the coast but are best developed at Holme and Holkham. On Scolt Head Island and at Blakeney Point sand dunes have developed on a shingle base. The stabilised, mature dunes hold a rich flora including a number of uncommon halophytic (salt tolerant) species.

The foredunes are generally comprised of wind-blown sand with scattered plants of theprimary colonising species sand couch-grass *Elymus farctus* and lyme-grass *Leymusarenarius*. Ephemeral species such as sea rocket *Cakile maritima* and saltwort *Salsola kali* also occur in this zone.

The yellow dunes are further consolidated by the binding rhizomes of marram grass *Ammophila arenaria* and several other species occur including sea holly *Eryngium maritimum*, sea sandwort *Honkenya peploides* and sand sedge *Carex arenaria*.

The vegetation is most diverse on the stable grey dunes. Marram grass is still abundant but red fescue *Festuca rubra* is often co-dominant. The calcareous nature of the dunes is revealed by the presence of such species as spring whitlow-grass *Erophila verna agg.*, centaury *Centaurium erythraea*, bird's-foot trefoil *Lotus corniculatus*, pyramidal orchid *Anacamptis pyramidalis*, and bee orchid *Ophrys apifera*.

Two rare plants, Jersey cudweed *Gnaphalium luteo-album* arid grey hair-grass *Corynephorus canescens* are associated with the grey dunes.

Corsican pine *Pinus nigra* var. *maritima*, has been planted at Holkham to stabilize the dunes, and has spread through self-seeding. Creeping ladies' tresses *Goodvera repens* and yellow bird's-nest *Monotropa hypopitys* occur locally under the mature pines. Secondary mixed woodland and scrub have developed on the landward side of the pines which provide valuable cover for migratory passerine birds.

Dune slacks are present behind the main dune systems at Holme and Holkham. These wet areas have a characteristic flora that includes pennywort *Hydrocotyle vulgaris*, marsh helleborine *Epipactis palustris* and southern marsh orchid *Dactylorhiza praetermissa*.

Shingle
The North Norfolk Coast is rich in shingle structures consisting of material derived and reworked from glacial drift. Scolt Head Island is an extensive offshore barrier island with a complex sequence of shingle ridges and dunes and is of the highest national importance as a geomorphological site, and Blakeney Point is a large shingle spit; both are important educational and research sites, that have been well studied and feature extensively in the literature.

The shingle banks are colonised by a variety of specialised plants. Characteristic species include biting stonecrop *Sedum acre*, thrift *Armeria maritima*, sea campion *Silene maritima*, yellow horned-poppy *Glaucium flavum*, sea sandwort, sea beet *Beta vulgaris* ssp. *Maritime* and bird's-foot-trefoil. At the saltmarsh-shingle interface, a discrete community occurs including shrubby seablite *Suaeda vera*, an uncommon species in Britain, which is often abundant here with rock sea lavender *Limonium binervosum* and sea wormwood.

Brackish Lagoons and Reedbeds
Natural brackish lagoons are present at Holme and in the Cley-Salthouse area. In addition, artificial lagoons have been created at Titchwell and Cley. The shallow water, and an abundant invertebrate fauna in the mud, make these coastal lagoons important feeding sites for wintering and passage waders and waterfowl.
Extensive reedbeds have developed at Cley, Brancaster and Titchwell; here Reed *Phragmites australis* is dominant with mud rush *Juncus gerardii*, brackish water-crowfoot *Ranunculus baudotii*, sea club-rush *Scirpus maritimus* and great reed-mace *Typha latifolia*. Many of the reedbeds are managed to provide the conditions favoured by rare breeding birds.

Maritime Pasture and Grazing Marsh
Maritime pasture is present on the Cley and Salthouse Marshes, where several plants characteristic of damp grazed areas occur including marsh fox-tail *Alopecurus geniculatus*, annual beard-grass *Polypogon monspeliensis*, jointed rush *Juncus articulatus* and silverweed *Potentilla anserina*.

Extensive areas of permanent grazing marsh derived from reclaimed saltmarsh are present in several places along the coast. The dominant grass species in the sward are creeping bent *Agrostis stolonifera*, common fox-tail *Alopecurus pratensis* and perennial rye-grass *Lolium perenne*. The wet, rough grassland is suitable breeding habitat for several species of wader and is a valuable feeding area for wintering wildfowl.

A number of relict saltmarsh creeks on the marshes have developed into brackish reedbeds of considerable ornithological importance. The grazing marsh at Holkham was reclaimed in the 17th and 18th centuries. A network of clear water dykes is present with a variety of marginal plants including reed, lesser spearwort *Ranunculus flammula*, water mint *Mentha aquatica* and gipsy-wort *Lycopus europaeus*. Amongst several interesting species of water plant recorded are the uncommon soft hornwort *Ceratophyllum submersum* and bluntleaved pondweed *Potamogeton obtusifolius*. A fringe of dry grassland is present above the saltmarsh at Holkham and is annually mown and occasionally grazed.

Vertebrate Fauna
The breeding bird communities of the North Norfolk Coast are of national and international importance. Most noteworthy are breeding colonies totalling up to 4,500 pairs of sandwich terns *Sterna sandvicensis* which represent about 1/12th of the world population. The largest colony of little terns *Sterna albifrons* in Western Europe is located on Blakeney Point. On the North Norfolk Coast as a whole, there are up to 400 pairs of little terns which constitute over 20% of the British population. Bird species with breeding populations of national importance include up to 1,000 pairs

of common terns *Sterna hirundo*, 27 pairs (in 1982) of avocets *Recurvirostra avosetta* and up to 100 pairs of bearded tits *Panurus biarmicus*.

