

Swale Borough Council Local Plan

Habitats Regulations Assessment

January 2021

Quality information

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1. Introduction

Background

- 1.1 Under the Conservation of Habitats and Species Regulations 2017 (as amended), an Appropriate Assessment is required where a plan or project is likely to have a significant effect upon an internationally designated wildlife site, either individually or 'in combination' with other projects or plans.
- 1.2 AECOM was appointed by Swale Borough Council to undertake a Habitats Regulations Assessment of The Swale Local Plan Review (Regulation 19) February 2021 (hereafter referred to as the 'Plan'). The objective of this assessment was to identify any aspects of the Plan that would cause an adverse effect on the integrity of internationally designated sites that are part of the Bern Convention Emerald Network. These are Special Areas of Conservation (SACs), Special Protection Areas (SPAs), candidate Special Areas of Conservation (cSACs), potential Special Protection Areas (pSPAs) and Ramsar sites, either alone or in combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

Legislative Context

- 1.3 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). This established a transition period, which ended on 31 December 2020. During this transition period, the Withdrawal Act retained the body of existing EU-derived law within our domestic law. During the transition period EU law applied in the UK. From 1 January 2021, the UK is no longer a member of the European Union. However, Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019¹.
- 1.4 The need for Appropriate Assessment (Figure 1) is set out in the Conservation of Habitats and Species Regulations 2017 (as amended).
- 1.5 The HRA process applies the 'Precautionary Principle'² to international sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the international site(s) in question. Plans and projects with predicted adverse impacts on international; sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

¹ these don't replace the 2017 Regulations but are just another set of amendments

² The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: "When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".

- 1.6 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

Figure 1: The legislative basis for Appropriate Assessment

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

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

- 1.7 Over time the phrase ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Habitats Directive from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an ‘Appropriate Assessment’.
- 1.8 In spring 2018 the ‘Sweetman’ European Court of Justice ruling³ clarified that ‘mitigation’ (i.e. measures that are specifically introduced to avoid or reduce a harmful effect on a international site that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA has been cognisant of that ruling.

Scope of the Project

- 1.9 There is no guidance that dictates the physical scope of an HRA of a Plan document in all circumstances. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than by arbitrary ‘zones’. Current guidance suggests that the following international sites be included in the scope of assessment:
- All sites within the boundary of Swale Borough; and,
 - Other sites shown to be linked to development within the authority boundary through a known impact ‘pathway’ (discussed below).
- 1.10 Briefly defined, impact pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon an internationally designated site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect international sites by, for example, disturbance of wintering or breeding birds.
- 1.11 Guidance from the Ministry of Housing, Communities and Local Government (MHCLG) states that the HRA should be ‘*proportionate to the geographical scope of the [plan policy]*’ and that ‘*an AA need not be done in any more detail,*

³ People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

or using more resources, than is useful for its purpose’ (MHCLG, 2006, p.6). More recently, the Court of Appeal ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be ‘achieved in practice’ to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document). In this case the High Court ruled that for ‘a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Reg 61 of the Habitats Regulations’.

The Layout of this Report

1.12 **Chapter 2** of this report explains the methodology by which this HRA has been carried out, including the three essential tasks that form part of HRA. **Chapter 3** provides detailed background on the main impact pathways identified in relation to the Local Plan and the relevant international sites (see **Appendix A** for detail on the international sites). **Chapter 4** undertakes the screening assessment of Likely Significant Effects (LSEs) of the Plan’s policies (see **Appendix B** for the screening tables of Plan policies and **Appendix C** for the screening tables of the Plan’s site allocations). The Appropriate Assessment is undertaken in **Chapter 5**. The conclusions arising from the HRA process so far are provided in **Chapter 6**.

Quality Assurance

1.13 This report was undertaken in line with AECOM’s Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

1.14 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017).

2. Methodology

Introduction

- 2.1 The HRA has been carried out with reference to the general EC guidance on HRA⁴; Natural England has produced its own internal guidance⁵. These have been referred to in undertaking this HRA.
- 2.2 Figure 2 below outlines the stages of HRA according to current EC guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

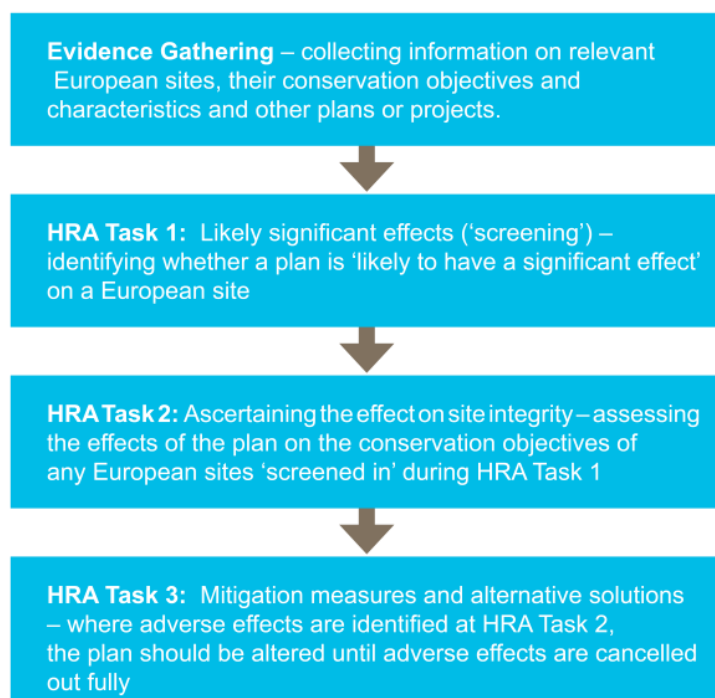


Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001.

Description of HRA Tasks

HRA Task 1 – Likely Significant Effects (LSE)

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

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

- 2.4 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in significant adverse

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

⁵ http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf

effects upon international sites, usually because there is no mechanism for an adverse interaction. This stage is undertaken in **Appendix B** and **Appendix C** of this report and summarised and discussed in Chapter.

HRA Task 2 – Appropriate Assessment (AA)

- 2.5 Where it is determined that a conclusion of ‘no Likely Significant Effect’ cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that ‘Appropriate Assessment’ is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to appropriate assessment rather than determination of likely significant effects.
- 2.6 By virtue of the fact that it follows the screening process, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level screening analysis and assess the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the international site(s)).
- 2.7 Also, in 2018 the Holohan ruling⁶ was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that ‘*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*’ [emphasis added]. This has been considered in relation to The Swale and Medway Estuary and Marshes SPA and Ramsar sites which supports mobile bird species.

HRA Task 3 – Avoidance and Mitigation

- 2.8 Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on international sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation for recreational impacts on international sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.
- 2.9 In evaluating significance, AECOM has relied on professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the international sites considered within this assessment, and bespoke assessments (such as traffic modelling and air quality modelling).

⁶ Case C-461/17

2.10 When discussing ‘mitigation’ for a Local Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the details of the mitigation measures themselves since the Local Plan document is a high-level policy document.

Geographical Scope of the HRA

2.11 There are no standard criteria for determining the ultimate physical scope of an HRA. Rather, the source-pathway-receptor model should be used to determine whether there is any potential pathway connecting development to any international sites. In the case of Swale Borough, it was determined that for the initial coarse screen the following international Sites required consideration:

Table 1 Physical scope of the HRA

International Site	Reason for inclusion
The Swale SPA/Ramsar	Within the Swale Borough boundary
Medway Estuary & Marshes SPA/Ramsar	Within the Swale Borough boundary
Queendown Warren SAC	Within the Swale Borough boundary
Blean Complex SAC	Partially within the Swale Borough boundary
Outer Thames Estuary SPA	Immediately adjacent to the Swale Borough boundary
North Downs Woodlands SAC	Located 3.6km south west of the Swale Borough Boundary

2.12 This was based upon a search of surrounding international sites and based on the vulnerabilities of the interest features of the international sites. All the above sites were subjected to the initial screening exercise. It should be noted that the presence of a conceivable pathway linking the Borough to an international site does not mean that likely significant effects will occur.

The ‘in combination’ scope

2.13 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the international site(s) in question. In practice, ‘in combination assessment’ is of greatest importance when the Local Plan would otherwise be screened out because the individual contribution is inconsequential. It is neither practical nor necessary to assess the ‘in combination’ effects of the Local Plan within the context of all other plans and projects within the region. The principal other plans and projects that we are considering are:

Plans

- South East Water – adopted Water Resources Management Plan, 2019.

- Medway Local Plan 2003. It is noted that Medway plan to publish a draft Local Plan (2019-2027) in 2021 – however no detail is available.
- Canterbury Local Plan (to 2031), Adopted 2017.
- Gravesham Local Plan Core Strategy, Site Allocations and a Development Management Policies Document Regulation 18 (December 2020).
- Ashford Local Plan 2030, adopted February 2019
- Kent Minerals and Waste Local Plan, adopted September 2020.
- Kent Local Transport Plan (LTP4): Delivering Growth without Gridlock (2016-2031);
- Environment Agency and Defra - River Basin Management Plan Thames River Basin District, December 2009.

2.14 It should be noted that, while the broad potential impacts of these other projects and plans has been considered, we have not carried out full HRA on each of these plans – we have however drawn upon existing HRAs that have been carried out for surrounding authorities and plans.

2.15 Within this document, each Policy and allocated site within the Local Plan is subjected to HRA screening and is summarised in **Appendix B** and **C** respectively. Likely Significant Effects are then scrutinised in more detail in the main body of the report.

3. Pathways of Impact

Introduction

3.1 The following impact pathways are considered relevant to the Swale Borough Local Plan:

- Recreational Pressure
- Atmospheric Pollution
- Water Resources
- Water Quality
- Functionally Linked Land
- Visual and Noise Disturbance
- Coastal Squeeze

3.2 In carrying out an HRA it is important to avoid confining oneself to effectively arbitrary boundaries (such as Local Authority boundaries) but to use an understanding of the various ways in which Land Use Plans can impact on international sites to follow the pathways along which development can be connected with international sites, in some cases many kilometres distant. Briefly defined, pathways are routes by which a change in activity associated with a development can lead to an effect upon an international site. It is also important to bear in mind CLG guidance which states that the AA should be '*proportionate to the geographical scope of the [plan policy]*' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (CLG, 2006, p.6⁷).

3.3 The following pathways of impact were considered relevant to the HRA of the Swale Borough Local Plan.

Recreational Pressure

3.4 Potentially damaging levels of recreational pressure are already faced by many international sites. Recreational use of a site has the potential to:

- Cause disturbance to sensitive species such as wintering wildfowl;
- Prevent appropriate management or exacerbate existing management difficulties;
- Cause damage through erosion, trampling and fragmentation; and
- Cause eutrophication as a result of dog fouling.

3.5 Different types of international sites (e.g. coastal, heathland, chalk grassland) are subject to different types of recreational pressures and have different

⁷ Department for Communities and Local Government. 2006. *Planning for the Protection of European Sites: Appropriate Assessment*. <http://www.communities.gov.uk/index.asp?id=1502244>

vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex.

- 3.6 Disturbance effects for birds can have an adverse effect in various ways, with increased nest predation by natural predators as a result of adults being flushed from the nest and deterred from returning to it by the presence of people and dogs likely to be a particular problem. A literature review on the effects of human disturbance on bird breeding found that 36 out of 40 studies reported reduced breeding success as a consequence of disturbance⁸. The main reasons given for the reduction in breeding success were nest abandonment and increased predation of eggs or young. Over years, studies of other species have shown that birds nest at lower densities in disturbed areas, particularly when there is weekday as well as weekend pressure⁹.
- 3.7 Studies have shown that birds are affected more by dogs and people with dogs than by people alone, with birds flushing more readily, more frequently, at greater distances and for longer (Underhill-Day, 2005). In addition, dogs, rather than people, tend to be the cause of many management difficulties, notably by worrying grazing animals, and can cause eutrophication near paths. Nutrient-poor habitats are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces¹⁰.
- 3.8 Underhill-Day (2005) summarises the results of visitor studies that have collected data on the use of semi-natural habitat by dogs. In surveys where 100 observations or more were reported, the mean percentage of visitors who were accompanied by dogs was 54.0%.
- 3.9 However, these studies need to be treated with care. For instance, the effect of disturbance is not necessarily correlated with the impact of disturbance, i.e. the most easily disturbed species are not necessarily those that will suffer the greatest impacts. It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain (possibly due to an absence of alternative sites) and thus suffer greater impacts on their population¹¹. A recent literature review undertaken for the RSPB¹² also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts of future recreational pressure on international sites.
- 3.10 It should be emphasised that recreational use is not inevitably a problem. Many international sites are also National Nature Reserves or nature reserves managed by Wildlife Trusts and the RSPB. At these sites, access is

⁸ Hockin, D., M. Oundsted, M. Gorman, D. Hill, V. Keller and M.A. Barker (1992) – Examination of the effects of disturbance on birds with reference to its importance in ecological assessments. *Journal of Environmental Management*, **36**, 253-286.

⁹ Van der Zande, A.N., J.C. Berkhuisen, H.C. van Letesteyn, W.J. ter Keurs and A.J. Poppelaars (1984) – Impact of outdoor recreation on the density of a number of breeding bird species in woods adjacent to urban residential areas. *Biological Conservation*, **30**, 1-39.

¹⁰ Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. *The London Naturalist*, **74**, 77-82.

¹¹ Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation*, **97**, 265-268

¹² Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

encouraged and resources are available to ensure that recreational use is managed appropriately.

3.11 Where increased recreational use is predicted to cause adverse impacts on a site, avoidance and mitigation should be considered. Avoidance of recreational impacts at international sites involves location of new development away from such sites; Local Plans (and other strategic plans) provide the mechanism for this. Where avoidance is not possible, mitigation will usually involve a mix of access management, habitat management and provision of alternative recreational space:

- *Access management* – restricting access to some or all of a international site - is not usually within the remit of the Council and restriction of access may contravene a range of Government policies on access to open space, and Government objectives for increasing exercise, improving health etc. However, active management of access is possible, for example as practised on nature reserves.
- *Habitat management* is not within the direct remit of the Council. However, the Council can help to set a framework for improved habitat management by promoting cross-authority collaboration and S106 funding of habitat management. In the case of Swale Borough, opportunities for this are limited since, according to Natural England, the majority of The Swale component SSSI units are in favourable condition.
- *Provision of alternative recreational space* can help to attract recreational users away from sensitive international sites and reduce additional pressure on them. Some species for which international sites have been designated are particularly sensitive to dogs, and many dog walkers may be happy to be diverted to other, less sensitive, sites. However, the location and type of alternative space must be attractive for users to be effective.

Bird Disturbance Study

3.12 A study was undertaken in 2010/2011 by Footprint Ecology¹³, who looked at bird disturbance in North Kent. The study focused on recreational disturbance to wintering waterfowl on intertidal habitats and focused on part of the North Kent shoreline, stretching between Gravesend and Whitstable; encompassing three SPAs: the Thames Estuary and Marshes SPA, the Medway Estuary and Marshes SPA and the Swale SPA. The key findings of the study are as follows:

3.13 From 1,400 events (records of visitors in the bird survey areas) occurring within 200m of the birds, 3,248 species specific observations were noted of which:

- 74% resulted in no response.
- 13% resulted in a major flight.
- 5% resulted in a short flight.
- 5% resulted in a short walk.
- 3% resulted in an alert.

¹³ D. Liley & H. Fearnley (Footprint Ecology), 2011. Bird Disturbance Study North Kent.

- 3.14 Dog walking accounted for 55% of all major flight observations with a further 15% attributed to walkers without dogs. After controlling for distance, major flights were more likely to occur when activities took place on the intertidal zone (compared to events on the water or events on the shore), when dogs were present, and the probability of major flight increased with the number of dogs present within a group.
- 3.15 There were significant differences between species with curlew *Numenius arquata* the species with the highest probability of major flight and teal and black-tailed godwit *Limosa limosa* the lowest.
- 3.16 Tide state was also significant with major flights more likely at high tide, after controlling for distance. There was also a significant interaction between distance and tide, indicating that the way in which birds responded varied according to tide.

North Kent Visitor Survey

- 3.17 A visitor survey was undertaken at the same time as the aforementioned bird survey by Footprint Ecology¹⁴. The key findings of the survey are as follows:
- 3.18 542 groups of visitors were interviewed representing information from 930 people with 502 dogs.
- 65% (345) interviewed groups were accompanied by at least one dog.
 - 96% (521) interviewed groups were local residents who made their visit from home.
 - 70% of visitors who arrive by foot made their visits either daily or most days (in comparison to 31% who arrive by car).
 - 63% of visitors travelled to their visit location by car or van, 34% of visitors arrived by foot, 3% arrived by bicycle and 2% by public transport.
 - 50% of visitors who arrived by car lived within 4.2km of their visit location.
 - 23% of visitors stated they walked off the paths and onto the mudflats or the open beach. Of the 23% of visitors whose routes took them onto the mudflats 65% were accompanied by at least one dog.
- 3.19 The following international sites are considered susceptible to recreational pressures within the context of the Swale Local Plan:
- Medway Estuary and Marshes SPA and Ramsar
 - The Swale SPA and Ramsar

Functionally Linked Land

- 3.20 While most international sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and

¹⁴ Fearnley, H. & Liley, D. (2011). North Kent Visitor Survey Results. Footprint Ecology.

function, and the support of their qualifying features, this is not always the case. A diverse array of qualifying species including birds, bats and amphibians are not confined to the boundary of designated sites.

- 3.21 For example, the highly mobile nature of both wildfowl and heathland birds implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of international sites. Despite not being part of the formal designation, this habitat is still integral to the maintenance of the structure and function of the interest feature on the designated site and, therefore, land use plans that may affect such areas should be subject to further assessment.
- 3.22 With regards to birds, areas of functionally linked land typically provide habitat for foraging or other ecological functions essential for the maintenance of the designated population e.g. high tide roost on coastal populations. Functionally linked land may extend up to the maximum foraging distance for the designated bird species. However, the number of birds foraging will tend to decrease further away from the protected site and thus the importance of the land to the maintenance of the designated population will decrease.
- 3.23 Functionally linked land may extend up to the maximum foraging distance for the designated bird species. However, the number of birds foraging will tend to decrease further away from the protected site and thus the importance of the land to the maintenance of the designated population will decrease.
- 3.24 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land¹⁵.
- 3.25 Pertinent designated birds relating to both the Medway Estuary and Marshes SPA and Ramsar site and The Swale Estuary SPA and Ramsar site are as follows.

