dha environment

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Appendix 10.2

Habitats Regulation Assessment

The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

October 2018 - Post Deadline Four Version (tracked changes)

PINS Ref: EN010090

KEMSLEY K4 CHP, KEMSLEY PAPER MILL, SITTINGBOURNE, KENT:

HABITATS REGULATIONS ASSESSMENT REPORT

KEMSLEY K4 CHP, KEMSLEY PAPER MILL, SITTINGBOURNE, KENT:

HABITATS REGULATIONS ASSESSMENT REPORT

~~June~~ ~~August~~October 2018

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1 INTRODUCTION

1.1 The need for an Appropriate Assessment is set out in Article 6(3) of the Habitats Directive and interpreted into British law by Regulation 48 of the Conservation of Species and Habitats Regulations (2017) (Table 1.1).

Table 1.1: Legislative Basis for a Habitats Regulations Assessment

The legislative basis for Habitat Regulations Assessment		
Habitats Directive	Article 6(3)	Any plan or project not directly connected with or necessary to the management of a Special Protection Area (SPA) or Special Area of Conservation (SAC) but likely to have a significant effect thereon, either individually or in-combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.
Habitats Regulations	Regulation 48	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

1.2 The Habitats Directive applies the precautionary principle to relevant designated areas, in so much as plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of a SPA or SAC, collectively termed Natura 2000 sites. This is in contrast to Environmental Impact Assessment requirements where the findings (as documented in an Environmental Statement) should be 'taken into account' during preparation of the plan or project.

1.3 Under Government advice, Proposed SPAs (pSPA) should also be treated as having protection under the Habitats Regulations.

1.4 It is Government policy (as outlined in Section 118 of the National Planning Policy Framework) for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to Natura 2000 sites. As such, information to inform an Appropriate Assessment needs to cover features of any relevant Ramsar site.

1.5 In undertaking an assessment, competent authorities (in this case the appropriate Secretary of State) must have regard to both direct and indirect effects on an interest feature of the Natura 2000 site, as well as cumulative effects. This may include consideration of features and issues outside the boundary of a Natura 2000 site. The Department for Communities and Local Government and Planning Inspectorate guidance states that an assessment should be proportionate to the geographical scope of the plan or project and that it need not be done in any more detail, or using more resources, than is useful for its purpose (DCLG, 2006; Planning Inspectorate (PINS), 2016).

1.6 Plans and projects for which it is not possible to conclude that there would be no adverse effect on the integrity of Natura 2000 sites may still be permitted if there are no alternatives 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.

2 SCOPE AND OBJECTIVES

2.1 Whilst it is the responsibility of the competent authority to determine whether it can be concluded there is no adverse effect, it is the responsibility of applicants to submit sufficient information to enable such a determination to be made.

2.2 The purpose of this report is therefore to collate and provide sufficient information to enable the Secretary of State to undertake a Habitat Regulations Assessment (HRA) of the potential effects of the DCO application for land at Kemsley on the Natura 2000 network. It draws upon information within the Environmental Statement, notably Chapter 10 Ecology, but purposely does not repeat the detail contained within the Environmental Statement. Instead, it provides sufficient standalone information, with references to other more detailed sections where necessary, for the Secretary of State to be able to make an informed decision on the potential effects of the proposed development on Natura 2000 sites.

2.3 The following sites should be included in the scope of a Habitats Regulations Assessment:

- All Natura 2000 sites shown to be linked to the proposed development through a known 'pathway'.

2.4 The key activities in the development programme are:

- Site preparation and enabling works;
- Piling (method TBC, assume at this stage percussive impact) to establish appropriate foundations;
- Main construction;
- Commissioning of the CHP; and
- Decommissioning.

2.5 As set out in Chapter 2 of the ES, decommissioning will comprise the rendering inoperable of the K1 facility through the removal of key plant and equipment. Given this low-level of activity necessary to render the plant inoperable, it is not expected to have any negative likely significant effects on any Natura 2000 site; indeed, it would be somewhat positive due to the removal of emissions from K1. On this basis, the activity of decommissioning of K1 is not considered further within this HRAR.

2.6 No Natura 2000 sites or Ramsar sites lie wholly or partly within the boundary of the area covered by the DCO application. The locations of the Nature 2000 sites in relation to the application boundary can be seen in Figures 10.1a – 10.1~~mh~~ of the ES.