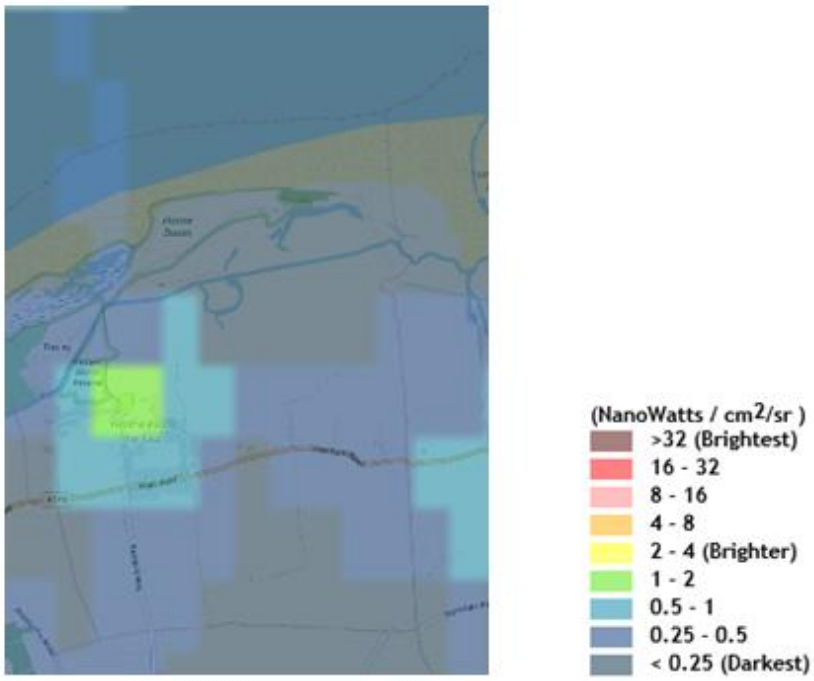
Bitterns *Botaurus stellaris* and marsh harriers *Circus aeruginosus* are regular breeders in small numbers and garganey *Anas querquedula* and black-tailed godwit *Limosa limosa* breed on occasions.

Migratory birds, notably waders and passerines, are often present in great abundance in the spring and autumn. Wintering birds include large numbers of brent geese *Branta bernicla* and smaller numbers of pink-footed geese *Anser brachyrhynchus* and white-fronted geese *Anser albifrons*. Ducks and waders are also present in great abundance on the marshes and intertidal areas. The shingle banks and foreshore provide suitable habitats for wintering passerines such as twite *Acanthis flavirostris*, snow buntings *Plectrophenax nivalis* and shore larks *Eremophila alpestris*.

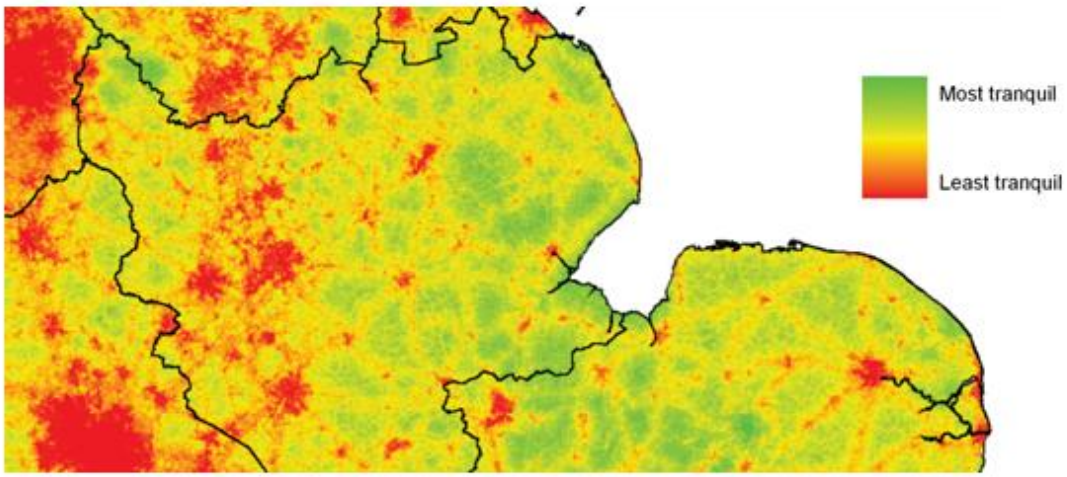
The natterjack toad *Bufo calamita*, a rare amphibian in Britain, breeds in shallow pools in the dune slacks at two sites on the coast.

Red squirrels *Sciurus vulgaris* occurred in the dune pine woods until 1981 at Holkham.
Otters *Lutra lutra* breed and hunt within the whole site.

13 APPENDIX 5: DARK SKIES, PEACE AND TRANQUILLITY IN HOLME



Dark Skies map of Holme (2015): Showing that the Parish benefits from very low levels of light pollution. The proposed Adaptation and Resilience Zone is particularly free of light pollution. (*Campaign for Protection of Rural England*).



Tranquillity mapping of the UK (2007): Extract showing that Holme is relatively one of its most tranquil areas (*Campaign for Protection of Rural England*).