Table 2. Habitat Preferences and Diet of Bird Features of the Medway Estuary and Marshes SPA / Ramsar and The Swale Estuary SPA / Ramsar Sites

Designated Bird Feature	Habitat Preferences¹⁶	Diet¹⁷
Avocet (<i>Recurvirostra avosetta</i>)	Mudflats, lagoons, sandy beaches	Invertebrates, especially insects, crustaceans, worms, but also small fish; sweeps bill from side to side, prey located by touch
Dark-bellied brent goose (<i>Branta bernicla bernicla</i>)	Tundra, on migration marshes & estuaries	Eelgrass (<i>Zostera</i>), also vegetation by grazing on land or shallow water
Dunlin (<i>Calidris alpina</i>)	Tundra, moor, heath, on migration estuaries &	Invertebrates, located by

¹⁵ Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

¹⁶ Taken from British Trust of Ornithology BirdFacts <https://www.bto.org/understanding-birds/birdfacts>

¹⁷ Ibid

Designated Bird Feature	Habitat Preferences ¹⁶	Diet ¹⁷
<i>alpina</i>)	coasts	sight and touch
Grey plover (<i>Pluvialis squatarola</i>)	Tundra, on migration pasture & estuaries	Summer, invertebrates, Winter primarily marine worms, crustaceans and molluscs
Knot (<i>Calidris canutus</i>)	Tundra, on migration coastal	Summer, insects and plant material, Winter Inter-tidal invertebrates, especially molluscs
Pintail (<i>Anas acuta</i>)	Lakes, rivers, marsh & tundra	Omnivorous, feeds on mud bottom at depths of 10- 30cm
Redshank (<i>Tringa totanus</i>)	Rivers, wet grassland , moors & estuaries	Invertebrates, especially earthworms , crane fly larvae (inland) crustaceans, molluscs, marine worms (estuaries)
Ringed plover (<i>Charadrius hiaticula</i>)	Sandy areas with low vegetation, on migration estuaries	Summer, invertebrates, Winter primarily marine worms, crustaceans and molluscs
Shelduck (<i>Tadorna tadorna</i>)	Coasts, estuaries & lakes	Mostly invertebrates, esp. insects, molluscs and crustaceans

3.26 Generally, the identification of an area as functionally linked land is now a relatively straightforward process. However, the importance of non-designated land parcels may not be apparent and could require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring some further survey work.

3.27 The following international sites are considered susceptible to loss of Functionally Linked Land in the context of the Swale Local Plan:

- Medway Estuary and Marshes SPA and Ramsar
- The Swale SPA and Ramsar

Visual and Noise Disturbance

3.28 As detailed in the Recreational Pressure section above, human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat). Human activity can also lead to behavioural changes (e.g. alterations in feeding behaviour, avoidance of certain areas etc.) and physiological changes (e.g. an increase in heart rate) that, although less

noticeable, may ultimately result in major population-level effects by altering the balance between immigration/birth and emigration/death¹⁸.

- 3.29 Recreational pressure is not the only potential source of disturbance. Construction work taking place immediately adjacent to the designated site or functionally linked land could cause disturbance and displacement of the designated birds. While any impact relating to demolition and construction activities will be temporary (in that birds would return once construction work ceased and the disturbance stimulus was removed) the resulting effect on population survival could be significant if it occurs during the winter/passage period and prevents birds from using feeding areas on which they rely. It should be noted that operational activities are unlikely to be temporary in nature and thus the impact of these activities could result in a more severe adverse reaction from designated bird features.
- 3.30 The degree of impact that varying levels of noise will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995) examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads¹⁹.
- 3.31 A recent study on recreational disturbance on the Humber²⁰ assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt 1999²¹), traffic (Reijnen, Foppen, & Veenbaas 1997)²², dogs (Lord, Waas, & Innes 1997²³; Banks & Bryant 2007²⁴) and machinery (Delaney et al. 1999; Tempel & Gutierrez 2003). These studies identified that there is still relatively little work on the effects of different types of water-based craft and the impacts from jet skis, kite surfers, windsurfers etc. (see Kirby et al. 2004²⁵ for a review). Some types of disturbance are clearly likely to invoke different responses. In very general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) will both influence the response (Delaney et al. 1999²⁶; Beale & Monaghan 2005²⁷). On UK estuaries

¹⁸ Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.

¹⁹ Reijnen, R. et al. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *Journal of Applied Ecology* 32: 187-202

²⁰ Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

²¹ Drewitt, A. (1999) Disturbance effects of aircraft on birds. *English Nature*, Peterborough.

²² Reijnen, R., Foppen, R. & Veenbaas, G. (1997) Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation*, 6, 567-581.

²³ Lord, A., Waas, J.R. & Innes, J. (1997) Effects of human activity on the behaviour of northern New Zealand dotterel *Charadrius obscurus aquilonius* chicks. *Biological Conservation*, 82,15-20.

²⁴ Banks, P.B. & Bryant, J.V. (2007) Four-legged friend of foe? Dog-walking displaces native birds from natural areas. *Biology Letters*, 3, 611-613.

²⁵ Kirby, J.S., Clee, C. & Seager, V. (1993) Impact and extent of recreational disturbance to wader roosts on the Dee estuary: some preliminary results. *Wader Study Group Bulletin*, 68, 53-58.

²⁶ Delaney, D.K., Grubb, T.G., Beier, P., Pater, L.L.M. & Reiser, H. (1999) Effects of Helicopter Noise on Mexican Spotted Owls. *The Journal of Wildlife Management*, 63, 60-76.

and coastal sites, a review of WeBS data showed that, among the volunteer WeBS surveyors, driving of motor vehicles and shooting were the two activities most perceived to cause disturbance (Robinson & Pollitt 2002)²⁸.

- 3.32 Additionally, animals can be disturbed by the movement of ships. For instance, a DTI study of birds of the North West coast noted that: *“Divers and scoters were absent from the mouths of some busier estuaries, notably the Mersey... Both species are known to be susceptible to disturbance from boats, and their relative scarcity in these areas... may in part reflect the volume of boat traffic in these areas”*²⁹.
- 3.33 Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.
- 3.34 The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.
- 3.35 The following international sites are considered susceptible to visual and noise disturbance within the context of the Swale Local Plan:
- Medway Estuary and Marshes SPA and Ramsar
 - The Swale SPA and Ramsar

Atmospheric Pollution

- 3.36 Current levels of understanding of air quality effects on semi-natural habitats are not adequate to allow a rigorous assessment of the likelihood of significant effects on the integrity of key international sites.
- 3.37 The main pollutants of concern for international sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in **Table 3**. NO_x can have a directly toxic effect upon vegetation. In addition, greater NO_x or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.^{30 31}

²⁷ Beale, C.M. & Monaghan, P. (2005) Modeling the Effects of Limiting the Number of Visitors on Failure Rates of Seabird Nests. *Conservation Biology*, 19, 2015-2019.

²⁸ Robinson, J.A. & Pollitt, M.S. (2002) Sources and extent of human disturbance to waterbirds in the UK: an analysis of Wetland Bird Survey data, 1995/96 to 1998/99: Less than 32% of counters record disturbance at their site, with differences in causes between coastal and inland sites. *Bird Study*, 49, 205.

²⁹ DTI (2006). Aerial Surveys of Waterbirds in Strategic Wind Farm Areas: 2004/05 Final Report

³⁰ Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. **2006**. Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. *Lichenologist* 38: 161-176

³¹ Dijk, N. **2011**. Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation *Global Change Biology* 17: 3589-3607

Table 3 Main sources and effects of air pollutants on habitats and species³²

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO ₂)	<p>The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.</p>	<p>Wet and dry deposition of SO₂ acidifies soils and freshwater and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO₂ background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, NO_x, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.</p>	<p>Gaseous precursors (e.g. SO₂) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants.</p> <p>Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.</p>
Ammonia (NH ₃)	<p>Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock.</p> <p>Ammonia reacts with acid pollutants</p>	<p>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.</p> <p>Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For</p>

³² Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
	<p>such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) - containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen.</p> <p>As emissions mostly occur at ground level in the rural environment and NH₃ is rapidly deposited, some of the most acute problems of NH₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>
Nitrogen oxides (NO _x)	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.</p> <p>Nitrogen oxides have been consistently falling for decades due to a combination of coal fired power station closures, abatement of other combustion point sources and improved vehicle emissions technology. They are expected to continue to fall over the plan period.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³.</p> <p>Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.</p>
Nitrogen deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_x) or reduced (e.g. NH₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The N pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.</p> <p>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>
Ozone	A secondary pollutant generated by photochemical reactions involving	Concentrations of O ₃ above 40 ppb can be toxic to both humans and

Pollutant	Source	Effects on habitats and species
(O ₃)	<p>NO_x, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.</p>	<p>wildlife, and can affect buildings.</p> <p>High O₃ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.</p>

3.38 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ emissions will be associated with Local Plans. NO_x emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO_x (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison³³. Emissions of NO_x could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the Local Plan.

3.39 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 µgm⁻³; In addition, ecological studies have determined 'critical loads'³⁴ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃) for key habitats within international sites.

Local Air Pollution

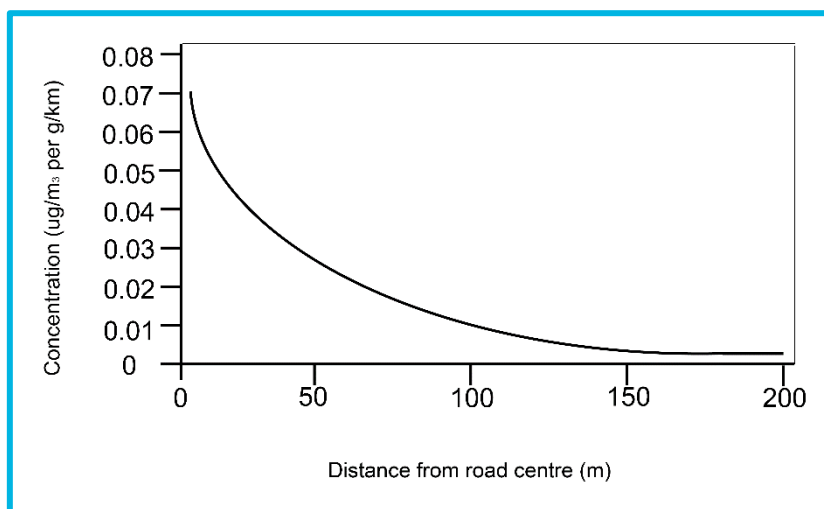
3.40 According to the Department of Transport's Transport Analysis Guidance, "*Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant*"³⁵.

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

³³ Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

³⁴ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

³⁵ www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

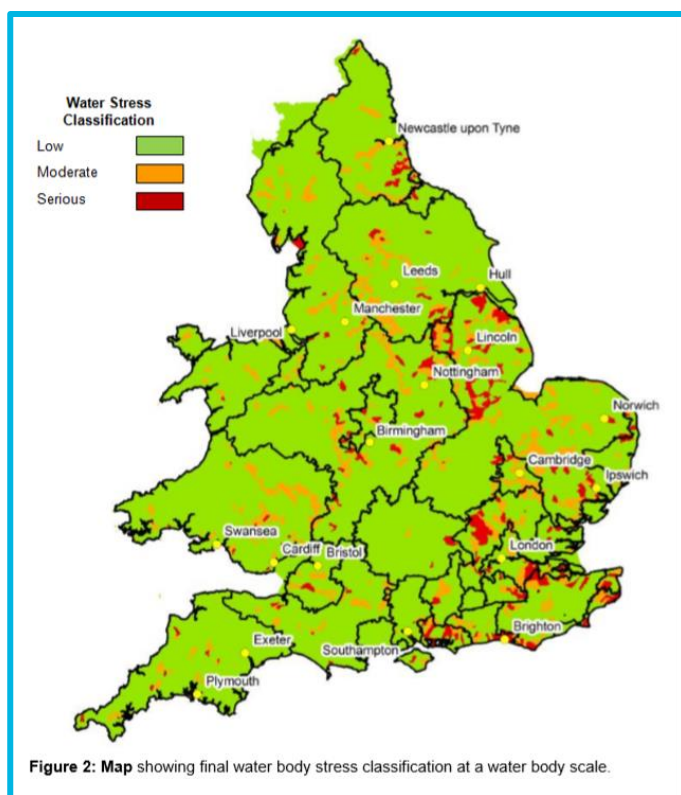


3.41 This is therefore the distance that has been used throughout this HRA in order to determine whether international sites are likely to be significantly affected by development under the Local Plan.

Water Resources

3.42 Swale is generally an area of serious water stress (see **Figure 4**).

Figure 4 Areas of water stress within England³⁶



3.43 Development within Swale Borough over the plan period will increase water demand.

3.44 According to the Environment Agency’s North Kent & Swale Abstraction Licensing Strategy (February 2013³⁷), the catchment is groundwater dominated. The fluvial network in this area is not characterised by a distinctive river, instead by spring-fed and surface-fed streams. These flow across the low-lying land of the Swale/Medway Marshes and into the Swale estuary. The Chalk and the Tertiaries provide a significant source of baseflow to the spring-fed streams, and surface-fed streams are reliant on rainfall.

3.45 The marshes along the North of the area are managed according to water level rather than flow. General practice is to keep water levels high in the marshes during the summer to allow for wet fencing or for abstraction to take place from ditches and streams. In the winter, levels are kept low to reduce flood risk. This is carried out by Water Level Management Plans.

3.46 The Water Companies relevant to Swale are Southern Water and South East Water. Southern Water provides wastewater treatment to all of Swale and

³⁶ Figure adapted from Environment Agency. 2013. Water Stressed Areas – Final Classification. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf [accessed 18/12/2020]

³⁷

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/289868/LIT_1815_765a21.pdf [accessed 18/12/2020]

supplies water to Sittingbourne, Sheppey and the west of the borough. South East Water provides water to the east of the borough.

- 3.47 Southern Water and South-East Water both adopted their latest Water Resource Management Plans in 2019. To demonstrate soundness and to enable adoption, both Plans were assessed in accordance with the Habitats Regulations and a conclusion of no adverse effect on the integrity of any internationally designated site reached.
- 3.48 In developing and implementing the Local Plan, it is understood that the Council have liaised with both water providers in order to ensure that the development is able to be supplied by water without requiring damaging levels of abstraction from tributaries of any international sites and that development will not take place until the necessary supporting infrastructure is in existence.
- 3.49 Water supply to support additional housing within Swale does not therefore need to be considered within the Swale Local Plan HRA.

Water Quality

3.50 Increased amounts of housing or business development can lead to reduced water quality of rivers and estuarine environments. Sewage and industrial effluent discharges can contribute to increased nutrients on international sites leading to unfavourable conditions. Within Swale there are Waste Water Treatment Works at Faversham, Teynham, Sittingbourne, Eastchurch and Queenborough and immediately outside the borough at Motney Hill.

- The quality of the water that feeds international sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:
- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behavior. Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.
- For sewage treatment works close to capacity, further development may increase the risk of effluent escape into aquatic environments. In many urban areas, sewage treatment and surface water drainage systems are combined, and therefore a predicted increase in flood and storm events could increase pollution risk.

Coastal Squeeze

- 3.51 Rising sea levels can be expected to cause intertidal habitats (principally saltmarsh, sand dunes and intertidal mudflats) to migrate landwards. However, in some areas, such landward retreat is often rendered impossible due to the presence of the sea wall and other flood defences. In addition, development frequently takes place immediately behind the sea wall, so that the flood defences cannot be moved landwards to accommodate managed retreat of threatened habitats. The net result is that the quantity of saltmarsh, sand dunes and mudflat adjacent to built-up areas will progressively decrease as sea levels rise. This process is known as 'coastal squeeze'. In areas where sediment availability is reduced, the 'squeeze' also includes an increasingly steep beach profile and foreshortening of the seaward zones.
- 3.52 Intertidal habitat loss is mainly occurring in the south and east of the country, particularly between the Humber and Severn. Northwest England, south Wales, the Solent in Hampshire, the southeast around the Thames estuary and large parts of East Anglia are also affected but to a lesser degree. The Medway Estuary and Swale Shoreline Management Plan process for the will be the main process whereby the losses due to flood defences and coastal squeeze and the gains due to managed retreat along the frontage will be identified at a strategic level. However, local authorities can also contribute to minimising squeeze by appropriately situating new development in line with Shoreline Management Plan policy.
- 3.53 A national assessment by Defra determined that the creation of an annual average of at least 100 ha of intertidal habitat associated with international sites in England that are subject to coastal squeeze, together with any more specifically identified measures to replace losses of terrestrial and supra-tidal habitats, is likely to be required to protect the overall coherence of the UKs contribution to the Bern Convention Emerald Network. This assessment takes account of intertidal habitat loss from international sites in England that is caused by a combination of all flood risk management structures and sea level rise. The assessment will be kept under review taking account of the certainty of any adverse effects and monitoring of the actual impacts of plans and projects.¹⁶

¹⁶ Defra. 2005. Coastal Squeeze – Implications for Flood Management.
<http://www.defra.gov.uk/enviro/fcd/policy/csqueeze.pdf>

4. Test of Likely Significant Effects

Introduction

- 4.1 The Test of Likely Significant Effects for the Local Plan Policies is undertaken within **Appendix B**, whilst the Test of Likely Significant Effects of Plan Allocations is undertaken in **Appendix C**. This section provides a summary of those Appendices.
- 4.2 Impact Pathways that were identified to potentially result in a likely significant effect are detailed in **Table 4**. These are discussed further in this Chapter.

Table 4 Potential Linking Impact Pathways Linking the Plan to an International Designated Site

International Site	Potential Linking Impact Pathway
The Swale SPA/Ramsar	<ul style="list-style-type: none"> - Recreational Pressure - Functionally Linked Land - Visual and Noise Disturbance - Air Quality - Water Quality
Medway Estuary & Marshes SPA/Ramsar	<ul style="list-style-type: none"> - Recreational Pressure - Functionally Linked Land - Visual and Noise Disturbance - Air Quality - Water Quality Coastal Squeeze
Queendown Warren SAC	<ul style="list-style-type: none"> - Air Quality
Blean Complex SAC	<ul style="list-style-type: none"> - Air Quality
Outer Thames Estuary SPA	<ul style="list-style-type: none"> - Visual and Noise Disturbance
North Downs Woodlands SAC	<ul style="list-style-type: none"> - Air Quality

Discussion

The Swale SPA/Ramsar and Medway Estuary & Marshes SPA/Ramsar

Recreational Pressure

- 4.3 All residential development within the Borough of Swale is located within such proximity to the North Kent Marshes internationally designated sites (less than

6km from an access point to the designated sites) as included within the Bird Wise North Kent Mitigation Strategy³⁸, that they could result in a likely significant effect on the internationally designated North Kent bird sites. The following policies provide for residential development within the Plan:

- Policy ST 1 Swale's development needs for jobs and homes 2022 – 2038
- Policy A 2 Kent Science Park
- A4 Smaller allocations for housing development Policy MU 1a Land at Graveney Road
- Policy MU 1b Land at Lady Dane Farm
- Policy MU 1c Land at South East Faversham
- Policy AO 1 Teynham Area of Opportunity
- Policy A 5 Land at Neames Forstal, Selling
- Policy Regen 3b Rushenden South Area

4.4 As such, Appropriate Assessment is required.

Functionally Linked Land and Visual and Noise Disturbance

4.5 From review of freely available online imagery and mapping, the following allocations have been identified to be located within land parcels that have the potential to provide habitat that could support a significant population of designated bird species, and thus could act as functionally linked land:

- SLA18/135: Land at Graveney Road, East of Faversham
- SLA18/091: Land at Lady Dane Farm
- SLA18/025: Land West of Frognal Lane
- SLA18/122: Land at Claxfield Road (Site 1)
- SLA18/113: Land at The Port of Sheerness, Rushenden Road

4.6 In addition, allocation SLA18/116: Land South of London Road/West of Lynsted Lane, whilst not located within potentially functionally linked land itself, is immediately adjacent to potentially functionally linked land. This allocation could provide disturbance to any significant bird populations located within adjacent fields, and as such could result in adverse effects on the integrity of the designated bird sites.