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2.~~5~~2.7 Based on the nature of the proposed development, the findings of the technical chapters of the Environmental Statement , it has been decided that the following eight Natura 2000 and Ramsar sites require consideration as to whether they could be affected:

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

- Medway Estuary and Marshes Ramsar;
- Thames Estuary and Marshes SPA;
- Thames Estuary and Marshes Ramsar;
- Queendown Warren SAC; and
- Outer Thames Estuary SPA ~~/ pSPA~~.

3 METHODOLOGY

Key Principles

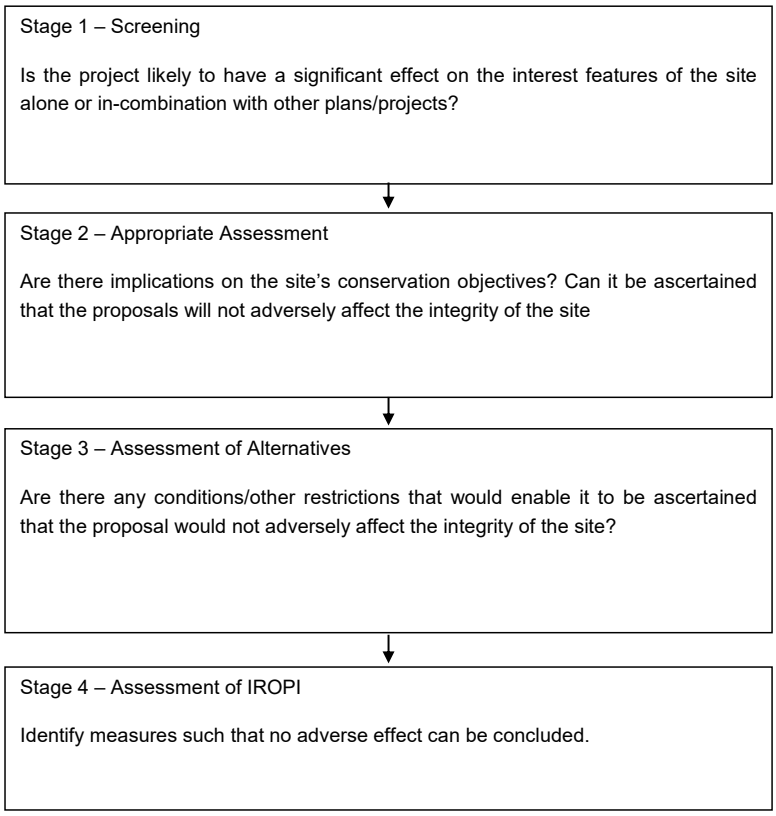
3.1 The key principles adopted during the collation and analysis of information are set out in Table 3.1.

Table 3.1: Key Principles Underpinning the Assessment Methodology

Key principles underpinning the assessment methodology	
Principle	**Rationale**
Use of best available existing information	We will use best available existing information to inform the assessment. This will include ecological information gathered on behalf of WTI, information made available through production of the Environmental Statement and information from other sources, including Natural England, British Trust for Ornithology, and others.
Proportionality	We will ensure that the level of detail provided in the assessment reflects the level of detail in the DCO application (i.e. that the assessment is proportionate).
Consultation	We will ensure continued consultation with Natural England and other stakeholders during production of the assessment and ensure that we take on board their comments.
Transparency in the assessment process	We will endeavour to keep the process as open, transparent and simple as possible while ensuring an objective and rigorous assessment in compliance with the Habitats Directive, Habitats Regulations and emerging best practice.
Audit trail	We will ensure that the process followed and the conclusions reached are clearly documented to ensure there is a clear audit trail.

Process

3.2 Figure 1 below outlines the stages of HRA according to Department for Communities and Local Government and PINS 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.


Stage 1 – Screening
Is the project likely to have a significant effect on the interest features of the site alone or in-combination with other plans/projects?
Stage 2 – Appropriate Assessment
Are there implications on the site's conservation objectives? Can it be ascertained that the proposals will not adversely affect the integrity of the site
Stage 3 – Assessment of Alternatives
Are there any conditions/other restrictions that would enable it to be ascertained that the proposal would not adversely affect the integrity of the site?
Stage 4 – Assessment of IROPI
Identify measures such that no adverse effect can be concluded.