4.7 The above allocations are provided by the following policies:

- Policy A 3a Ridham and Kemsley, Sittingbourne
- Policy A 3b Neatscourt, Queenborough, Isle of Sheppey
- Policy MU 1a Land at Graveney Road

³⁸ <https://northkent.birdwise.org.uk/wp-content/uploads/2018/02/Mitigation-Strategy.pdf> [accessed 07/01/2021]

- Policy MU 1b Land at Lady Dane Farm
- Policy MU 1c Land at South East Faversham
- Policy AO 1 Teynham Area of Opportunity
- Policy Regen 3b Rushenden South Area

4.8 As such Appropriate Assessment is required and provided in the subsequent chapter.

Air Quality

4.9 Given that both The Swale and the Medway Marshes and Estuaries SPA and Ramsar sites both lie within 200m of numerous roads that may be regularly used by vehicle journeys arising from the Swale borough as a result of the increased population, it was concluded that air quality should be included within the scope of this assessment.

4.10 For approximately 4km, the Swale SPA/Ramsar site lies within 200m of the A249 as it approaches and crosses onto the Isle of Sheppey (predominantly to the east of the A249). For approximately 2.4km the Medway Estuary and Marshes spa/ Ramsar is within 200m of the A249 as it approaches the and crosses onto the Isle of Sheppey (to the west of the A249). The MAGIC website www.magic.gov.uk indicates that the habitat within 200m of the road along this route is predominantly grazing marsh, along with areas of mudflat in the vicinity of the Swale Crossing itself. In addition, although Milton Creek is not actually part of the SPA, it does constitute important habitat for some SPA species and the Sittingbourne Northern Relief Road crosses the mudflats of the Creek. Development provided by the Plan will result in an increase in traffic flows over the Swale Crossing.

4.11 There will also be an increase in traffic flows due to development in surrounding local authorities (particularly Medway) over the same time period and (to a lesser extent) due to proposals for new minerals and waste facilities being developed for the Kent Minerals and Waste Plan.

4.12 The following policies provide for development that has the potential to result in an increase in atmospheric pollution contributions:

- Policy ST 1 Swale's development needs for jobs and homes 2022 – 2038
- Policy A 2 Kent Science Park
- Policy A 3a Ridham and Kemsley, Sittingbourne
- Policy A 3b Neatscourt, Queenborough, Isle of Sheppey
- Policy A 3c Land South of Kemsley Mill
- A4 Smaller allocations for housing development
- Policy MU 1a Land at Graveney Road
- Policy MU 1b Land at Lady Dane Farm
- Policy MU 1c Land at South East Faversham

- Policy AO 1 Teynham Area of Opportunity
- Policy A 5 Land at Neames Forstal, Selling
- Policy Regen 3b Rushenden South Area

4.13 As such, this impact pathways cannot be screened out from potentially resulting in a likely significant effect and appropriate assessment is required. This is undertaken in the subsequent chapter.

Water Quality

4.14 The following policies provide for development that has the potential to result in an increase in pressure on water quality from discharge of treated sewage effluent:

- Policy ST 1 Swale's development needs for jobs and homes 2022 – 2038
- Policy A 2 Kent Science Park
- Policy A 3a Ridham and Kemsley, Sittingbourne
- Policy A 3b Neatscourt, Queenborough, Isle of Sheppey
- Policy A 3c Land South of Kemsley Mill
- A4 Smaller allocations for housing development
- Policy MU 1a Land at Graveney Road
- Policy MU 1b Land at Lady Dane Farm
- Policy MU 1c Land at South East Faversham
- Policy AO 1 Teynham Area of Opportunity
- Policy A 5 Land at Neames Forstal, Selling
- Policy Regen 3b Rushenden South Area

4.15 The Site Improvement Plan for the Thames Complex³⁹ (including the Swale, Medway Estuary & Marshes and the Outer Thames Estuary), does not identify water quality (specifically nitrates) as an issue for these designated sites.

4.16 While the grazing marsh components of the SPA are sensitive to deteriorations in water quality, the grazing marsh and its ditches are not subject to the presence of treated sewage effluent, which due to the point of discharge flows through the creek channels and into the marine/estuarine portions of the SPA.

4.17 If macroalgae (such as members of the sea lettuce genus *Ulva*) are able to grow uncontrolled they can develop a thick layer over mudflats, saltmarsh and other intertidal habitats. This can result in a significant reduction in oxygen within the sediment which can in turn reduce invertebrate biomass thereby reducing its value as foraging habitat. The mats can also prove a simple physical barrier for birds trying to forage within the underlying sediment. The principal issue controlling oxygen depletion in the underlying sediments

³⁹ <http://publications.naturalengland.org.uk/file/5760073666134016> [accessed 07/01/2021]

appears to relate less to the weight and coverage of algae but to the quick growth and persistence of the mats.

- 4.18 In some estuaries on the south coast (e.g. Chichester & Langstone Harbours SPA) smothering macroalgae have been a historic problem due to the warmer water temperatures, low sediment loading and limited wave action, which result in a combination of rapid algal growth during the summer and low algal mortality during the winter and thus the accumulation of large dense persistent mats. In those estuaries nutrient inputs to the water have been a major contributor to the further growth of these algae (since there are few environmental factors to otherwise inhibit growth) and have necessitated controls on nitrogen loading of discharged effluent as well as other sources (such as agricultural runoff).
- 4.19 In estuaries like The Swale and Medway where the sediment loading is higher (reducing light penetration and thus restricting rates of growth) in addition to temperatures being cooler and wave action stronger (leading to winter break up of mats and considerable annual variation in algal cover) the sediments are able to remain well oxidised despite high nutrient loadings and hence the benthic invertebrate community is unaffected by macroalgal mats. If the benthic invertebrate community is unaffected then the site would continue to maintain its prey productivity for birds.
- 4.20 Previous discussions with the Environment Agency and the Review of Consent reports for the various marine/intertidal Special Protection Areas and Ramsar sites around the greater Thames Estuary have confirmed that while nutrient levels are high within the various estuaries around the greater Thames Estuary, this does not result in the smothering macro-algal growth that is having an adverse effect upon other European marine sites (such as The Solent). The prevailing expert opinion is that the dominant control on phytoplankton growth in these estuaries is not nutrient availability but light availability which is controlled by the high loading of suspended sediment.
- 4.21 As such, with regards to the Swale and Medway designated sites, this impact pathway can be screened out from resulting in a Likely Significant Effect as a result of the Plan, either in isolation or combination.

Coastal Squeeze

- 4.22 Policy Regen 3b Rushenden South Area provides for site allocation SLA18/113: Land at The Port of Sheerness, Rushenden Road. This allocation is located immediately adjacent to Medway Estuaries and Marshes SPA and Ramsar site, and also includes a small portion of the designated site. Development at this location has the potential to result in coastal squeeze. The Medway and Swale Shoreline Management Plan (SMP) identify that the current strategy for this frontage (Policy Unit E4 28: Kingsferry Bridge to Rushenden)⁴⁰ is Hold the Line, however in the medium to long term (i.e. 20 years into the future), the site is identified for managed realignment, and thus enabling habitats to shift in accordance with sea level rise and climate change. In addition, the Medway

⁴⁰ <https://se-coastalgroup.org.uk/shoreline-management-plans/medway-estuary-to-swale/> [accessed 13/01/2021]

Estuary and Swale Flood and Coast Management Strategy ⁴¹ identifies that the current through to 2118 management policy for BA8.5: Rushenden Marshes is No Active Intervention. The majority of the frontage is not currently defended and is artificially raised as the land has been historically used to deposit dredged material. The Flood and Coast Management Strategy also identifies that there will be an increased risk of overtopping and the defences will be at risk of failure from the year 25.

4.23 As such there is the potential for the allocation in this location to affect the ability of this realignment to occur, and thus limiting the designated site's ability to react to changing sea levels, thus potentially result in a likely significant effect. This impact pathway is subject to appropriate assessment in the subsequent chapter.

Queendown Warren SAC

Air Quality

4.24 Queendown Warren SAC is located in the south west corner of Swale Borough. It is located immediately adjacent to the minor lanes of Warren Lane, an unnamed lane, and bisected by Yaugter Lane but due to their minor nature these are not expected to experience a change in daily traffic flows due to Local Plan growth. The SAC is also located approximately c.300m from the A2, the only affected road within the vicinity of the SAC. The Site Improvement Plan⁴² identifies that the dry grassland and scrublands on chalk or limestone (important orchid sites) are potentially vulnerable to atmospheric nitrogen deposition. Whilst the sensitive features of the site are currently identified to be in favourable condition⁴³, the deposition rates at the site (15.5kg N/ha/yr) exceeds the minimum critical load for the chalk grassland and scrubland habitat (15kg N/ha/yr)⁴⁴. However, due to the distance from the only affected road in the locality of the SAC (i.e. the SAC is well over 200m from the road) traffic growth will have a negligible effect on local pollutant levels. As such no likely significant effect will result.

Blean Complex SAC

Air Quality

4.25 The Blean Complex SAC is located on the edge of the Borough of Swale, with the majority of the site located within the neighbouring Canterbury City authority boundary. It is 6.5km in a straight line from the nearest significant population centre in the Borough (Faversham) or 8.5km following the road network. In comparison, The Blean Complex is less than 200m from Rough Common, a suburb of Canterbury City, and less than 30 m from the A290, the main through road from Canterbury in the south to the A299 in the north, both within the City Council area. As such by far the largest contribution to traffic flows within 200m of the Blean Complex is likely from Canterbury City. Traffic modelling for the

⁴¹ <https://www.gov.uk/government/publications/medway-estuary-and-swale-flood-and-coastal-risk-management-strategy/medway-estuary-and-swale-flood-and-coastal-risk-management-strategy> [accessed 13/01/2021]

⁴² <http://publications.naturalengland.org.uk/file/5485982457528320> [accessed 08/01/2021]

⁴³ <https://designatedsites.naturalengland.org.uk/SiteUnitList.aspx?SiteCode=S1001523&SiteName=&countyCode=&responsiblePerson=&unitId=&SeaArea=&IFCAArea=> [accessed 08/01/2021]

⁴⁴ www.apis.ac.uk/ [accessed 08/01/2021]

Swale Plan, does not identify the A290 as an affected road as a result of the Plan.

4.26 As such it is considered that no Likely Significant Effect of the Swale Local Plan will arise either alone or in combination with other projects and plans.

North Downs Woodlands SAC

Air Quality

4.27 North Downs Woodland SAC is located within the neighbouring authority of Maidstone Borough, 3.6km from the Swale Borough boundary. At its closest, it is located 7m from the A249 (Detling Hill), a dual carriageway that connects the A2 in the north of Kent (and within Swale Borough) to the A20 at Maidstone to the south. The Site Improvement Plan for the SAC identifies that the dry calcareous grassland and scrubland (important orchid site), the beech forests on neutral to rich soils and the yew dominated woodland are vulnerable to atmospheric nitrogen deposition⁴⁵. The portion of the SAC that is located within 200m of the A249 is designated as Wouldham to Detling Escarpment SSS (unit Lynch Bank – 026). This portion of the site only contains woodland habitats, no calcareous grassland is present, and as such only the woodland habitats are considered further. The A249 past the SAC is identified to be an affected road and therefore is discussed in the appropriate assessment.

⁴⁵ <http://publications.naturalengland.org.uk/publication/6363401429188608> [accessed 08/01/2021]

5. Appropriate Assessment

The Swale SPA/Ramsar and Medway Estuary & Marshes SPA/Ramsar

- 5.1 As impacts relating to the Swale SPA and Ramsar site and the Medway Estuary and Marshes SPA and Ramsar site are similar, these are discussed together in the following section.

Recreational Pressure

- 5.2 In accordance with the Bird Wise North Kent Mitigation Strategy⁴⁶, all residential development within 6km of the North Kent Bird sites could result in an adverse effect on the integrity of the SPA as a result of increased recreational pressure. The strategic Mitigation Strategy is funded by developer contributions. It provides for a range of mitigation and avoidance strategies. As such to ensure no adverse effects on the integrity of the designated sites occurs, any net new residential development within 6km of the North Kent Bird sites will be required to contribute to the Mitigation Strategy and provide the appropriate financial contributions.

- 5.3 The requirement for contributions towards this mitigation strategy is detailed within Plan Policy ST 10: Conserving and enhancing the natural environment. It states:

“10. Require the completion of project specific Habitats Regulations Assessment, in accordance with Policy DM24, to ensure there are no likely significant effects upon any European designated site. For residential sites within 6km of an access point to any of the North Kent Marshes, development must contribute to its Strategic Access Management and Monitoring Strategy or undertake their own HRA;”

- 5.4 Furthermore, the supporting text to ST 10: Conserving and enhancing the natural environment provides the following detail.

4.0.257 Potential adverse impacts on European designated wildlife sites

4.0.258 A particular issue where the green and blue infrastructure strategy and this policy will play a key part is where potential adverse impacts on European designated wildlife sites are identified, for example, as a result of increased recreational pressures on bird habitats on the North Kent Marshes. These are matters affecting both the preparation of the Local Plan and for relevant development projects, both of which are required to comply with the Habitats Regulations Assessment process.

4.0.259 North Kent partners have put in place a Strategic Access Management and Monitoring Strategy (SAMMS) that includes the measures needed to mitigate growth. This will also include a mechanism to ensure that residential development financially contributes toward mitigation measures, such as wardening, management or habitat creation. SAMMS will be used to support

⁴⁶ <https://northkent.birdwise.org.uk/wp-content/uploads/2018/02/Mitigation-Strategy.pdf> [accessed 07/01/2021]

the determination of planning applications and inform any future Local Plan Review and if implemented, a Community Infrastructure Levy.

4.0.260 To address the issue in both the short and longer terms, requires management and containment of pressures. Where mitigation and/or compensation is required, it must be provided in an appropriate way either as a result of the cumulative impact of Plan proposals or individual development proposals. An integral part of the SAMMS will be the monitoring of the effectiveness of the measures put in place through the tariff payments. If this monitoring highlights areas where changes to the mitigation measures are required, these will be implemented by the Partnership.

4.0.261 Please see the Partnership's website for more detailed information Bird Wise"

- 5.5 It can therefore be concluded that the Plan provides sufficient protective policy framework to ensure no adverse effects on the integrity result as a result of increased recreational pressure from new residential development stemming from the Plan.

Functionally Linked Land and Visual and Noise Disturbance

- 5.6 As previously detailed, the following allocations have been identified to be located within land parcels that have the potential to provide habitat that could support a significant population of designated bird species, and thus could act as functionally linked land:

- SLA18/135: Land at Graveney Road, East of Faversham
- SLA18/091: Land at Lady Dane Farm
- SLA18/025: Land West of Frognal Lane
- SLA18/122: Land at Claxfield Road (Site 1)
- SLA18/113: Land at The Port of Sheerness, Rushenden Road

- 5.7 In addition, allocation SLA18/116: Land South of London Road/West of Lynsted Lane, is located immediately adjacent to potentially functionally linked land. This allocation could provide disturbance to any significant bird populations located within adjacent fields, and as such could result in adverse effects on the integrity of the designated bird sites.

- 5.8 The following paragraphs provide the Appropriate Assessment of these allocations in relation to functionally linked land and where required, provide recommendations.

- 5.9 SLA18/135: Land at Graveney Road, East of Faversham (Policy A 3g Land at Graveney Road, east of Faversham) – This site is located c. 1.0km from The Swale designated sites, it is c. 8.4ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows (notably to the north looking towards The Swale) so has the potential to offer sight lines for SPA / Ramsar birds. As such the allocations could act as functionally linked land.

Whilst Allocation Policy text provides the need for the development to not result in a Likely Significant Effect, further explicit detail should be included.

- 5.10 It is recommended that policy or supporting text relating to this allocation is amended to further investigate if the land parcel does indeed act as functionally linked land.** Similar text has already been incorporated within the Plan document relating to other allocations as follows:

“The applicant will be required to provide evidence that the development will not result in a Likely Significant Effect. To achieve this, surveys will be required to determine habitats and current use of the site and surrounding land parcels to determine if it does support a significant population (A significant population is classified as a site that regularly used by more than 1% of the population of qualifying bird species) of qualifying species. Where habitats are suitable, non-breeding bird surveys will be required to determine if the site and neighbouring land constitute a significant area of supporting habitat. Surveys should be required to be undertaken during autumn, winter and spring and at more than 1 year of surveys may be needed (to be agreed in consultation with the local planning authority and Natural England). If habitat within or adjacent to the site is identified to support significant populations of designated bird features avoidance measures and mitigation will be required, such as the creation of replacement habitat nearby, and the planning application will likely need to be supported by a project specific Habitats Regulations Assessment to ensure that the development does not result in adverse effects on integrity.”

- 5.11 SLA18/091: Land at Lady Dane Farm (Policy MU 1b Land at Lady Dane Farm)**
 – This site is located c. 1.1km from The Swale designated sites. It is 42.7ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops (c.14ha) such as cereal with the remainder providing land for fruit production (including orchards and polytunnels). It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows (notably to the north looking towards The Swale). The land used for fruit production is not considered suitable to provide functionally linked land, however the c.14ha of arable land to the north of the site has the potential offer sight lines for SPA / Ramsar birds. As such the allocation could act as functionally linked land.

- 5.12 Supporting text for Policy MU 1 East of Faversham Expansion, in relation to Land at Lady Dane Farm already states:**

“5.5.70 The applicant will be required to provide evidence that the development will not result in a Likely Significant Effect. To achieve this, surveys will be required to determine habitats and current use of the site and surrounding land parcels to determine if it does support a significant population (A significant population is classified as a site that regularly used by more than 1% of the population of qualifying bird species) of qualifying species. Where habitats are suitable, non-breeding bird surveys will be required to determine if the site and neighbouring land constitute a significant area of supporting habitat. Surveys should be required to be undertaken during autumn, winter and spring and at more than 1 year of surveys may be needed (to be agreed in consultation with the local planning authority and Natural England). If habitat within or adjacent to the site is identified to support significant populations of designated bird features avoidance measures and mitigation will be required, such as the creation of replacement habitat nearby, and the planning application will likely

need to be supported by a project specific Habitats Regulations Assessment to ensure that the development does not result in adverse effects on integrity.”

- 5.13 As such, it is considered that suitable policy framework is in place to ensure that this allocation would not result in a likely significant effect as a result of loss of functionally linked land.
- 5.14 SLA18/025: Land West of Frogmal Lane – This site is located c. 1.5km from The Swale designated sites. It is c. 23.9ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows so has the potential offer sight lines for SPA / Ramsar birds. As such the allocations could act as functionally linked land. As such the allocations could act as functionally linked land.
- 5.15 **It is recommended that policy or supporting text relating to this allocation is amended to provide the requirement to determine if the land parcel does indeed act functionally linked land.** Similar text has already been incorporated within the Plan document relating to other allocations (see SLA18/135: Land at Graveney Road, East of Faversham (Policy A 3g Land at Graveney Road, east of Faversham above), SLA18/122: Land at Claxfield Road (Site 1) - This site allocation is located to the north of the A2 and is 6ha in size. It is located 2.3km from the SPA / Ramsar site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. The north of the site is bordered by residential development; however, the wider setting is one of arable fields with open site lines into the wider countryside. As such the allocations could act as functionally linked land. As such the allocations could act as functionally linked land.
- 5.16 **It is recommended that policy or supporting text relating to this allocation is amended to provide the requirement to determine if the land parcel does indeed act functionally linked land.** Similar text has already been incorporated within the Plan document relating to other allocations (see SLA18/135: Land at Graveney Road, East of Faversham (Policy A 3g Land at Graveney Road, east of Faversham above)).
- 5.17 SLA18/116: Land South of London Road/West of Lynsted Lane - Whilst land to the north of this allocation is residential, the other surrounding fields are of an arable nature with sight lines into the wider countryside. As such surrounding lands could act as functionally linked land to support SPA / Ramsar bird species. **Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are not subject to disturbance. It is recommended that at least one season of wintering bird surveys is undertaken to inform the planning application.** This impact cannot be assessed further until detailed designs and construction programmes for the development are devised. However, there are available widely-used techniques to ensure that no disturbance will arise and therefore there is no uncertainty over the deliverability of this allocation.

- 5.18 SLA18/113: Land at The Port of Sheerness, Rushenden Road - A large site allocation (149ha), that contains a portion of the Medway Estuary and Marshes international sites (Medway Estuary and Marshes SSSI Unit 58). The site allocation itself includes coastal floodplain and grazing marsh. As such, the site allocation is considered to have greater potential than any other allocated site to act as functionally linked land. To support the allocation of this site therefore, non-breeding waterbird surveys were undertaken over three consecutive winter seasons (2015/2016, 2016/2017, 2017/2018).
- 5.19 The survey identified that the majority of the site allocation (identified as 'The Site' within the non-breeding waterbird report) does not support a significant population of designated bird features (in fact no birds features were recorded within the main body of the survey site), and thus does not act as functionally linked land. However, two small portions of the allocation site (identified as Section C and I in the non-breeding waterbird report) are included within the site allocation boundary and do contain significant bird populations. Therefore, these portions of land do act as functionally linked land.
- 5.20 Section C provides functionally linked land for grey plover (up to 93 individual/ 17.19% of the population in 2016/2017), redshank (up to 43 individuals / 13.69% of the population in 2015/ 2016) and shelduck (up to 95 individuals / 2.57% of the population in 2017/2018). The report notes that the habitat at Section C is 'mudflats' so can be considered unlikely to be built upon. Section C will nonetheless require consideration within the masterplanning and project specific HRA, for example with regard to ensuring that no construction period disturbance occurs and that the lighting layout of the development is sensitive to the presence of the mudflat. However, it is not anticipated that the presence of birds within Section C will provide deliverability issues to this allocation.
- 5.21 Section I provides functionally linked land for redshank (up to 5 individuals / 1.59% of the population). The report identified that the habitat within this section is '*wet, containing sedges and 'marginal pools'*'. Section I constitutes a relatively small section of the site, so it is not considered that the presence of functionally linked land within this section would provide unresolvable deliverability issues for this allocation. It is, however, noted that the presence of the functionally linked land in Section I would also require consideration within the masterplanning and project specific HRA.
- 5.22 It is noted that Section H forms part of the internationally designated site itself and is nonetheless located within the site allocation boundary. The non-breeding waterbird survey did not record any designated bird features within this section. Nonetheless, due to its international designation, Section H will require consideration within the masterplanning and project specific HRA and must be protected from lighting and other disturbance impacts during construction and operation. This cannot be assessed further until detailed designs and construction programmes for the development are devised. However, its presence is unlikely to provide any deliverability issues for this allocation.
- 5.23 It is considered that allocating sites for development prior to full wintering bird surveys being undertaken is appropriate and legally compliant in this case. Firstly, the law accepts that ecological investigation to support plan development must be tiered, with more detailed investigation undertaken at each subsequent stage:

- The Court of Appeal⁴⁷ has ruled that provided the competent authority is duly satisfied that mitigation can be achieved in practice (in other words that solutions exist that are likely to be effective) this will suffice to enable a conclusion that the proposed development would have no adverse effect.
- The High Court⁴⁸ has ruled that for '*a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of the Habitats Regulations*'.
- Advocate-General Kokott⁴⁹ has commented that '*It would also hardly be proper to require a greater level of detail in preceding plans [than lower tier plans or planning applications] or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure*'.

5.24 Secondly, there is a low risk of any of these allocated sites proving undeliverable due to loss of functionally-linked land. The functionally-linked habitats in question are common, widespread and easily recreated (or managed in a more favourable manner) and the species in question do not have highly specific habitat requirements and are sufficiently widespread in their use of this functionally-linked land that development is only likely to affect a small amount of their overall foraging resource.

Air Quality

5.25 The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre ($\mu\text{g m}^{-3}$), known as the Critical Level. The air quality data (see **D**) identifies that this is currently exceeded on several modelled transects. At their greatest, baseline NO_x concentrations are currently $125.3\mu\text{g m}^{-3}$ adjacent to the road on the second Swale transect point. After 50 m, this is reduced to less than $30\mu\text{g m}^{-3}$. At high concentrations (e.g. 75 micrograms and above) NO_x can be directly toxic to vegetation⁵⁰ but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats⁵¹. At all transect points, during the Plan period the NO_x concentrations are forecast to be greatly reduced due to improvements in vehicle emissions technology (i.e. people replacing older, more polluting vehicles, with newer, less polluting vehicles) and consistent with long-term

⁴⁷ No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015

⁴⁸ High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

⁴⁹ Opinion of Advocate General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49.
<http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN>

⁵⁰ APIS identifies that negative effects of NO₂ in atmosphere (as distinct from its role in nitrogen deposition) are most likely to arise in the presence of equivalent concentrations of sulphur dioxide (SO₂).

⁵¹ For example, the APIS website states that '*It is likely that the strongest effect of emissions of nitrogen oxides across the UK is through their contribution to total nitrogen deposition...*'

http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm

trends in NO_x which has been reducing for decades. In all cases the Critical Level is forecast to be below 30 µg_m⁻³ by 2037, with the exception of Swale transect 2, which is still above the Critical Level (69.9 µg_m⁻³ at the immediate roadside) but below 75 µg_m⁻³.

- 5.26 APIS⁵² identifies that negative effects of NO_x/NO₂ in atmosphere (as distinct from its role in nitrogen deposition) are most likely to arise in the presence of equivalent concentrations of sulphur dioxide (SO₂). Vehicle exhausts do not emit SO₂ and APIS indicates that background SO₂ concentrations at this SPA and Ramsar sites are very low (a maximum of 3.73 µg_m⁻³) compared to critical levels for SO₂ of 10-20 µg_m⁻³. Since the SO₂ concentrations are so low no synergistic effect with NO_x is expected.
- 5.27 However, the fact that NO_x concentrations exceed the Critical Level certainly indicates nitrogen deposition requires consideration.
- 5.28 The nitrogen Critical Load for grazing marsh and littoral sediment (the load above which adverse botanical effects may occur) is 20kg N/ha/yr⁵³. The air quality modelling indicates that the modelled nitrogen deposition rate at the transect points for the Swale Crossing into the Isle of Sheppey is between 33.0 and 13.7 kg N/ha/yr at the closest part of each of the six modelled transects to the road, in the base year 2017.
- 5.29 The following table provides a summary of the key data detailing the changes in air quality at the six transect points of relevance to the Swale and Medway international sites. This data is discussed in the subsequent paragraphs. In Table 5, Base is the 2017 baseline deposition rates, Reference Case (RC) 2037 is the forecast end of plan period deposition rates with all growth included except the Swale Local Plan, and LDP1054 is identical to the Reference Case but with Swale Local Plan added. The Future Baseline indicates what nitrogen deposition rates would be expected to be by the end of the plan period (2037) in the entirely theoretical situation of no further traffic growth above the baseline but applying improvements in vehicle emission factors.
- 5.30 In interpreting these data, the following points are relevant:
- Paragraph 5.26 of Natural England guidance⁵⁴ states that '*An exceedance [of the critical level or load] alone is insufficient to determine the acceptability (or otherwise) of a project*'. So, the fact that the critical load for nitrogen is already exceeded is not a legitimate basis to conclude that any further nitrogen (no matter how small) will result in an adverse effect; and
 - Paragraph 4.25 of the same NE guidance states '*...1% of critical load/level are considered by Natural England's air quality specialists (and by industry, regulators and other statutory nature conservation bodies) to be suitably precautionary, as any emissions below this level are widely considered to be imperceptible...There can therefore be a*

⁵² http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm

⁵³ <http://www.apis.ac.uk/> [accessed 07/01/2021]

⁵⁴ 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations. Version: June 2018'. <http://publications.naturalengland.org.uk/publication/4720542048845824>

high degree of confidence in its application to screen for risks of an effect’.

5.31 The ‘in combination’ nitrogen dose can be determined in Table 5 by comparing the LDP1054 scenario with the Future Baseline scenario, while the contribution of Swale Local Plan can be discerned by comparing the LDP1054 scenario with the Reference Case scenario. This is done in the final two columns. Orange shading in the cells indicates a dose greater than 1% of the Critical Load.

Table 5 Summary of the Key Air Quality Data for the closest part of the international site to the modelled road for each modelled transect

Receptor ID (transect point)	Base 2017	Reference Case 2037	Projected Baseline 2032	LDP 1054	In combination dose	Contribution of Swale Local Plan to the ‘in combination’ dose
	Total N Deposition (kg N/ha/yr)	Total N Deposition (kg N/ha/yr)	Total N Deposition (kg N/ha/yr)	Total N Deposition (kg N/ha/yr)	LDP1054-Future Baseline	LDP1054-RC
Medway_Estuary_01	26.91	26.79	26.72	26.79	0.07	0.00
Medway_Estuary_Transect_2_01	27.89	27.36	27.09	27.28	0.18	-0.08
Medway_Estuary_Transect_3_01	28.47	27.81	27.36	27.72	0.35	-0.09
Medway_Estuary_Transect_3_02	28.04	27.53	27.19	27.46	0.27	-0.07
Medway_Estuary_Transect_3_03	27.79	27.36	27.08	27.31	0.22	-0.05
The_Swale_01	26.89	26.83	26.75	26.81	0.06	-0.02
The_Swale_Transect_2_01	33.02	30.65	29.43	30.33	0.90	-0.31
The_Swale_Transect_2_02	31.33	29.54	28.62	29.30	0.68	-0.24

The_Swale_Transect_2_03	29.57	28.41	27.83	28.26	0.43	-0.16
The_Swale_Transect_2_04	28.80	27.93	27.49	27.81	0.32	-0.12
The_Swale_Transect_2_05	28.36	27.66	27.31	27.56	0.25	-0.09
The_Swale_Transect_2_06	28.07	27.48	27.19	27.40	0.21	-0.08
The_Swale_Transect_3_01	15.26	14.64	14.09	14.48	0.39	-0.16
The_Swale_Transect_3_02	14.79	14.28	13.89	14.18	0.29	-0.10
The_Swale_Transect_3_03	14.52	14.09	13.78	14.01	0.23	-0.08

5.32 With regard to Medway Estuary Transects 1 and 2, and The Swale Transect 1, the data (**Table 5**) identify that in combination (the DS-Future Baseline column), nitrogen deposition due to all expected traffic growth to 2037 will be less than 1% of the Critical Load for grazing marsh and littoral sediment (1% of 20kg N/ha/yr = 0.20kg N/ha/yr), and as such no adverse effects on the integrity of the designated sites will result at these locations in combination. Furthermore, at all three transect locations, the Swale Plan in isolation (DS-DM Column) is identified to either have zero contribution to nitrogen deposition⁵⁵, or to have a positive contribution, thus actually reducing the nitrogen depositions at these locations. This is most likely attributable to traffic improvement measures contained within the Local Plan to reduce congestion enabling a net improvement in flows.

5.33 **Table 5** identifies that at Medway Estuary Transect 3, and the Swale Transect 2 and 3, the in combination nitrogen deposition is greater than imperceptible. However, from looking at the detail further, at all three transect routes, the Swale Plan in isolation is identified to provide a positive contribution to nitrogen deposition rates, reducing atmospheric nitrogen deposition rates compared to a situation without the plan, and thus actually reducing the nitrogen depositions at these locations compared to the situation that would otherwise arise. As a result, it can be concluded that the Plan would not result in an adverse effect on the integrity of any international designated sites as a result of increased nitrogen deposition.

⁵⁵ Note that this does not literally mean zero contribution but that the contribution is so small it is only affects the third decimal place which is not reported in air quality modelling to avoid false precision

5.34 Moreover, habitats closely linked to coastal and fluvial sources of water such as grazing marsh and littoral sediment are generally nitrogen rich and will receive far more nitrogen through inundation from marine and freshwater than through deposition from atmosphere, rendering atmospheric inputs much less relevant than for other situations⁵⁶. In addition, the value of grazing marsh to SPA birds is dictated less by its detailed botanical composition (which is the aspect most likely to be affected by changes in atmospheric nitrogen deposition) than by its regular seasonal inundation and its overall habitat structure⁵⁷.

Coastal Squeeze

5.35 It has been identified that the allocation SLA18/113: Land at The Port of Sheerness, Rushenden Road could potentially result in coastal squeeze given that the boundary of the allocated site (which it is accepted is considerably larger than the area actually intended for development) abuts the Medway Estuary & Marshes SPA/Ramsar site. This cannot be assessed further at the Local Plan level except to note that the actual proposed development area is a considerable distance from the SPA/Ramsar site and does allow sufficient space for Managed Realignment to be achieved.

5.36 The SMP's medium to long term policy of Managed Realignment and the Flood Risk Management Strategy's policy of No Active Intervention, is intended to enable the designated site to react to rising sea levels as a result of climate change and thus preserve its integrity. **To ensure that this allocation does not result in an adverse effect on the integrity of the Medway Estuary and Marsh SPA and Ramsar site, it is recommended that policy wording is included within the Plan that detailed proposals for land use in the allocated site must ensure the allocation does not compromise the Managed Realignment policy set out in the Shoreline Management Plan or the No Active Intervention policy within the Flood Risk Management Strategy, and that development is planned to achieve the maximum retreat.**

North Downs Woodlands SAC

Air Quality

5.37 The air quality data (see **Appendix D**) identifies that the Critical Level for NO_x along the A249 at the Wouldham and Detling SSSI transect point is currently exceeded (annual mean NO_x concentrations are modelled to be currently 57.67µg/m³ at the closest point of the SAC to the A249). As previously detailed, with regard to NO_x itself APIS⁵⁸ identifies that negative effects of NO_x/NO₂ in atmosphere (as distinct from its role in nitrogen deposition) are most likely to arise in the presence of equivalent concentrations of sulphur dioxide (SO₂). Vehicle exhausts do not emit SO₂ and APIS indicates that background SO₂

⁵⁶ This is reflected on the UK Air Pollution Information System website which states that 'Overall, N deposition [from atmosphere] is likely to be of low importance for these systems as the inputs are probably significantly below the large nutrient loadings from river and tidal inputs'.

⁵⁷ It is noted that Natural England (John Lister) commented in its Local Plan consultation response of 30/01/15 that unspecified information to hand identified a deposition rate of c. 20kgN/ha/yr for The Swale SPA/Ramsar site. It is unclear whether this was data received from specific monitoring, or was a reference to the general deposition rate for the centroid of the SPA (rather than the specific locations discussed in this HRA). Either way, in this case the conclusion of the analysis would remain valid due to the small importance of atmospheric nitrogen deposition (relative to inundation and management) for these particular species of this particular SPA/Ramsar site.

⁵⁸ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm

concentrations at this SAC is very low (a maximum of 1.51 $\mu\text{g m}^{-3}$) compared to critical levels for SO_2 of 10-20 $\mu\text{g m}^{-3}$. Since the SO_2 concentrations are so low no synergistic effect with NO_x is expected. Moreover, by 2037 total NO_x concentrations are forecast to have fallen below the Critical Level (except at the very edge of the SAC) even allowing for traffic growth, due to improvements in vehicle emissions technology.

5.38 However, the fact that NO_x exceeds the Critical Level certainly indicates nitrogen deposition requires consideration.

5.39 Whilst the sensitive features of the site are currently identified to be in favourable condition⁵⁹, the nitrogen deposition rates at the site (maximum of 32.53kg N/ha/yr) currently far exceed the minimum critical load for both yew woodland and beech forest (10 kg N/ha/yr)⁶⁰. The modelled data identify that the 'in combination' effect of all expected growth (including the Maidstone Local Plan and Swale Local Plan) is 0.51kg N/ha/yr at its greatest (within 7m of the roadside) and thus well above the 1% of the critical load threshold (i.e. 0.1kg N/ha/yr). As such could be considered to be potentially significant. However, the Swale Local Plan contributes at most 0.05 kg N/ha/yr, which is barely perceptible and only slightly more than zero. It is therefore considered that the Swale Local Plan would not result in an adverse effect on the integrity of the international designated sites as a result of increased nitrogen deposition.

5.40 In reaching this conclusion we are mindful of paragraph 48 of Advocate-General Sharpston's Opinion in European Court of Justice Case C-258/11 where she stated that: *'the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill'*. We are also mindful that, Mr Justice Jay, when ruling in *Wealden v SSCLG* [2017] EWHC 351 (Admin) (2017), accepted that if the contribution of an individual plan or project was *'very small indeed'* it could be legitimately and legally excluded from 'in combination' assessment. This is consistent with Advocate-General Sharpston's position.

⁵⁹ <https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1006693> accessed 08/01/2021]

⁶⁰ www.apis.ac.uk/ [accessed 08/01/2021]. APIS provides a critical load range for coniferous woodland of 5 - 15 kgN/ha/yr in the Site Relevant Critical Load tab for the North Downs Woodlands SAC. However, the range for coniferous woodland is derived from research into pine and spruce forests. In addition, a site visit has confirmed that the small section of woodland within 200m of the existing A229 is predominantly broadleaved. The 10 - 15 kgN/ha/yr range for beech woodland is therefore considered to be the most appropriate critical load for this part of the North Downs Woodlands SAC. This can be seen from the entry for coniferous woodland on the following page on APIS where it directs the reader to use 10 kgN/ha/yr unless lichens/ free-living algae are important features of the site <http://www.apis.ac.uk/indicative-critical-load-values>

6. Conclusions and a Summary of Recommendations and Considerations

Conclusions

6.1 HRA was undertaken of The Swale Local Plan Review (Regulation 19) February 2021. A Test of Likely Significant Effects was undertaken of Plan policy and site allocations in relation to the following internationally designated sites and impact pathways:

- The Swale SPA/Ramsar - Recreational Pressure, Functionally Linked Land, Visual and Noise Disturbance, Air Quality, Water Quality
- Medway Estuary & Marshes SPA/Ramsar: Recreational Pressure, Functionally Linked Land, Visual and Noise Disturbance, Air Quality, Water Quality, Coastal Squeeze
- Blean Complex SAC: Air Quality
- Outer Thames Estuary SPA: Visual and Noise Disturbance
- North Downs Woodlands SAC: Air Quality

6.2 Following the Test of Likely Significant Effects, Appropriate Assessment was undertaken of potential linking impact pathways that could not be screened out and were identified to potentially result in an adverse effect on the integrity of an international site. Appropriate Assessment was undertaken as follows:

The Swale SPA/Ramsar and Medway Estuary & Marshes SPA/Ramsar

Recreational Pressure

6.3 In accordance with the Bird Wise North Kent Mitigation Strategy⁶¹, all residential development within 6km of the North Kent Bird sites could result in an adverse effect on the integrity of the SPA as a result of increased recreational pressure. The strategic Mitigation Strategy is funded by developer contributions. It provides for a range of mitigation and avoidance strategies. As such to ensure no adverse effects on the integrity of the designated sites occurs, any net new residential development within 6km of the North Kent Bird sites will be required to contribute to the Mitigation Strategy and provide the appropriate financial contributions.