Stage 1 – Qualifying Interest Features

3.3 Natural England has provided copies of the relevant citations and confirmed both the conservation objectives and Regulation 33 (English Nature 2001) advice to be taken into account. The conservation objectives provide the basis for determining what is currently, or may cause, a significant effect, and for informing the scope of appropriate assessments.

3.4 Natural England has confirmed that the assessment should focus on the qualifying features listed within the official Natura 2000 citations as these are the features for which the site is legally designated.

3.5 In addition to qualifying interest features, it is necessary to explore the environmental features and conditions required to maintain the integrity of the eight Natura 2000 and Ramsar sites, as well as both current condition and trends in environmental processes.

Stage 2 - Likely Significant Effect

3.6 The second stage is to determine whether there is a likely to be a significant effect. This is essentially a risk assessment to decide whether a more detailed assessment is required, and if so, the scope of the issues and features to be addressed. This involves identifying the potential pathways through which the DCO application could affect the interest features of relevant Natura 2000 and Ramsar site, and then assessing in broad terms the magnitude of each effect to determine whether it is likely to have a significant effect. In making this determination, we have taken into account the risk of an effect not just on those sites within the administrative boundary of Swale Borough Council, but in line with best practice, considered potential ways in which the application could impact upon other relevant Natura 2000 or Ramsar sites.

3.7 The main purpose of this stage is to screen out those aspects of the proposal that can be considered not likely to have a significant effect, as well as those features of each relevant Natura 2000 and Ramsar site that are not likely to be significantly affected. Judgements have been based on sound reasoning and within the context of best available knowledge on the various ways in which development of the nature proposed could impact on the interest features of the relevant Natura 2000 and Ramsar sites. At this stage, they are made without consideration of mitigation/avoidance measures. If it cannot be concluded with confidence that adverse effects are unlikely, then under the precautionary principle, it is assumed that the issue requires more detailed consideration.

~~3.8 In determining likely significant effect, as well as any subsequent analysis, historical data from a variety of different sources have been used. The principal source has been data collected over the last ten years through the Wetland Bird Survey (WeBS). This is a joint scheme between the British Trust for Ornithology (BTO), the Wildfowl and Wetlands Trust (WWT), the Royal Society for the Protection of Birds (RSPB) and the JNCC, and comprises Core Counts and Low Tide counts.~~

~~3.9 For both types of count, sites are divided into a number of pre-determined sub-divisions, each of which is usually allocated to an experienced volunteer recorder. Core Counts are undertaken annually to monitor population sizes, determine trends in numbers and to identify important sites for waterbirds. Coastal wetlands like the Swale are primarily~~

monitored at high tide when birds are congregated at roosts, though not all sub-divisions may be counted each year.

3.10 Low Tide Counts are undertaken on selected estuaries each year in the period two hours either side of low tide, to determine the distribution of waterbirds during low tide and to identify important feeding areas (Frost et al., 2016). Historical WeBS low tide data (albeit sometimes relating to partial coverage of some sites) were available for the Swale for 2001/2002 and 2011/2012, the Medway Estuary and Marshes for 1996/1997, 2004/2005, 2005/2006 and 2013/2014, for the Thames Estuary and Marshes for 1998/1998, January 2000, November 2002, 2005/2006 and 2013/2014.

3.113.8 The proposed development site comprises hard standing and industrial buildings. Therefore, no surveys have been undertaken on site. However, a suite of ecological surveys of the surroundings have also been completed to inform other developments within the wider Paper Mill site, including targeted breeding bird surveys, assessment of roosting Marsh Harriers, and intertidal waterbird surveys of the Swale in the vicinity of the Proposed Development.

3.123.9 The methodology for the breeding bird surveys involved standard territory (registration) mapping techniques as outlined in Gilbert et al. (1998) and Bibby et al. (2000). Full survey methods and details of visits are available in the respective technical survey reports (RPS, 2009, 2016).

3.133.10 The survey methodology for the intertidal surveys involved monthly counts of the waterbirds using the Kemsley foreshore. Full survey methods and details of visits are available in the respective technical survey reports (RPS, 2009, 2010, 2016). For example, a combined total of 44 survey visits were undertaken during January to May 2016 and July to December 2016.