6.4 The requirement for contributions towards this mitigation strategy is detailed within Plan Policy ST 10: Conserving and enhancing the natural environment.

⁶¹ <https://northkent.birdwise.org.uk/wp-content/uploads/2018/02/Mitigation-Strategy.pdf> [accessed 07/01/2021]

6.5 It can therefore be concluded that the Plan provides sufficient protective policy framework to ensure no adverse effects on the integrity result as a result of increased recreational pressure from new residential development stemming from the Plan.

Functionally Linked Land and Visual and Noise Disturbance

6.6 the following allocations have been identified to be located within land parcels that have the potential to provide habitat that could support a significant population of designated bird species, and thus could act as functionally linked land:

- SLA18/135: Land at Graveney Road, East of Faversham
- SLA18/091: Land at Lady Dane Farm
- SLA18/025: Land West of Frognal Lane
- SLA18/122: Land at Claxfield Road (Site 1)
- SLA18/113: Land at The Port of Sheerness, Rushenden Road

6.7 In addition, allocation SLA18/116: Land South of London Road/West of Lynsted Lane, is located immediately adjacent to potentially functionally linked land. This allocation could provide disturbance to any significant bird populations located within adjacent fields, and as such could result in adverse effects on the integrity of the designated bird sites.

6.8 All sites identified above should provide policy or supporting requiring the need to determine if the land parcel or neighbouring affected land does indeed act functionally linked land by inclusion of the following (or similar text).

6.9 “The applicant will be required to provide evidence that the development will not result in a Likely Significant Effect. To achieve this, surveys will be required to determine habitats and current use of the site and surrounding land parcels to determine if it does support a significant population (A significant population is classified as a site that regularly used by more than 1% of the population of qualifying bird species) of qualifying species. Where habitats are suitable, non-breeding bird surveys will be required to determine if the site and neighbouring land constitute a significant area of supporting habitat. Surveys should be required to be undertaken during autumn, winter and spring and at more than 1 year of surveys may be needed (to be agreed in consultation with the local planning authority and Natural England). If habitat within or adjacent to the site is identified to support significant populations of designated bird features avoidance measures and mitigation will be required, such as the creation of replacement habitat nearby, and the planning application will likely need to be supported by a project specific Habitats Regulations Assessment to ensure that the development does not result in adverse effects on integrity.”

6.10 With the above recommendation it can be concluded that the Plan will not result in an adverse effect on the integrity of the international sites.

Air Quality

6.11 Air quality modelling was undertaken of the A249 within 200m of The Swale PSA and Ramsar site and the Medway Estuary and Marshes Spa and Ramsar

sites. It identified that whilst in combination the plan would retard improvements in nitrogen deposition rates within the internationally designated sites, ultimately in isolation, the Plan will result in an improvement in the retardation rate. As a result, it can be concluded that the Plan would not result in an adverse effect on the integrity of any international designated sites as a result of increased nitrogen deposition.

Coastal Squeeze

- 6.12 Allocation SLA18/113: Land at The Port of Sheerness, Rushenden Road could potentially result in coastal squeeze given that the boundary of the allocated site (which it is accepted is considerably larger than the area actually intended for development) abuts the Medway Estuary & Marshes SPA/Ramsar site. This cannot be assessed further at the Local Plan level.
- 6.13 The SMP's medium to long term policy of Managed Realignment and the Flood Risk Management Strategy's policy of No Active Intervention, is intended to enable the designated site to react to rising sea levels as a result of climate change and thus preserve its integrity. **To ensure that this allocation does not result in an adverse effect on the integrity of the Medway Estuary and Marsh SPA and Ramsar site, it is recommended that policy wording is included within the Plan that detailed proposals for land use in the allocated site must ensure the allocation does not compromise the Managed Realignment policy set out in the Shoreline Management Plan or the No Active Intervention policy within the Flood Risk Management Strategy, and that development is planned to achieve the maximum retreat.**

North Downs Woodlands SAC

Air Quality

- 6.14 Air quality modelling was undertaken of the A249 within 200m of SAC. It identified that the 'in combination' effect of all expected growth (including the Maidstone Local Plan and Swale Local Plan) is well above the 1% of the critical load threshold. As such could be considered to be potentially significant. However, the Swale Local Plan contributes at most 0.05 kg N/ha/yr, which is barely perceptible and only slightly more than zero. It is therefore considered that the Swale Local Plan would not result in an adverse effect on the integrity of the international designated sites as a result of increased nitrogen deposition.

Appendix A Internationally Designated Sites

Figure A1: Location of Internationally Designated Sites

The Swale SPA and Ramsar Site

Reason for Designation

The **SPA** is designated for⁶²:

During the breeding season:

- Avocet *Recurvirostra avosetta*
- Marsh Harrier *Circus aeruginosus*
- Mediterranean Gull *Larus melanocephalus*

Over winter:

- Avocet *Recurvirostra avosetta*
- Bar-tailed Godwit *Limosa lapponica*
- Golden Plover *Pluvialis apricaria*
- Hen Harrier *Circus cyaneus*
- Black-tailed Godwit *Limosa limosa islandica*
- Grey Plover *Pluvialis squatarola*
- Knot *Calidris canutus*
- Pintail *Anas acuta*
- Redshank *Tringa totanus*
- Shoveler *Anas clypeata*
- Dark-bellied Brent goose *Branta bernicla bernicla*
- Dunlin *Calidris alpina alpina*

On passage:

- Ringed Plover *Charadrius hiaticula*

The SPA also 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 65,390 individual waterfowl (5 year peak mean 1991/2 - 1995/6))

The **Ramsar** site is designated for⁶³:

The Ramsar information sheet states that The Swale comprises, “A complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. Rare wetland birds breed in important numbers. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates”.

⁶² <http://publications.naturalengland.org.uk/file/4517156041523200> [accessed 23/12/2020]

⁶³ <https://jncc.gov.uk/jncc-assets/RIS/UK11071.pdf> [accessed 23/12/2020]

Ramsar criterion 2: The site supports nationally scarce plants and at least seven British Red data book invertebrates.

Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 77501 waterfowl (5 year peak mean 1998/99-2002/2003).

Ramsar criterion 6: – Species/populations occurring at levels of international importance.

Species with peak counts in spring/autumn:

- Common redshank *Tringa totanus tetanus*

Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*
- Grey plover *Pluvialis squatarola*, E Atlantic/W Africa -wintering

Species/populations identified subsequent to designation for possible future consideration under criterion 6:

Species with peak counts in spring/autumn:

- Ringed plover *Charadrius hiaticula*, Europe/Northwest Africa

Species with peak counts in winter:

- Eurasian wigeon *Anas penelope*, NW Europe
- Northern pintail *Anas acuta*, NW Europe
- Northern shoveler *Anas clypeata*, NW & C Europe
- Black-tailed godwit *Limosa limosa islandica*, Iceland/W Europe

Conservation Objectives of the SPA⁶⁴

“With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*

⁶⁴ <http://publications.naturalengland.org.uk/file/4666133965963264> [accessed 23/12/2020]

- *The distribution of the qualifying features within the site.*”

Historic Trends and Current Pressures⁶⁵

- Coastal squeeze
- Public access/ disturbance
- Invasive species
- Changes in species distribution
- Fisheries: commercial marine and estuarine
- Vehicles: illicit
- Air pollution: risk of atmospheric nitrogen deposition

Medway Estuary and Marshes SPA and Ramsar Site

Reason for Designation

The site is designated as an **SPA**⁶⁶ for supporting bird populations of European importance for the breeding species of:

- Avocet *Recurvirostra avosetta*
- Little tern *Sterna albifrons*
- Common tern *Sterna hirundo*

The site is designated as an **SPA** for supporting bird populations of European importance for the over-wintering species of:

- Tundra swan *Cygnus columbianus bewickii*
- Avocet *Recurvirostra avosetta*

The **Ramsar** site is designated for⁶⁷:

The Ramsar information sheet states that Medway Estuary and Marshes site comprises, “A complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. Rare wetland birds breed in important numbers. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates”.

Ramsar criterion 2: The site supports nationally scarce plants and at least seven British Red data book invertebrates.

Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 47637 waterfowl (5 year peak mean 1998/99-2002/2003).

⁶⁵ <http://publications.naturalengland.org.uk/file/5760073666134016> [accessed 23/12/2020]

⁶⁶ <http://publications.naturalengland.org.uk/file/5039453273849856> [accessed 23/12/2020]

⁶⁷ <https://rsis.ramsar.org/RISapp/files/RISrep/GB645RIS.pdf> [accessed 23/12/2020]

Ramsar criterion 6: – Species/populations occurring at levels of international importance. The site has bird species occurring in internationally important numbers: Redshank, grey plover (spring/autumn), dark-bellied brent goose, shelduck, pintail, red knot, ringed plover, dunlin (winter)

Conservation Objectives of the SPA⁶⁸

“With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site.”*

Historic Trends and Current Pressures⁶⁹

- Coastal squeeze
- Public access/ disturbance
- Invasive species
- Changes in species distribution
- Fisheries: commercial marine and estuarine
- Vehicles: illicit
- Air pollution: risk of atmospheric nitrogen deposition

The Outer Thames Estuary SPA

Reason for Designation

The Marine **SPA** is designated for its⁷⁰:

- Red-throated diver *Gavia stellate* (non-breeding)
- Common tern *Sterna hirundo* (breeding)
- Little tern *Sternula albifrons* (breeding)

⁶⁸ <http://publications.naturalengland.org.uk/publication/6672791487119360> [accessed 23/12/2020]

⁶⁹ <http://publications.naturalengland.org.uk/file/5760073666134016> [accessed 23/12/2020]

⁷⁰ <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020309.pdf> [accessed 23/12/2020]

Conservation Objectives⁷¹

“The site’s conservation objectives apply to the site and the individual species and/or assemblage of species for which the site has been classified (the “Qualifying features” listed above).

The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- *the extent and distribution of the habitats of the qualifying features*
- *the structure and function of the habitats of the qualifying features*
- *the supporting processes on which the habitats of the qualifying features rely*
- *the populations of each of the qualifying features*
- *the distribution of qualifying features within the site”*

Historic Trends and Current Pressures

- Low levels of winter disturbance (from both noise and visual presence);
- Low risk of direct birdstrike from wind turbines;
- Good water quality; and
- Limited dredging.

Queendown Warren SAC

Reason for Designation⁷²

The site is designated as a **SAC** for its:

- Dry grasslands and scrublands on chalk or limestone, including important orchid sites.

Conservation Objectives⁷³

“With regard to the SAC and the natural habitats and/or species for which the site has been designated (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

⁷¹

<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9020309&SiteName=outer%20thames&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&HasCA=1&NumMarineSeasonality=3&SiteNameDisplay=Outer%20Thames%20Estuary%20SPA#hlco> [accessed 23/12/2020]

⁷² <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012833.pdf> [accessed 23/12/2020]

⁷³ <http://publications.naturalengland.org.uk/file/4860443613200384> [accessed 23/12/2020]
<http://publications.naturalengland.org.uk/file/4724631642832896> [accessed 23/12/2020]

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely”*

Historic Trends and Current Pressures⁷⁴

- Species decline
- Habitat fragmentation
- Air quality: risk of atmospheric nitrogen deposition

The Blean Complex SAC

Reason for Designation⁷⁵

The site is designated as a **SAC** for its:

- Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*. (Oak-hornbeam forests)

Conservation Objectives⁷⁶

“With regard to the SAC and the natural habitats and/or species for which the site has been designated (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely”*

Historic Trends and Current Pressures⁷⁷

- Air quality: risk of atmospheric nitrogen deposition

North Downs Woodlands SAC

Reason for Designation⁷⁸

The site is designated as a **SAC** for its:

⁷⁴ <http://publications.naturalengland.org.uk/publication/4943746697265152> [accessed 23/12/2020]

⁷⁵ <http://publications.naturalengland.org.uk/file/6743128623022080> [accessed 23/12/2020]

⁷⁶ <http://publications.naturalengland.org.uk/file/6568792784371712> [accessed 23/12/2020]

⁷⁷ <http://publications.naturalengland.org.uk/file/4985875433783296> [accessed 23/12/2020]

⁷⁸ <http://publications.naturalengland.org.uk/file/6520020842577920> [accessed 23/12/2020]

- *Taxus baccata* woods of the British Isles. (Yew-dominated woodland)*
- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

Conservation Objectives⁷⁹

“With regard to the SAC and the natural habitats and/or species for which the site has been designated (the ‘Qualifying Features’ listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely”*

Historic Trends and Current Pressures⁸⁰

- Public access/ disturbance
- Forestry and woodland management
- Invasive species
- Air pollution: impact of atmospheric nitrogen deposition

⁷⁹ <http://publications.naturalengland.org.uk/file/5579173532008448> [accessed 23/12/2020]

<http://publications.naturalengland.org.uk/file/5280120969625600> [accessed 23/12/2020]

⁸⁰ <http://publications.naturalengland.org.uk/publication/6363401429188608> [accessed 23/12/2020]

Appendix B Test of Likely Significant Effects: Local Plan Policy

Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the policy and an international site and the site and policy will be subject to further discussions and appropriate assessment.

Table 6 Test of Likely Significant Effects: Local Plan Policy

Policy	Description	Test of Likely Significant Effects Outcome
Policy ST 1 Swale's development needs for jobs and homes 2022 – 2038	This policy identifies that the plan will deliver: <ul style="list-style-type: none"> - 66ha or 40ha of B Class Employment floorspace provision. - 16,608 (1.038 dwellings per annum) net new dwellings 	Potential HRA implications. Both residential and employment development have the potential to result in the following potential linking impact pathways: <ul style="list-style-type: none"> - Recreational pressure - Loss of functionally linked land - Visual noise and disturbance - Atmospheric pollution - Water resources - Water quality
Policy ST 2 Swale settlement strategy	This is a broad development management policy detailing settlements that will be the main focus of development. This policy does not identify any type, specific location or quantum of development	No HRA implications. There are no linking impact pathways present.
Policy ST 3 Delivering sustainable development in Swale	A development management policy detailing the requirements to deliver sustainable development in Swale that provides both mitigation and adaptation to climate change	No HRA implications. By definition sustainable development would not adversely affect an internationally designated site. There are no linking impact pathways present.

Policy ST 4 Building a strong, competitive economy	This is a development management policy relating to economic growth.	No HRA implications. Whilst this type of development has the potential to result in pathways that could link to a designated site such as recreational pressure, air quality and water quality and quantity issues, this policy does not itself provide for any location or quantum of development. There are no realistic linking impact pathways present.
Policy ST 5 Delivering a wide choice of high-quality homes	This is a development management policy relating to the quality of new homes	No HRA implications. This policy does not itself provide for a quantum, or location of residential development. There are no linking impact pathways present.
Policy ST 6 Good design	This is development management policy relating to design.	No HRA implications. There are no linking impact pathways present.
Policy ST 7 Health and Wellbeing	This policy relates to health and wellbeing.	No HRA implications. There are no linking impact pathways present.
Policy ST 8 Planning for Infrastructure	This policy details that the Council will work with providers, stakeholders and applicant to ensure development is supported by necessary infrastructure in a timely manner.	No HRA implications. There are no linking impact pathways present.
Policy ST 9 Promoting Sustainable Transport and Active Travel	This policy promotes sustainable travel and active travel. By definition this would not result in an adverse effect on the integrity of an international site and has the potential to reduce atmospheric pollution contributions. This policy includes the provision of increased commercial use of the waterways through working with the Port of Sheerness	No HRA implications There are no realistic linking impact pathways present.
Policy ST 10	Provides for the conservation and enhancement of the natural	No HRA implications.