3.143.11 The Marsh Harrier roost adjacent to the haul road to serve the laydown was surveyed twice per month between January to March and October to December 2016. Full survey methods and details of visits are available in the respective technical survey reports (RPS, 2012, 2016). Twelve survey visits in total were undertaken in 2016. Surveys began approximately one and a half hours before dusk and continued until dark. The reedbed was observed from a suitable vantage point, minimising disturbance to the birds entering the roost.

3.15 Due to the period of several years over which ornithological surveys have been undertaken at Kemsley in association with the adjacent K3 application, the consistent approach to survey methods enables comparisons between breeding bird data collected in 2009 and 2016, Marsh Harrier datasets collected in 2010/11 and 2016, and non-breeding waterbird information collected in 2009/10 and 2016, respectively. This is useful background information with respect to interpretation of any changes in bird populations at the site level over that period and potential implications of the application in the future. Furthermore, it provides a robust context for the use of March 2017 as a baseline for assessment.

Stage 3 - Appropriate Assessment

3.163.12 When a plan or project cannot be 'screened out' as being unlikely to have a significant effect on a Natura 2000 or Ramsar site, it is necessary to progress to explore whether there are any adverse effects, including whether any suitable avoidance or mitigation measures can be incorporated to avoid or reduce those adverse effects. . Experience suggests that

the best approach to addressing this is on a site by site basis, with avoidance / mitigation measures focused on the environmental conditions needed to maintain site integrity. The steps involved are outlined in Figure 2.

Figure 2: Steps involved in the Appropriate Assessment

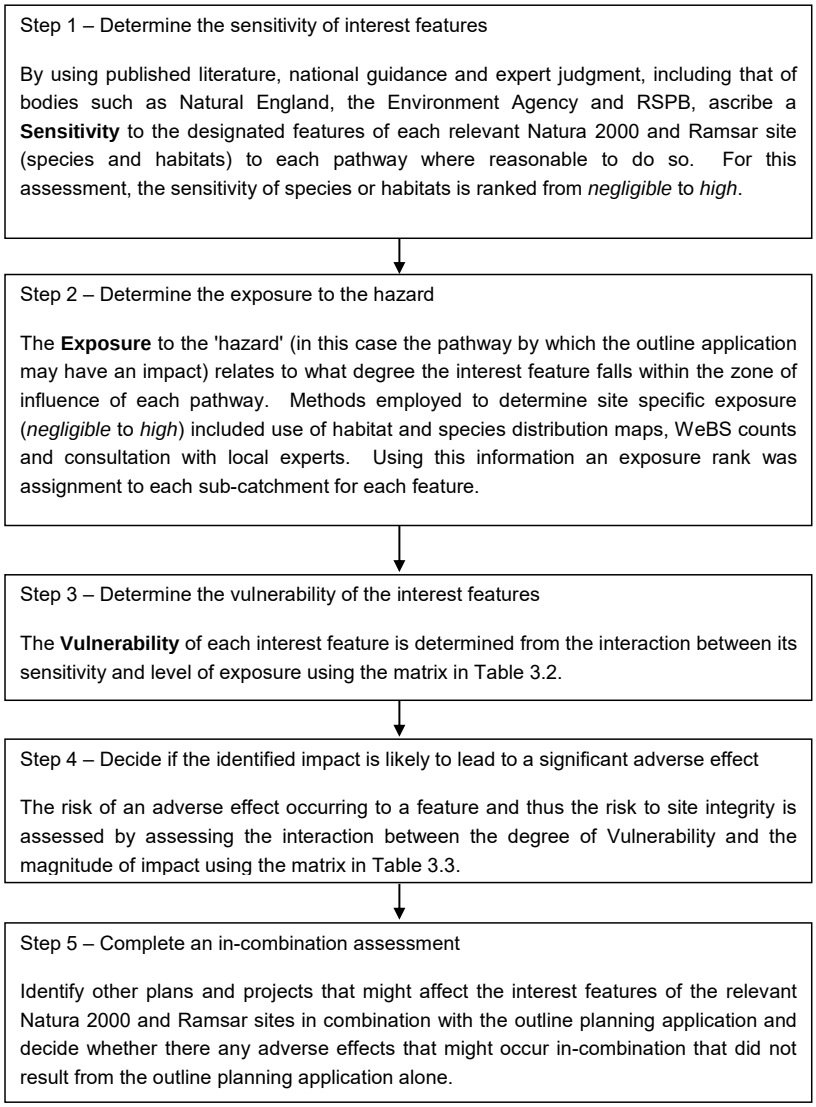


Table 3.2: Determining the Vulnerability of Interest Features Exposure

	Exposure to hazard				
Sensitivity of feature		**High**	**Medium**	**Low**	**Negligible**
	High	High	High	Medium	Low
	Medium	High	Medium	Low	Negligible
	Low	Medium	Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Table 3.3: Determination of Adverse Effect

	Magnitude of impact				
Vulnerability of feature		**High**	**Medium**	**Low**	**Negligible**
	High	Yes	Yes	Yes	No
	Medium	Yes	Yes	No	No
	Low	Yes	No	No	No
	Negligible	No	No	No	No

~~Stage 4 – Avoidance and Mitigation Measures~~

~~3.18 This involves developing measures to avoid the effect entirely, or as a minimum to mitigate the impact sufficiently that its effect on the integrity of a Natura 2000 or Ramsar site is rendered insignificant. In evaluating whether an identified impact is likely to have an adverse effect, we have relied upon both recognised standards and professional judgement. In the absence of quantifiable data, under the precautionary principle the approach we have adopted is that if an adverse effect cannot be confidently ruled out, avoidance or mitigation measures must be provided.~~

~~3.19~~3.13 This is in line with Department for Communities and Local Government / PINS guidance that the level of detail of the assessment, whilst meeting the relevant requirements of the Habitats Regulations, should be 'appropriate' to the level of plan or project that it addresses.

4 STAGE 1 – QUALIFYING INTEREST FEATURES

The Swale

4.1 The boundary of The Swale SPA / Ramsar site lies 275 m to the east of the area covered by the proposal.

4.2 The Swale Estuary separates the Isle of Sheppey from the Kent mainland. To the west it adjoins the Medway Estuary, to the east the outer Thames Estuary. It consists of a complex of grazing marsh with ditches, intertidal saltmarshes and mud-flats. The grazing marsh is the most extensive in Kent and there is much diversity both in the salinity of the dykes (which range from fresh to strongly brackish) and in the topography of the fields.

4.3 The Swale Ramsar was designated in 1993. In addition to qualifying under Criterion 3a by virtue of regularly supporting over 20,000 waterfowl, with an average peak count of 57,600 birds for the five winter period 1986/1987 to 1990/1991, and under Criterion 3c by supporting, in winter, internationally important populations of four species of migratory waterfowl, the Swale also qualifies under Criterion 2a of the Ramsar Convention by supporting a number of species of rare plants and invertebrates (Table 4.1).

Table 4.1: Qualifying Plant and Invertebrate Species for the Swale Ramsar

Ramsar Criteria	Scientific Name	Species Name
Nationally rare and scarce plant species	*Lactuca saligna*	Least Lettuce
	Peucedanum officinale	Hogs Fennel
	Bupleurum tenuissimum	Slender Hare's-ear
	Spartina maritima	Small Cord-grass
	Inula crithmoides	Golden Samphire
	Ranunculus baudotii	Brackish Water Crowfoot
	Ceratophyllum submersum	Soft Hornwort
	Carex divisa	Divided Sedge
	Trifolium squamosum	Sea Clover
	Hordeum marinum	Sea Barley
Red Data Book invertebrates	*Bagous cylindrus*	An aquatic weevil
	Erioptera bivittata	A cranefly
	Lejops vittata	A hoverfly
	Poecilobothrus ducalis	A small dancefly
	Micronecta minutissima	A water bug
	Malachius vulneratus	A beetle
	Philonthus punctus	A predatory rove beetle
	Campsicnemus magius	A small dolichopodid fly
	Elachiptera rufifrons	A small chloropid fly
	Myopites eximia	A picture-winged fly

4.4 The intertidal flats are extensive, especially in the east of the site, and support a dense invertebrate fauna. These invertebrates, together with beds of algae and Eelgrass *Zostera spp.,* are important food sources for waterbirds. Locally there are large Mussel Mytilus edulis beds formed on harder areas of substrate. The wide diversity of coastal habitats combine to support important numbers of waterbirds throughout the year.

4.5 The diverse mix of habitats within the Swale support internationally important populations of wintering birds. It supports outstanding numbers of waterfowl with some species regularly occurring in nationally or internationally important numbers. The Swale SPA was classified in 1985 and extended in 1993. The qualifying bird interest features listed in the Ramsar citation, SPA Citation (as provided by Natural England in their Section 42 response) are provided in Table 4.2.