<p>Conserving and enhancing the natural environment</p>	<p>environment. It includes specific policy wording that identifies the need for project specific HRA and to ensure that no adverse effect on the integrity of an internationally designated site alone or in combination with other plan and projects occurs. It states: <i>“9. Ensure that there is no adverse effect on the integrity of a SAC, SPA or Ramsar site, alone or in combination with other plan and projects, as it would not be in accordance with the aims and objectives of this Local Plan; 10. Require the completion of project specific Habitats Regulations Assessment, in accordance with Policy DM24, to ensure there are no likely significant effects upon any European designated site. For residential sites within 6km of an access point to any of the North Kent Marshes, development must contribute to its Strategic Access Management and Monitoring Strategy or undertake their own HRA;”</i></p>	<p>There are no linking impact pathways present.</p>
<p>Policy ST 11 Conserving and enhancing the historic environment</p>	<p>This is a development management policy relating to the historic environment.</p>	<p>No HRA implications. There are no linking impact pathways present.</p>
<p>Policy A 1 Saved housing allocations</p>	<p>A policy providing for the safeguarding of allocations previously allocated within the Bearing Fruits Plan.</p>	<p>No HRA implications. This policy is for the safeguarding of housing allocations provided in the Bearing Fruits Plan. The allocations provided within the Bearing Fruits Plan were subject to their own HRA and no adverse effects on the integrity was concluded. There are no HRA implications present.</p>
<p>Policy A 2 Kent Science Park</p>	<p>This policy supports residential proposals at the Kent Science Park, but does not provide for any quantum. This allocation is</p>	<p>Potential HRA implications. Potential linking impact pathways</p>

	carried over the from Bearing Fruits Plan.	<p>present include</p> <ul style="list-style-type: none"> - Recreational pressure - Atmospheric pollution - Water resources <p>The Bearing Fruits Plan has already been subject to HRA and no adverse effects on the integrity was concluded.</p>
Policy A 3a Ridham and Kemsley, Sittingbourne	Supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	<p>Potential HRA implications.</p> <ul style="list-style-type: none"> - Potential linking impact pathways present Disturbance (other than recreation) - Proximity effects, - Atmospheric pollution - Water resources <p>As such this allocation has the potential to result in a likely significant effect</p>
Policy A 3b Neatscourt, Queenborough, Isle of Sheppey	Supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	<p>Potential HRA implications.</p> <p>Potential linking impact pathways present:</p> <ul style="list-style-type: none"> - Disturbance (other than recreation), - Proximity effects, - Atmospheric pollution - Water resources <p>As such this allocation has the potential to result in a likely significant effect</p>
Policy A 3c Land South of Kemsley Mill	Supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	<p>Potential HRA implications.</p> <p>Potential linking impact pathways</p>

		<p>present:</p> <ul style="list-style-type: none"> - Atmospheric pollution and - Water quality.
Policy A 3d Land at West Minster, Sheerness	A development management policy that supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	No HRA implications. There are no linking impact pathways present.
Policy A 3e Land at Cowstead Corner, Queenborough	A development management policy that supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	No HRA implications. There are no linking impact pathways present.
Policy A 3f Land at Selling Road, Faversham	A development management policy that supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	No HRA implications. There are no linking impact pathways present.
Policy A 3g Land at Graveney Road, east of Faversham	A development management policy that supports employment development as this location. This allocation is carried over the from Bearing Fruits Plan.	No HRA implications. There are no linking impact pathways present.
A4 Smaller allocations for housing development	A development management policy for allocations not yet implemented in the Bearing Fruits Local Plan Policies 20 and 21. It also allocates a new residential allocation at the Garden Hotel, The Street, Boughton for up to 20 net new dwellings.	Potential HRA implications. Potential linking impact pathways present include <ul style="list-style-type: none"> - Recreational pressure - Atmospheric pollution - Water resources
Policy MU 1 East of Faversham Expansion	This is a development management policy relating to the masterplanning of this site (consisting of three sites: land at Graveney Road, land at Lady Dane Farm and land at South East Faversham). It details the need to accord with the Strategic Access Manage There are no linking impact pathways present. Requires the requirement for financial contributions toward the Strategic Access Management and Monitoring Strategy if required, and	No HRA implications. There are no linking impact pathways present.

	the need for the provision of a project specific Habitats Regulations Assessment.	
Policy MU 1a Land at Graveney Road	Provides for 240 new dwellings and a comprehensive landscape framework. Also provides development management policy including: <i>“3. Provide evidence that the development will not result in a ‘Likely Significant Effect’ to any European site of biodiversity interest.”</i>	Potential HRA implications Please see Appendix C, Table C1 (allocation SLA18/135: Land at Graveney Road, East of Faversham) for the Test of Likely Significant Effects Potential linking impact pathways: <ul style="list-style-type: none"> – Functionally Linked Land – Disturbance to land adjacent to the site allocation – Recreational Pressure Atmospheric pollution – Water resources
Policy MU 1b Land at Lady Dane Farm	Provides for 600 new dwellings, and mixed-use development including a 10ha employment hub. Also provides development management policy including: <i>“8. Provide evidence that the development will not result in a ‘Likely Significant Effect’ to any European site of biodiversity interest.”</i>	Potential HRA implications Please see Appendix C, Table C1 (allocation SLA18/091: Land at Lady Dane Farm) for the Test of Likely Significant Effects Potential linking impact pathways: <ul style="list-style-type: none"> – Functionally Linked Land – Disturbance to land adjacent to the site allocation – Recreational Pressure – Atmospheric pollution – Water resources
Policy MU 1c Land at South East Faversham	Provides for 2500 dwellings, a variety of employment space capable of supporting 2500	Potential HRA implications Please see Appendix C, Table C1

	<p>jobs, community infrastructure, open space and habitat creation on land at South East Faversham Development proposals will: Also provides development management policy.</p>	<p>(allocation SLA18/226: South East Faversham) for the Test of Likely Significant Effects Potential linking impact pathways:</p> <ul style="list-style-type: none"> - Recreational Pressure - Atmospheric pollution - Water resources
<p>Policy AO 1 Teynham Area of Opportunity</p>	<p>Provides approximately 1,100 homes, proportionate employment and accompanying infrastructure to be commenced in the mid to latter part of the plan period (post 2028). Also provides development management policy.</p>	<p>Potential HRA implications Please see Appendix C, Table C1 (allocations SLA18/025: Land West of Frognal Lane, SLA18/106: Land at Barrow Green Farm, London Road, SLA18/123: Land at Claxfield Road (Site 2), SLA18/122: Land at Claxfield Road (Site 1), SLA18/116: Land South of London Road/West of Lynsted Lane, SLA18/010: Land at Cellar Hill and, SLA18/153: Land south of Dover Castle Inn, A2 London Road/Cellar Hill) for the Test of Likely Significant Effects Potential linking impact pathways:</p> <ul style="list-style-type: none"> - Functionally Linked Land - Disturbance to land adjacent to the site allocation - Recreational Pressure - Atmospheric pollution - Water resources
<p>Policy A 5</p>	<p>Provides for up to 90 dwellings</p>	<p>Potential HRA implications</p>

<p>Land at Neames Forstal, Selling</p>	<p>Also provides development management policy.</p>	<p>Please see Appendix C, Table C1 (allocations SLA18/096: Land East of Selling Road (2) and SLA18/094: Land East of Selling Road) for the Test of Likely Significant Effects Potential linking impact pathways:</p> <ul style="list-style-type: none"> – Functionally Linked Land – Disturbance to land adjacent to the site allocation – Recreational Pressure – Atmospheric pollution – Water resources
<p>Policy A 6 Lamberhurst Farm, Yorkletts</p>	<p>Provides for 5.5ha of employment space. Also provides development management policy.</p>	<p>No HRA implications Please see Appendix C, Table C1 (SLA18/154: Land at Lamberhurst Farm) for the Test of Likely Significant Effects There are no linking impact pathways present.</p>
<p>Policy Regen 1 The Port of Sheerness: Regeneration Area</p>	<p>This policy supports proposals that maintain and enhance the Port of Sheerness as a deepwater gateway port to Europe. Provides development management policy, including the requirement that <i>“a project specific HRA demonstrates that the integrity of the Outer Thames Estuary SPA is retained”</i></p>	<p>No HRA implications. Due to the proximity of the port to both the Outer Thames Estuary SPA and the Medway and Marshes SPA and Ramsar site, there is potential for disturbance (non-recreational) to impact upon the designated sites from port enhancements depending on what they might be. <u>However</u>, no type, location or extent of development is identified and there are</p>

		no realistic linking impact pathways present. Therefore the policy itself is not considered likely to result in a significant effect.
Policy Regen 2 Sittingbourne Town Centre	A development management policy relating to the regeneration of Sittingbourne Town Centre. No specific location, extent or type of development is identified	No HRA implications. There are no linking impact pathways present.
Policy Regen 3a Queenborough and Rushenden Regeneration Area	A development management policy relating to the regeneration of Queenborough and Rushenden. It supports regeneration for residential, employment and community uses, although no exact extent, location or quantum is identified. Includes for the requirement of a project specific Habitats Regulations Assessment, including the need for financial contribution towards the Strategic Access Management and Monitoring Strategy as required.	No HRA implications. There are no linking impact pathways present.
Policy Regen 3b Rushenden South Area	A development management policy that also provides for 850 net new dwellings and employment space. Includes for the requirement of a project specific Habitats Regulations Assessment, including the need for financial contribution towards the Strategic Access Management and Monitoring Strategy as required.	Potential HRA implications. Both residential and employment development have the potential to result in the following potential linking impact pathways: <ul style="list-style-type: none"> - Recreational pressure - Loss of functionally linked land - Visual noise and disturbance - Atmospheric pollution - Water resources - Water quality <p>Please see Appendix C, Table C1 (SLA18/113: Land at The Port of Sheerness, Rushenden Road) for the Test of Likely Significant Effects for the allocation site</p>

Policy NP 1 Faversham Creek Neighbourhood Plan	A development management policy relating to the area covered by the Faversham Neighbourhood Plan. No type, quantum or exact location of development is identified as these will be determined by the Neighbourhood Plan which will be subject to its own HRA.	No HRA implications. There are no linking impact pathways present.
Policy DM 1 General development criteria	Provides general development criteria	No HRA implications. There are no linking impact pathways present.
Policy DM 2 Achieving Good Design	A development management policy relating to good design in relation to built form, movement, nature, public spaces and private or communal gardens, mixed and integrated uses, homes and buildings, lifespan, resources and boundaries.	No HRA implications. There are no linking impact pathways present.
Policy DM 3 Mitigating and adapting to climate change through sustainable design and construction	This development management policy identifies documentation that development will need to adhere to in relation to climate change.	No HRA implications. There are no linking impact pathways present.
Policy DM 4 Sustainable energy production, distribution and storage	A development management policy providing for sustainable energy production, distribution and storage. No type, location or extent of development is identified.	No HRA implications. There are no linking impact pathways present.
Policy DM 5 Proposals for Main Town Center Uses	A development management policy identifying the town hierarchy as follows: Principal Town Centre: Sittingbourne Secondary Town Centres: Faversham and Sheerness Urban Local Service Centres: Minster and Halfway; Queenborough and Rushenden Rural Local Service Centres: Boughton, Eastchurch, Iwade, Leysdown, Newington and Teynham No type, location or extent of development is identified.	No HRA implications. There are no linking impact pathways present.
Policy DM 6 Shopfronts, signs and	A development management policy relating to shopfronts, signs and advertisements.	No HRA implications. There are no linking impact pathways present.

advertisements		present.
Policy DM 7 Loss of employment floorspace and land	A development management policy relating to loss of employment floorspace and lane	No HRA implications. There are no linking impact pathways present.
Policy DM 8 The rural economy	A development management policy relating to the rural economy. No type, exact location or extent of development is identified	No HRA implications. There are no linking impact pathways present.
Policy DM 9 New holiday parks or extensions to existing parks	This is a development management policy relating to new and existing holiday parks. No location or quantum of development is identified. This policy also provides for the requirement of a habitats regulations assessment where required	No HRA implications. There are no linking impact pathways present.
Policy DM 10 Managing transport demand and impact	A development management policy relating to managing transport demand and impacts. It does not identify any location type or quantum of development.	No HRA implications. There are no linking impact pathways present.
Policy DM 11 Vehicle Parking	A development management policy relating to vehicle parking	No HRA implications. There are no linking impact pathways present.
Policy DM 12 Rural Lanes	A development management policy relating to rural lanes	No HRA implications. There are no linking impact pathways present.
Policy DM 13 Broadband Infrastructure Provision	A development management policy relating to broadband infrastructure provision.	No HRA implications. This is a positive policy that has the potential to reduce the need to travel and thus reduce atmospheric pollution. There are no linking impact pathways present.
Policy DM 14 Small and medium sites for housing development	A development management policy relating to small and medium residential development sites. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 15 Affordable housing	A development management policy relating to affordable housing. This policy does not itself provide for any location or	No HRA implications. There are no linking impact pathways

	quantum of residential development.	present.
Policy DM 16 Rural exception housing	A development management policy relating to rural exceptional housing. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 17 Open space, sports and recreation provision	A development management policy relating to open spaces, sports and recreational provision and provides required standards for these amenities.	No HRA implications. There are no linking impact pathways present.
Policy DM 18 Proposals for Park Homes	A development management policy relating to Park Housing. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 19 Gypsy, Traveller and Travelling Showpeople accommodation	A development management policy relating to Gypsy, Traveller and Travelling Showpeople accommodation. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 20 Dwellings for rural workers	A development management policy relating to dwellings for rural workers. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 21 Extensions to, and the replacement of, dwellings in the countryside	A development management policy relating to extensions to and the replacement of dwellings in the countryside. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 22 Alterations and extensions	A development management policy relating to alterations and extensions. This policy does not itself provide for any location or quantum of residential development.	No HRA implications. There are no linking impact pathways present.
Policy DM 23 Extending the garden of a dwelling in the countryside	A development management policy relating to extensions to gardens within the countryside.	No HRA implications. There are no linking impact pathways present.
Policy DM 24 Biodiversity and geodiversity conservation and biodiversity net gain	A development management policy relating to biodiversity and geodiversity conservation and biodiversity net gain. It states: <i>“Within internationally designated sites (including candidate sites), the highest level of protection will apply. The Council will ensure that development proposals only proceed when in</i>	No HRA implications. There are no linking impact pathways present. This is a positive ‘hook’ policy within the Plan. It ensures development will not

	<i>accordance with relevant Directives, Conventions and Regulations. Where the proposed development will have an adverse effect on the integrity of a European site, planning permission will only be granted in exceptional circumstances, where there are no less ecologically damaging alternatives, there are imperative reasons of overriding public interest and where the damage can be fully compensated.”</i> Providing a ‘hook’ policy within the Plan to ensure development does not result in an adverse effect on the integrity of an international site.	result in an adverse effect on the integrity of an international site.
Policy DM 25 Conserving and enhancing valued landscapes	A development management policy relating to landscapes.	No HRA implications. There are no linking impact pathways present.
Policy DM 26 Kent Downs AONB strategy	A development management policy providing strategy for the Kent Downs AONB.	No HRA implications. There are no linking impact pathways present.
Policy DM 27 The separation of settlements – Important Local Countryside Gaps	A development management policy relating to Important Local Countryside Gaps.	No HRA implications. There are no linking impact pathways present.
Policy DM 28 Local green spaces	A development management policy relating to Local Green Space	No HRA implications. There are no linking impact pathways present.
Policy DM 29 Woodland, orchards, trees and hedgerows	A development management policy relating to woodlands, orchards, trees and hedgerows.	No HRA implications. There are no linking impact pathways present.
Policy DM 30 Agricultural land	A development management policy relating to development on agricultural land	No HRA implications. There are no linking impact pathways present.
Policy DM 31 The Coast	A development management policy relating to development near to Coast. This policy does not itself provide for any location, quantum or type of development.	No HRA implications. There are no linking impact pathways present.

Policy DM 32 Coastal change management	A development management policy relating to development on agricultural land	No HRA implications. There are no linking impact pathways present.
Policy DM 33 Air Quality	A positive development management policy relating to air quality	No HRA implications. There are no linking impact pathways present.
Policy DM 34 Pollution and Land Instability	A development management policy relating to pollution and land instability.	No HRA implications. There are no linking impact pathways present.
Policy DM 35 Water Quality and Water Resources	A positive development management policy relating to water quality and water resources.	No HRA implications. There are no linking impact pathways present.
Policy DM 36 Flood Risk	A development management policy relating to flood risk.	No HRA implications. There are no linking impact pathways present.
Policy DM 37 Sustainable Drainage	A development management policy relating to sustainable drainage.	No HRA implications. There are no linking impact pathways present.
Policy DM 38 Development Involving Listed Buildings	A development management policy relating to listed building development.	No HRA implications. There are no linking impact pathways present.
Policy DM 39 Development affecting a conservation area	A development management policy relating to development affecting a conservation area	No HRA implications. There are no linking impact pathways present.
Policy DM 40 Historic landscapes including parks and gardens	A development management policy relating to historic landscapes	No HRA implications. There are no linking impact pathways present.
Policy DM 41 Area of high townscape value	A development management policy relating to the Area of High Townscape Value.	No HRA implications. There are no linking impact pathways present.
Policy DM 42 Development affecting a	A development management policy relating to locally listed heritage assets	No HRA implications. There are no linking impact pathways

locally listed heritage asset		present.
Policy DM 43 Archaeological Heritage	A development management policy relating to archaeology heritage	No HRA implications. There are no linking impact pathways present.
POLICY DM 44 The keeping and grazing of horses	A development management policy relating to the keeping of horses and their grazing.	No HRA implications. There are no linking impact pathways present.

Appendix C Test of Likely Significant Effects: Local Plan Site Allocations

Figure C1: Location of Site Allocations

Investigations were undertaken using freely available online imagery of a site. No site visits have been undertaken. Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the allocation and an international site and the site will be subject to further discussions and appropriate assessment.

Table 7: Test of Likely Significant Effects: Local Plan Site Allocations

Site Allocation	Test of Likely Significant Effects Outcome		
	Functionally Linked Land	Disturbance to land adjacent to the site allocation	Recreational Pressure
SLA18/135: Land at Graveney Road, East of Faversham	Located 1.0km from The Swale designated sites, 8.4ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows (notably to the north looking towards The Swale) so has the potential to offer sight lines for SPA / Ramsar birds. As such the allocations could act as functionally linked land.	Land to the east of the site is a hop garden, and unsuitable to act as functionally linked land due to the hop it supports. The land parcel to the west of the site is a new residential development, well screened from the site by a mature hedgerow, and thus will not act as functionally linked land. The south of the site is bordered by the Graveney Road and arable fields (SLA18/091). There is a direct sight line between the site and these arable fields. These fields have the potential to act as functionally linked land. The site is bordered to the north by the railway line. Between the railway line and The Swale, are additional arable fields and grazing marsh and a solar farm. This land (with the exception of the solar farm) could act as functionally linked land. <i>Whilst the presence of this land does not present deliverability issues for the allocation,</i>	To provide residential development and located less than 6km from The Swale designated sites (c 1km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.

	<p><i>precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are not subject to disturbance. It is recommended that at least one season of wintering bird surveys is undertaken to inform the planning application.</i></p>		
<p>SLA18/091: Land at Lady Dane Farm</p>	<p>Located 1.1km from The Swale designated sites, 42.7ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops (c.14ha) such as cereal with the remainder providing land for fruit production (including orchards and polytunnels). It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows (notably to the north looking towards The Swale). The land used for fruit production is not considered suitable to provide functionally linked land, however the c.14ha of arable land to the north of the site has the potential offer sight lines for SPA / Ramsar birds. As such the allocation could act as functionally linked land.</p>	<p>Land to the east and west of the site is dominated by fruit growing (orchards/ hop gardens and polytunnels). A land parcel to the west is also currently being developed as housing. The south of the site is bordered by a tall mature hedgerow and the busy A2 road. There are no sight lines to the south of the site. The only land that could be considered as functionally linked land, is that to the north, beyond Graveney road (SLA18/135). <i>Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are not subject to disturbance. It is recommended that at least one season of wintering bird</i></p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 1.1km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>

	<i>surveys is undertaken to inform the planning application.</i>		
<p>SLA18/226: South Faversham</p>	<p>East</p> <p>Located 1.5km from The Swale designated sites and 131ha in size comprising multiple land parcels divided by rail lines and roads. It is situated on greenfield.</p> <p>The eastern tip of the site is dominated by arable land. However, this land parcel is bounded by tall, mature hedgerows, that limit sight lines into the wider countryside and as such is not considered to provide functionally linked land. The central section of the site is bordered to the north by the A2, the east by the railway line, the south by the M2 and the west by Selling Road. Fields within the site are arable cropped and for fruit production, many with mature hedgerow boundaries. In addition, much of the central section is surrounded by mature hedgerows, thus offering poor sight lines into the wider area. As such the central section is not considered suitable to provide significant functionally linked land. The western extent of the site is part arable crop and part fruit production. Many of the fields contain mature hedgerows, and the majority of the site is bounded by tall mature hedgerows. It is not considered suitable to support functionally linked land.</p>	<p>The site is bounded on three sides by busy roads that already provide a level of disturbance into the site. These are the M2 motorway and the A2 (the main road into Faversham from the east/ M2). The land located to the south of the M2 (which itself provides a high level of existing noise disturbance), is well screened from the wider countryside by mature hedgerows, and is a mosaic of smaller and larger fields, dominated by fruit production including within polytunnels. Fields located beyond the A2 are currently used for fruit production/ hop gardens or are well bounded by mature hedgerows that offer high levels of screening, preventing sight lines into the wider countryside. The land to the west of the site is residential development/ local household waste recycling centre or an arable field will mature hedgerows located in an urban setting. The land surrounding this allocation is not considered suitable to provide functionally linked land.</p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 1.5km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>

<p>SLA18/025: Land West of Frogmal Lane</p>	<p>Located 1.5km from The Swale designated sites, 23.9ha in size and situated in a greenfield site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. It does not appear to be in a heavily disturbed location and is not surrounded by continuous hedgerows so has the potential offer sight lines for SPA / Ramsar birds. As such the allocations could act as functionally linked land.</p>	<p>The site is located north of the A2. To the east is a band of houses along Frogmal Lane, and some development to the south along the A2 (London Road). To the North is Lower Road with a band of scrub and a rail line, along with a Frogmal Farmhouse and associated out buildings. However, to the west are open arable fields with good sight lines into the wider countryside that could potentially act as functionally linked land. <i>Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are not subject to disturbance. It is recommended that at least one season of wintering bird surveys is undertaken to inform the planning application.</i></p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 1.5km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>
<p>SLA18/123: Land at Claxfield Road (Site 2)</p>	<p>A small site allocation (0.5ha in size), located just to the north of the A2 (London Road). Due to the small size of the allocation it is not considered likely to support a significant population of SPA / Ramsar bird species on a regular basis and as such not act as significant functionally linked land.</p>	<p>This allocation is a small pocket of greenfield located in a developed location with the A2 located immediately adjacent to the north, and residential and employment land surrounding the site. It is not considered that the surrounding land parcels could act as functionally linked land.</p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 1.5km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>

<p>SLA18/122: Land at Claxfield Road (Site 1)</p>	<p>This site allocation is located to the north of the A2 and is 6ha in size. It is located 2.3km from the SPA / Ramsar site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. The north of the site is bordered by residential development; however, the wider setting is one of arable fields with open site lines into the wider countryside. As such the allocations could act as functionally linked land.</p>	<p>Whilst land to the north is residential, the surrounding fields are of an arable nature with sight lines into the wider countryside. As such surrounding lands could act as functionally linked land to support SPA / Ramsar bird species. <i>Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are not subject to disturbance. It is recommended that at least one season of wintering bird surveys is undertaken to inform the planning application.</i></p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 2.3km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>
<p>SLA18/116: Land South of London Road/West of Lynsted Lane</p>	<p>This site allocation is located to the north of the A2 and is 6.3ha in size. It is located 2.3km from the SPA / Ramsar site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. The north of the site is bordered by residential development. The site is bounded on all sides by hedgerows, thus restricting sight lines into the wider countryside. As such, this site is not considered suitable to support a significant population of SPA / Ramsar birds and is not considered likely to provide significant functionally linked land.</p>	<p>Whilst land to the north is residential, the surrounding fields are of an arable nature with sight lines into the wider countryside. As such surrounding lands could act as functionally linked land to support SPA / Ramsar bird species. <i>Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development may be required, following planning application surveys, to ensure any birds that do form a significant population of The Swale are</i></p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 2.3km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>

		<p><i>not subject to disturbance. It is recommended that at least one season of wintering bird surveys is undertaken to inform the planning application.</i></p>	
<p>SLA18/153: Land south of Dover Castle Inn, A2 London Road/Cellar Hill</p>	<p>A small site allocation (1.4ha in size), located to the north of the A2 (London Road). Due to the small size of the allocation it is not considered likely to support a significant population of SPA / Ramsar bird species on a regular basis and as such is unlikely to act as significant functionally linked land.</p>	<p>The land immediately surrounding the site allocation is either residential or are typically small fields (less than 2ha in size) with mature hedgerows (and thus poor sight lines), that would not be considered to provide functionally linked land.</p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 2.3km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>
<p>SLA18/106: Land at Barrow Green Farm, London Road</p>	<p>This site allocation is located to the north of the A2 and south of the rail line and is 13.2ha in size. It is located 1.4km from the SPA / Ramsar site. From review of freely available online imagery, the current use of the site is for arable crops such as cereal. All sides of the site are bordered by either residential or employment development, with the exception of the eastern boundary which open to additional arable land. However, much of this boundary is screened from the wider countryside by a hedgerow, thus offering poor site lines. The site also appears to contain public rights of way that would add a level of disturbance to the site. As such it is considered to have low potential to support a significant population of SPA / Ramsar birds, and is</p>	<p>Whilst land to the east of the site is a large arable field that could potentially act as functionally linked land, the field is bordered by hedgerows, thus offering poor visibility into the wider countryside. It is not considered to act as functionally linked land to SPA/ Ramsar bird features.</p>	<p>To provide residential development and located less than 6km from The Swale designated sites (c 1.4km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p>

	not considered likely to provide significant functionally linked land.		
<p>SLA18/154: Land at Lamberhurst Farm (EMPLOYMENT USE)</p>	<p>This site allocation is located to the south of the A2 and north of the Thanet Way and is 22.5ha in size. It is located 0.8km from the SPA / Ramsar site. From review of freely available online imagery, the current use of the site is for arable crops, grazing pasture, existing employment and residential land. Much of the site is already subject to levels of disturbance associated with the existing residential and employment use of the central portion of the site. The largest field appears to contain site lines towards the north and The Swale, however it is in close proximity to additional residential development. In addition, the land to the north east and south east is owned by The Woodland Trust and provides additional recreational facilities associated with Victory Wood, and thus is likely to be subject to levels of disturbance. Due to the existing levels of disturbance within and surrounding the site, it is considered that this allocation is unlikely to provide significant functionally linked land associated with the SPA / Ramsar site.</p>	<p>Land to the north east and south is Victory Wood which is owned by the Woodland Trust. It has been subject to extensive woodland planting since 2004 and is used for recreational activities such as walking and dog walking. As such, this land parcel is not considered suitable to act as functionally linked land. Land to the south west of the site appears to comprise a matrix of smaller fields bounded by mature hedgerows, and thus unsuitable to support functionally linked land. The field located to the west between the site and Plumpudding Lane appears to be bounded to the north by mature hedgerows, thus offering poor sight lines to The Swale. It is considered unsuitable to support functionally linked land.</p>	<p>This site is to provide employment space only. As such recreational pressures are not pertinent.</p>
<p>SLA18/113: Land at The Port of Sheerness,</p>	<p>A large site allocation (149ha), that contains a portion of the Medway Estuary and Marshes international sites (Medway</p>	<p>Much of the site allocation is located immediately adjacent to the Medway Estuary and Marshes international site</p>	<p>To provide residential development and located less than 6km from The Swale</p>

<p>Rushenden Road</p>	<p>Estuary and Marshes SSSI Unit 58). The site allocation itself includes coastal floodplain and grazing marsh. As such, the site allocation is considered to have the potential to act as functionally linked land. To support the allocation of this site, non-breeding waterbird surveys were undertaken over three consecutive winter seasons (2015/2016, 2016/2017, 2017/2018).</p> <p>The survey identifies that the majority of the site allocation (The Site within the non-breeding waterbird report) does not support a significant population of designated bird features (in fact no birds features were recorded within the main body of the site), and thus does not act as functionally linked land. However, two small portions of the site (identified as Section C and I in the non-breeding waterbird report⁸¹) which are included within the site allocation boundary do in fact contain significant bird populations and that these portions of land do act as functionally linked land.</p> <p>Section C provides functionally linked land for grey plover (up to 93 individual/ 17.19% of the population in 2016/2017), redshank (up to 43 individuals / 13.69% of the population in 2015/ 2016) and</p> <p>(with the exception of the eastern extent that is located adjacent to housing and green space. As such there is the potential for disturbances stemming from the site allocation affecting the internationally designated site.</p> <p><i>Whilst the presence of this land does not present deliverability issues for the allocation, precautionary measures during the construction and operational phase of the development will be required.</i></p>	<p>designated sites (contains a portion of the designated site), as such contribution towards the Bird Wise North Kent Mitigation Strategy.</p> <p>Coastal Squeeze:</p> <p>Due to the location of this allocation immediately abject to Medway Estuary and Marshes designated site and also its inclusion of a portion of the internationally designated site, depending on the final masterplan, coastal squeeze could be an impact pathway that could affect the internationally designated site.</p>
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⁸¹ Royal HaskoningDHV (2020). Non-breeding waterbird interest at Rushenden.

shelduck (up to 95 individuals / 2.57% of the population in 2017/2018). The report notes that the habitat at Section C is 'mudflats' so can be considered unlikely to be built upon, however, Section C will require consideration within the masterplanning and project specific HRA. It is not anticipated that the presence of birds within Section C will provide deliverability issues to this allocation.

Section I provides functionally linked land for redshank (up to 5 individuals / 1.59% of the population). The report identified that the habitat within this section is wet, containing sedges and 'marginal pools'. Whilst no specified area is available for Section I, it constitutes a relatively small section of the site, so it is not considered that the presence of functionally linked land within this section would provide unresolvable deliverability issues for this allocation. It is noted that the presence of the functionally linked land in Section I would require consideration within the masterplanning and project specific HRA.

It is noted that **Section H** forms part of the international designation site and is located within the site allocation boundary. However, the non-breeding waterbird survey did not record any designated bird features within this section. None-the-less, due to its

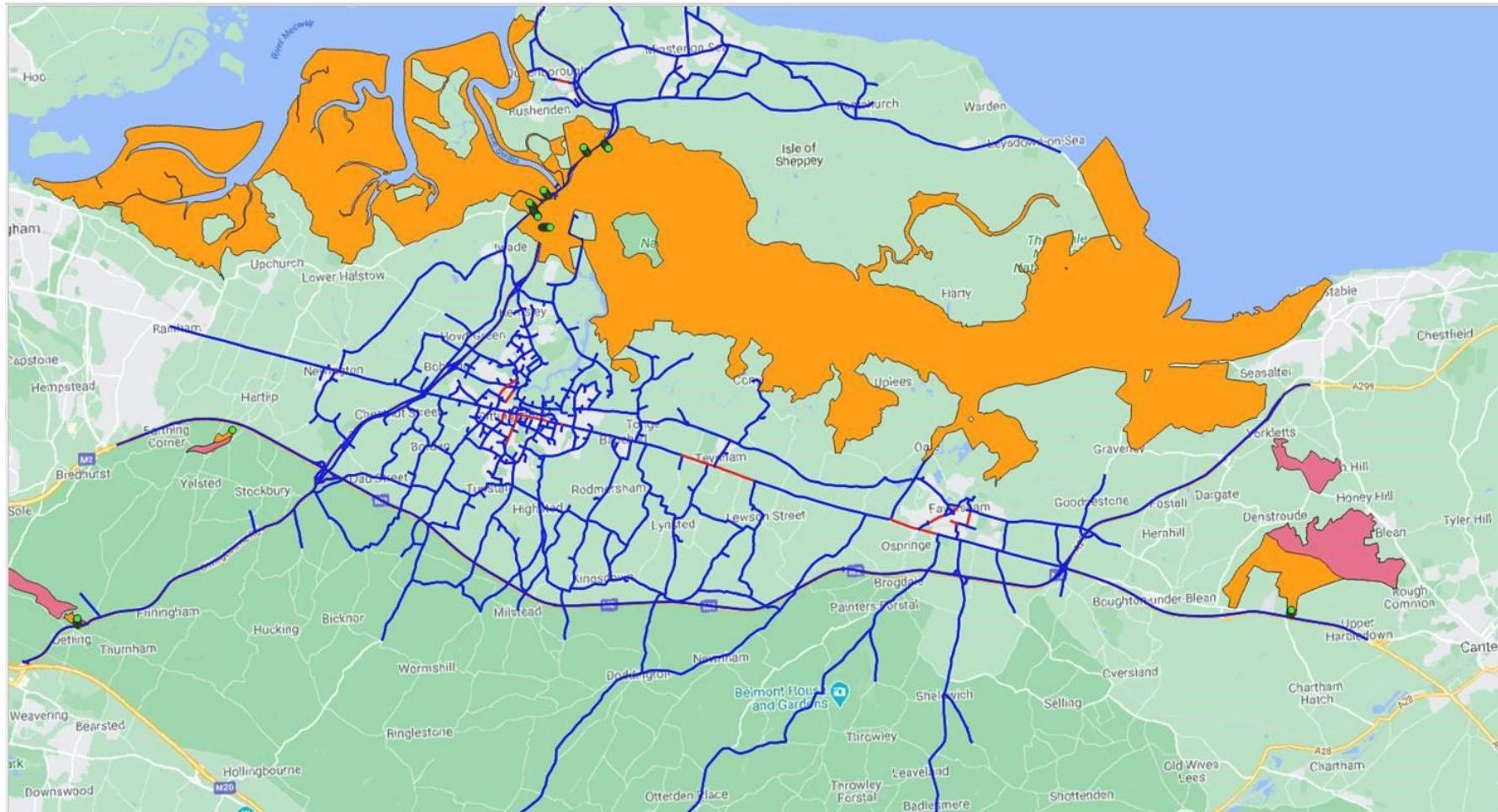
	international designation, Section H will require consideration within the masterplanning and project specific HRA. Its presence is unlikely to provide any deliverability issues for this allocation.		
SLA18/010: Land at Cellar Hill	A small site allocation (0.5ha in size), located to the north of the A2 (London Road). Due to the small size of the allocation it is not considered likely to support a significant population of SPA / Ramsar bird species on a regular basis and as such not act as functionally linked land.	The site is located on the edge of an urban area with residential development to the north, west and south. However, the land to the east of the site is a large arable field. This field has mature hedgerows along much of its boundary, and as such is not considered to act as functionally linked land.	To provide residential development and located less than 6km from The Swale designated sites (c 2.3km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.
SLA18/178: Preston Fields, Canterbury Road, Faversham	Located 1.6km from The Swale designated sites and 14.3ha in size in size and situated in a greenfield site. To the north, east and west the site is bordered by residential / employment development. The south and south east of the site is adjacent to a small paddock and a larger arable field. However, the allocation is bounded by hedgerows, thus offering poor sight lines into the wider countryside. The slightly disturbed setting, and the poor sight lines of the site indicate it has a low likelihood of being significant functionally linked land.	Land to the north is urban development along the A2 (London Road). To the west is residential development along the A251 (Ashford Road), and to the north east is the Faversham Household Waste Recycling Centre. The south east of the site is bordered by a large arable field; however, a hedgerow exists precluding sight lines into the site. The south is adjacent to a small grazed meadow that is also well enclosed with mature hedgerows/ trees. As such, it is not considered that land adjacent to the site is likely to act as functionally linked land.	To provide residential development and located less than 6km from The Swale designated sites (c 1.6km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.
SLA18/096: Land East of Selling Road (2)	Located 5.6km from The Swale designated sites and 1.0ha in size. From review of freely available online imagery, current land use appears to be for fruit	The site is located within an area of fruit production (including orchards), on the edge of urban development which make the surrounding land unsuitable to act as	To provide residential development and located less than 6km from The Swale designated sites (c 5.6km), as

	production. The site is located adjacent to residential development. Current land use, location, distance from the SPA and the small size of the site render this site unlikely to constitute significant functionally linked land.	functionally linked land.	such contribution towards the Bird Wise North Kent Mitigation Strategy.
SLA18/094: Land East of Selling Road	Located 5.6km from The Swale designated sites and 0.5ha in size. From review of freely available online imagery, current land use appears to be for fruit production. The site is located adjacent to residential development. Current land use, distance from the SPA, location, and the small size of the site render it unlikely that this site would constitute significant functionally linked land.	The site is located within an area of fruit production (including orchards), on the edge of urban development which make the surrounding land unsuitable to act as functionally linked land.	To provide residential development and located less than 6km from The Swale designated sites (c 5.6km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.
SLA18/093: Land Adjacent Monica Close	Located 5.6km from The Swale designated sites and 0.7ha in size. From review of freely available online imagery, current land use appears to be for fruit production. The site is located adjacent to residential development. Current land use, location, distance from the SPA, and the small size of the site render this site unlikely to constitute significant functionally linked land.	The site is located within an area of fruit production (including orchards), on the edge of urban development which make the surrounding land unsuitable to act as functionally linked land.	To provide residential development and located less than 6km from The Swale designated sites (c 5.6km), as such contribution towards the Bird Wise North Kent Mitigation Strategy.
SLA18/150 Former Garden Hotel, The Street, Boughton	Located 3.4km from The Swale designated sites and 0.7ha in size. From review of freely available online imagery, current land use appears to be the disused hotel site, brownfield land	The site is located within an urban setting. The surrounding land are gardens hat are well screened with tree/hedge lines limiting sightlines into the wider countryside. or the area of fruit	To provide residential development and located less than 6km from The Swale designated sites (c 3.2km), as such contribution towards the

	<p>containing scrub and hardstanding. The site is located in an urban setting with mature vegetated boundaries, limiting sightlines into the wider countryside. Current land use, location, distance from the SPA, and the small size of the site render this site unlikely to constitute significant functionally linked land.</p>	<p>production (including orchards), on the edge of urban development which make the surrounding land unsuitable to act as functionally linked land.</p> <p>Bird Wise North Kent Mitigation Strategy.</p>
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Appendix D Air Quality Data (provided by SWECO)

Figure D1: Location of the Swale affected road network and the air quality modelling transect locations



Orange shading indicates a nitrogen dose exceeding 1% of the critical load

Receptor ID	X	Y	Base 2017	Reference Case 2037	Projected Baseline 2037	LDP 1054
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			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
Medway_Estuary_01	590813.3	168851.3	21.4	26.9	14.2	26.8	13.3	26.7	14.2	26.8	0.1	0.0
Medway_Estuary_02	590806.8	168858.9	21.2	26.9	14.0	26.8	13.2	26.7	13.9	26.8	0.1	0.0
Medway_Estuary_03	590800.3	168866.5	21.1	26.9	13.9	26.8	13.1	26.7	13.8	26.8	0.1	0.0
Medway_Estuary_04	590793.8	168874.1	21.0	26.9	13.8	26.8	13.1	26.7	13.7	26.8	0.0	0.0
Medway_Estuary_05	590787.3	168881.7	20.9	26.9	13.8	26.8	13.0	26.7	13.6	26.7	0.0	0.0
Medway_Estuary_06	590780.8	168889.3	20.8	26.9	13.7	26.8	13.0	26.7	13.6	26.7	0.0	0.0
Medway_Estuary_07	590774.3	168896.9	20.8	26.9	13.7	26.8	13.0	26.7	13.5	26.7	0.0	0.0
Medway_Estuary_08	590767.8	168904.5	20.7	26.9	13.7	26.8	13.0	26.7	13.5	26.7	0.0	0.0
Medway_Estuary_09	590761.3	168912.1	20.7	26.8	13.6	26.7	13.0	26.7	13.5	26.7	0.0	0.0
Medway_Estuary_10	590754.8	168919.8	20.6	26.8	13.6	26.7	12.9	26.7	13.4	26.7	0.0	0.0
Medway_Estuary_11	590748.3	168927.3	20.6	26.8	13.6	26.7	12.9	26.7	13.4	26.7	0.0	0.0
Medway_Estuary_12	590741.8	168935	20.5	26.8	13.5	26.7	12.9	26.7	13.4	26.7	0.0	0.0
Medway_Estuary_13	590735.3	168942.6	20.5	26.8	13.5	26.7	12.9	26.7	13.4	26.7	0.0	0.0

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_14	590728.8	168950.2	20.5	26.8	13.5	26.7	12.9	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_15	590722.4	168957.8	20.4	26.8	13.5	26.7	12.9	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_16	590715.9	168965.4	20.4	26.8	13.5	26.7	12.8	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_17	590709.4	168973	20.4	26.8	13.4	26.7	12.8	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_18	590702.9	168980.6	20.3	26.8	13.4	26.7	12.8	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_19	590696.4	168988.2	20.3	26.8	13.4	26.7	12.8	26.7	13.3	26.7	0.0	0.0
Medway_Estuary_20	590689.9	168995.8	20.3	26.8	13.4	26.7	12.8	26.7	13.2	26.7	0.0	0.0
Medway_Estuary_Transect_2_01	591151	169163.8	35.7	27.9	22.1	27.4	18.4	27.1	21.0	27.3	0.2	-0.1
Medway_Estuary_Transect_2_02	591144.9	169171.8	32.3	27.7	20.4	27.2	17.2	27.0	19.4	27.2	0.2	-0.1

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_2_03	591138.9	169179.7	30.3	27.5	19.2	27.2	16.5	27.0	18.4	27.1	0.1	-0.1
Medway_Estuary_Transect_2_04	591132.8	169187.7	28.8	27.4	18.4	27.1	15.9	26.9	17.6	27.0	0.1	-0.1
Medway_Estuary_Transect_2_05	591126.8	169195.7	27.7	27.3	17.7	27.0	15.5	26.9	17.1	27.0	0.1	0.0
Medway_Estuary_Transect_2_06	591120.8	169203.6	26.9	27.3	17.2	27.0	15.2	26.9	16.6	27.0	0.1	0.0
Medway_Estuary_Transect_2_07	591114.7	169211.6	26.2	27.2	16.8	27.0	15.0	26.8	16.3	26.9	0.1	0.0
Medway_Estuary_Transect_2_08	591108.6	169219.5	25.6	27.2	16.5	27.0	14.7	26.8	16.0	26.9	0.1	0.0
Medway_Estuary_Transect_2_09	591102.6	169227.5	25.1	27.1	16.2	26.9	14.5	26.8	15.7	26.9	0.1	0.0

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_2_10	591096.5	169235.5	24.7	27.1	15.9	26.9	14.4	26.8	15.5	26.9	0.1	0.0
Medway_Estuary_Transect_2_11	591090.4	169243.4	24.3	27.1	15.7	26.9	14.2	26.8	15.3	26.9	0.1	0.0
Medway_Estuary_Transect_2_12	591084.4	169251.4	24.0	27.1	15.5	26.9	14.1	26.8	15.1	26.9	0.1	0.0
Medway_Estuary_Transect_2_13	591078.3	169259.3	23.7	27.0	15.3	26.9	14.0	26.8	14.9	26.8	0.1	0.0
Medway_Estuary_Transect_2_14	591072.3	169267.3	23.5	27.0	15.2	26.9	13.9	26.8	14.8	26.8	0.1	0.0
Medway_Estuary_Transect_2_15	591066.3	169275.2	23.3	27.0	15.0	26.8	13.8	26.8	14.7	26.8	0.1	0.0
Medway_Estuary_Transect_2_16	591060.2	169283.2	23.1	27.0	14.9	26.8	13.8	26.8	14.6	26.8	0.1	0.0

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_2_17	591054.1	169291.2	22.9	27.0	14.8	26.8	13.7	26.7	14.5	26.8	0.06	-0.02
Medway_Estuary_Transect_2_18	591048.1	169299.1	22.7	27.0	14.7	26.8	13.6	26.7	14.4	26.8	0.06	-0.02
Medway_Estuary_Transect_2_19	591042	169307.1	22.6	27.0	14.6	26.8	13.6	26.7	14.3	26.8	0.05	-0.02
Medway_Estuary_Transect_3_01	592139	170235.2	44.5	28.5	28.7	27.8	22.4	27.4	27.4	27.7	0.35	-0.09
Medway_Estuary_Transect_3_02	592132.9	170243.2	38.1	28.0	24.7	27.5	19.8	27.2	23.7	27.5	0.27	-0.07
Medway_Estuary_Transect_3_03	592126.9	170251.1	34.4	27.8	22.3	27.4	18.4	27.1	21.5	27.3	0.22	-0.05
Medway_Estuary_Transect_3_04	592120.9	170259.1	31.9	27.6	20.7	27.2	17.4	27.0	20.0	27.2	0.19	-0.05

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_3_05	592114.9	170267.1	30.1	27.5	19.6	27.2	16.7	27.0	19.0	27.1	0.17	-0.04
Medway_Estuary_Transect_3_06	592108.8	170275.1	28.8	27.4	18.7	27.1	16.2	26.9	18.2	27.1	0.15	-0.04
Medway_Estuary_Transect_3_07	592102.8	170283.1	27.7	27.3	18.1	27.1	15.7	26.9	17.6	27.0	0.13	-0.03
Medway_Estuary_Transect_3_08	592096.8	170291	26.9	27.3	17.5	27.0	15.4	26.9	17.1	27.0	0.12	-0.03
Medway_Estuary_Transect_3_09	592090.8	170299	26.2	27.2	17.1	27.0	15.1	26.8	16.7	27.0	0.11	-0.03
Medway_Estuary_Transect_3_10	592084.7	170307	25.6	27.2	16.7	27.0	14.9	26.8	16.3	26.9	0.11	-0.03
Medway_Estuary_Transect_3_11	592078.7	170315	25.1	27.1	16.4	26.9	14.7	26.8	16.0	26.9	0.10	-0.03

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_3_12	592072.6	170322.9	24.7	27.1	16.1	26.9	14.5	26.8	15.8	26.9	0.09	-0.03
Medway_Estuary_Transect_3_13	592066.6	170330.9	24.3	27.1	15.9	26.9	14.4	26.8	15.6	26.9	0.09	-0.02
Medway_Estuary_Transect_3_14	592060.6	170338.9	24.0	27.1	15.7	26.9	14.3	26.8	15.4	26.9	0.08	-0.02
Medway_Estuary_Transect_3_15	592054.6	170346.9	23.7	27.0	15.5	26.9	14.1	26.8	15.2	26.9	0.08	-0.02
Medway_Estuary_Transect_3_16	592048.6	170354.8	23.5	27.0	15.3	26.9	14.0	26.8	15.0	26.8	0.07	-0.02
Medway_Estuary_Transect_3_17	592042.5	170362.8	23.2	27.0	15.2	26.9	13.9	26.8	14.9	26.8	0.07	-0.02
Medway_Estuary_Transect_3_18	592036.5	170370.8	23.0	27.0	15.0	26.8	13.9	26.8	14.8	26.8	0.07	-0.02

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Medway_Estuary_Transect_3_19	592030.4	170378.8	22.9	27.0	14.9	26.8	13.8	26.7	14.7	26.8	0.06	-0.02
Queendown_Warren_01	583257.8	163320.4	32.0	27.0	17.8	26.8	17.4	26.8	17.8	26.8	0.03	0.00
Queendown_Warren_02	583254.6	163311	31.7	27.0	17.7	26.8	17.3	26.8	17.7	26.8	0.03	0.00
The_Swale_01	590788.9	168787.9	21.2	26.9	14.0	26.8	13.2	26.7	13.9	26.8	0.06	-0.01
The_Swale_02	590795.4	168780.3	21.1	26.9	13.9	26.8	13.1	26.7	13.8	26.8	0.05	-0.01
The_Swale_03	590801.9	168772.6	21.1	26.9	13.9	26.8	13.1	26.7	13.8	26.8	0.05	-0.01
The_Swale_04	590808.3	168765	21.1	26.9	13.9	26.8	13.1	26.7	13.8	26.8	0.05	-0.01
The_Swale_05	590814.8	168757.4	21.2	26.9	14.0	26.8	13.2	26.7	13.8	26.8	0.05	-0.01
The_Swale_06	590821.3	168749.8	21.2	26.9	14.0	26.8	13.2	26.7	13.8	26.8	0.04	-0.01
The_Swale_07	590827.8	168742.1	21.3	26.9	14.0	26.8	13.2	26.7	13.8	26.8	0.05	-0.01
The_Swale_08	590834.3	168734.5	21.4	26.9	14.1	26.8	13.2	26.7	13.9	26.8	0.04	-0.01
The_Swale_09	590840.3	168726.6	21.4	26.9	14.1	26.8	13.3	26.7	13.9	26.8	0.05	-0.02

Receptor ID	X	Y	Base 2017		Reference Case 2037		Projected Baseline 2037		LDP 1054		LDP1054-Future Baseline (in combination nitrogen dose)	LDP1054-Reference Case (contribution of Swale Local Plan to nitrogen)
			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
The_Swale_10	7 590847.	9 168719. 2 3	21.5	26.9	14.1	26.8	13.3	26.7	13.9	26.8	0.05	-0.02
The_Swale_11	590853.	168711. 6 7	21.6	26.9	14.2	26.8	13.3	26.7	14.0	26.8	0.05	-0.02
The_Swale_12	590860. 1	168704	21.7	26.9	14.3	26.8	13.4	26.7	14.0	26.8	0.05	-0.02
The_Swale_13	590866.	168696. 6 4	21.8	26.9	14.3	26.8	13.4	26.7	14.1	26.8	0.05	-0.02
The_Swale_14	590873.	168688. 1 8	22.0	26.9	14.4	26.8	13.5	26.7	14.2	26.8	0.05	-0.02
The_Swale_15	590879.	168681. 6 2	22.1	27.0	14.5	26.8	13.5	26.7	14.2	26.8	0.05	-0.02
The_Swale_16	590886 590892.	168673. 5 168665.	22.2	27.0	14.6	26.8	13.6	26.7	14.3	26.8	0.05	-0.02
The_Swale_17	590898.	168658. 5 9	22.4	27.0	14.7	26.8	13.6	26.7	14.4	26.8	0.05	-0.02
The_Swale_18	590898.	168658. 9 3	22.6	27.0	14.8	26.8	13.7	26.8	14.5	26.8	0.06	-0.02
The_Swale_19	590905.	168650. 4 7	22.8	27.0	14.9	26.8	13.8	26.8	14.6	26.8	0.06	-0.02
The_Swale_Transect_2_01	590998.	168395. 6 4	125.3	33.0	75.7	30.6	54.1	29.4	69.9	30.3	0.90	-0.31

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			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
The_Swale_Transect_2_02	591008.6	168394.3	93.6	31.3	56.9	29.5	41.8	28.6	52.8	29.3	0.68	-0.24
The_Swale_Transect_2_03	591018.5	168393.3	62.8	29.6	38.6	28.4	29.8	27.8	36.2	28.3	0.43	-0.16
The_Swale_Transect_2_04	591028.4	168392.2	50.4	28.8	31.3	27.9	24.9	27.5	29.5	27.8	0.32	-0.12
The_Swale_Transect_2_05	591038.4	168391.1	43.7	28.4	27.2	27.7	22.3	27.3	25.9	27.6	0.25	-0.09
The_Swale_Transect_2_06	591048.3	168390.1	39.4	28.1	24.7	27.5	20.6	27.2	23.6	27.4	0.21	-0.08
The_Swale_Transect_2_07	591058.3	168389	36.5	27.9	23.0	27.4	19.5	27.1	22.0	27.3	0.18	-0.07
The_Swale_Transect_2_08	591068.2	168388	34.3	27.7	21.7	27.3	18.6	27.0	20.9	27.2	0.16	-0.06
The_Swale_Transect_2_09	591078.1	168386.9	32.7	27.6	20.7	27.2	18.0	27.0	20.0	27.1	0.15	-0.05
The_Swale_Transect_2_10	591088.1	168385.9	31.4	27.5	20.0	27.1	17.5	27.0	19.3	27.1	0.13	-0.05
The_Swale_Transect_2_11	591098.1	168384.8	30.4	27.4	19.3	27.1	17.1	26.9	18.7	27.1	0.12	-0.04
The_Swale_Transect_2_12	591108	168383.7	29.5	27.4	18.8	27.1	16.7	26.9	18.3	27.0	0.11	-0.04

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			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
The_Swale_Transect_2_13	591117.9	168382.7	28.8	27.3	18.4	27.0	16.4	26.9	17.9	27.0	0.11	-0.04
The_Swale_Transect_2_14	591127.9	168381.6	28.2	27.3	18.0	27.0	16.2	26.9	17.6	27.0	0.10	-0.03
The_Swale_Transect_2_15	591137.8	168380.6	27.7	27.3	17.7	27.0	16.0	26.9	17.3	27.0	0.09	-0.03
The_Swale_Transect_2_16	591147.8	168379.5	27.2	27.2	17.4	27.0	15.8	26.8	17.0	26.9	0.09	-0.03
The_Swale_Transect_2_17	591157.7	168378.5	26.8	27.2	17.2	26.9	15.7	26.8	16.8	26.9	0.08	-0.03
The_Swale_Transect_2_18	591167.6	168377.4	26.4	27.2	17.0	26.9	15.5	26.8	16.6	26.9	0.08	-0.03
The_Swale_Transect_2_19	591177.6	168376.3	26.1	27.1	16.8	26.9	15.4	26.8	16.4	26.9	0.08	-0.03
The_Swale_Transect_2_20	591187.6	168375.3	25.8	27.1	16.6	26.9	15.3	26.8	16.3	26.9	0.07	-0.03
The_Swale_Transect_2_21	591197.5	168374.2	25.6	27.1	16.5	26.9	15.2	26.8	16.1	26.9	0.07	-0.03
The_Swale_Transect_3_01	592550.9	170488.1	45.8	15.3	30.8	14.6	22.8	14.1	28.4	14.5	0.39	-0.16
The_Swale_Transect_3_02	592557.1	170480.2	38.8	14.8	25.5	14.3	19.9	13.9	24.0	14.2	0.29	-0.10

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			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
The_Swale_Transect_3_03	592563.3	170472.3	34.8	14.5	22.7	14.1	18.4	13.8	21.6	14.0	0.23	-0.08
The_Swale_Transect_3_04	592569.5	170464.5	32.2	14.3	21.0	14.0	17.4	13.7	20.1	13.9	0.19	-0.06
The_Swale_Transect_3_05	592575.7	170456.6	30.4	14.2	19.7	13.9	16.6	13.7	19.0	13.8	0.17	-0.05
The_Swale_Transect_3_06	592581.9	170448.8	29.0	14.1	18.8	13.8	16.1	13.6	18.2	13.8	0.15	-0.05
The_Swale_Transect_3_07	592588.1	170441.1	27.9	14.0	18.1	13.8	15.7	13.6	17.5	13.7	0.13	-0.04
The_Swale_Transect_3_08	592594.3	170433.1	27.1	14.0	17.5	13.7	15.3	13.6	17.0	13.7	0.12	-0.04
The_Swale_Transect_3_09	592600.4	170425.3	26.4	13.9	17.1	13.7	15.1	13.5	16.6	13.7	0.11	-0.03
The_Swale_Transect_3_10	592606.7	170417.4	25.8	13.9	16.7	13.7	14.8	13.5	16.3	13.6	0.10	-0.03
The_Swale_Transect_3_11	592612.9	170409.6	25.3	13.8	16.4	13.6	14.6	13.5	16.0	13.6	0.10	-0.03
The_Swale_Transect_3_12	592619.1	170401.7	24.8	13.8	16.1	13.6	14.5	13.5	15.7	13.6	0.09	-0.03
The_Swale_Transect_3_13	592625.3	170393.9	24.5	13.8	15.9	13.6	14.3	13.5	15.5	13.6	0.09	-0.03

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The_Swale_Transect_3_14	592631.4	170386	24.1	13.8	15.6	13.6	14.2	13.5	15.3	13.6	0.08	-0.02
The_Swale_Transect_3_15	592637.6	170378.2	23.8	13.7	15.5	13.6	14.1	13.5	15.1	13.5	0.08	-0.02
The_Swale_Transect_3_16	592643.8	170370.3	23.6	13.7	15.3	13.6	14.0	13.5	15.0	13.5	0.07	-0.02
The_Swale_Transect_3_17	592650	170362.5	23.4	13.7	15.1	13.5	13.9	13.5	14.9	13.5	0.07	-0.02
The_Swale_Transect_3_18	592656.3	170354.6	23.1	13.7	15.0	13.5	13.8	13.5	14.7	13.5	0.07	-0.02
The_Swale_Transect_3_19	592662.4	170346.8	23.0	13.7	14.9	13.5	13.8	13.4	14.6	13.5	0.06	-0.02
Wouldham_01	579403	158454	57.7	32.5	30.4	29.9	27.1	29.4	30.8	29.9	0.51	0.05
Wouldham_02	579403	158464	49.7	31.5	26.7	29.3	24.1	29.0	26.9	29.4	0.41	0.04
Wouldham_03	579402	158474	44.7	30.8	24.3	29.0	22.1	28.7	24.5	29.0	0.34	0.03
Wouldham_04	579402	158484	41.2	30.3	22.6	28.8	20.8	28.5	22.8	28.8	0.29	0.03
Wouldham_05	579401	158494	38.6	29.9	21.4	28.6	19.8	28.3	21.6	28.6	0.26	0.02
Wouldham_06	579401	158504	36.6	29.7	20.5	28.4	19.1	28.2	20.6	28.5	0.23	0.02
Wouldham_07	579400	158514	35.0	29.4	19.7	28.3	18.5	28.1	19.9	28.3	0.21	0.02
Wouldham_08	579400	158524	33.8	29.3	19.1	28.2	18.0	28.1	19.2	28.3	0.19	0.02
Wouldham_09	579399	158534	32.7	29.1	18.6	28.2	17.6	28.0	18.7	28.2	0.17	0.01
Wouldham_10	579399	158544	31.8	29.0	18.2	28.1	17.2	27.9	18.3	28.1	0.16	0.01
Wouldham_11	579398	158554	31.0	28.9	17.8	28.0	16.9	27.9	17.9	28.1	0.15	0.01

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			Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)	Annual Mean NOx ($\mu\text{g}/\text{m}^3$)	Total N Deposition (kg N/ha/Yr)		
Wouldham_12	579398	158564	30.4	28.8	17.5	28.0	16.7	27.9	17.6	28.0	0.14	0.01
Wouldham_13	579397	158574	29.8	28.7	17.3	28.0	16.4	27.8	17.3	28.0	0.13	0.01
Wouldham_14	579397	158584	29.3	28.6	17.0	27.9	16.3	27.8	17.1	27.9	0.12	0.01
Wouldham_15	579396	158594	28.8	28.5	16.8	27.9	16.1	27.8	16.9	27.9	0.12	0.01
Wouldham_16	579395.9	158603.9	28.4	28.5	16.6	27.9	15.9	27.8	16.7	27.9	0.11	0.01
Wouldham_17	579395.5	158613.9	28.0	28.4	16.4	27.8	15.8	27.7	16.5	27.8	0.10	0.01
Wouldham_18	579395	158623.9	27.7	28.4	16.3	27.8	15.6	27.7	16.3	27.8	0.10	0.01