4.6 The Conservation Objectives for the SPA (as set out in http://publications.naturalengland.org.uk/publication/5745862701481984?category=6528471664689152) are to 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.

4.7 During severe winter weather elsewhere, the Swale can assume even greater national and international importance as a cold weather refuge. Wildfowl and waders from many other areas arrive, attracted by the relatively mild climate, compared with continental European areas, and the abundant food resources available.

Table 4.2: Qualifying Bird Species of The Swale

	Scientific Name	SPA Citation	Ramsar	Assessment Criteria
~~**Regularly supporting more than 1% of the GB breeding population of an Annex 1 species in summer**~~				
~~Avocet~~	~~*Recurvirostra avosetta*~~	~~24 pairs, representing 6.2% of British population~~	~~-~~	~~103~~
Regularly used by 1% or more of the GB population of an Annex 1 species during passage				
Redshank	*Tringa totoanus*	-	1,712 individuals, representing an average of 1.4% of the British population	269
Migratory Wintering species regularly occurring in internationally-important numbers over winter				
Dark-bellied Brent Goose	*Branta bernicla bernicla*	2,850 representing 1.6% of the world population and 3.1% of the British winter population	2,850 representing 1.6% of the world population and 3.1% of the British wintering population	1,961
Grey Plover	*Pluvialis squatarola*	-	1,550 representing 1% of the East Atlantic Flyway population and 7.3% of the British population	2,021
Dunlin	*Calidris alpina*	13,000 representing 3% of British wintering population	-	13,000
Assemblage				
Regularly supporting over 20,000 waterfowl over winter	-	57,600	57,600	65,588
Diverse assemblage of breeding birds	-	-	-	-

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4.8 The 1993 Citation for The Swale describes 17 species occurring within the over-wintering assemblage in nationally- or internationally-important numbers but does not name them. Therefore, Natural England's advice for the K3 application, (Section 42 Response dated 19/04/17), based on the BTO's Wetland Bird Survey (WeBS) data, is that the following species should be considered as important components of the assemblage:

- European white-fronted goose;
- Shelduck;
- Teal;
- Shoveler;
- Oystercatcher;
- Golden Plover;
- Lapwing;
- Dunlin;
- Black-tailed Godwit;
- Green Sandpiper;
- Dark-bellied Brent Goose;
- Wigeon;
- Pintail;
- Little Egret;
- Avocet;
- Grey Plover;
- Sanderling;
- Ruff;
- Bar-tailed Godwit;
- Greenshank;
- Knot; and
- Curlew.

4.9 With respect to the breeding assemblage, The Swale Citation lists a number of species in the 'typical assemblage of breeding species' for grazing marsh:

- Shelduck;
- Coot;
- Mallard;

- Moorhen;
- Lapwing;
- Redshank;
- Reed Warbler; and
- Reed Bunting.

4.10 Natural England's Section 42 advice for that project was that this should be expanded to include breeding ducks, waders, Yellow Wagtail and Marsh Harrier. Given the proximity of the two developments, the S42 advice with respect to the K3 development has been taken as also applying to K4.

Medway Estuary and Marshes

4.11 The boundary of the Medway Estuary and Marshes SPA and Ramsar site lies just over 2km from the area covered by the Proposal site.

4.12 The Medway Estuary forms a single tidal system with the Swale to the east and joins the outer Thames Estuary between the Isle of Grain and Sheerness. It has a complex arrangement of tidal channels, which drain around islands of saltmarsh. The mud-flats are rich in invertebrates and also support beds of Enteromorpha and some Eelgrass *Zostera spp*. Small shell beaches occur, particularly in the outer part of the estuary. Together these form the largest area of intertidal habitats of value for nature conservation in Kent and are representative of the estuarine habitats found on the North Kent coast. Grazing marshes intersected by dykes and fleets are present in places inside the sea walls around the estuary.

4.13 The Medway Estuary and Marshes Ramsar site was designated in 1993. In addition to qualifying under Criterion 3a by virtue of regularly supporting over 20,000 waterfowl with an average peak count of 53,900 birds recorded in the five-year winter period 1986/1987 to 1990/1991, and under Criterion 3c by regularly supporting internationally or nationally important wintering populations of migratory species of waterfowl, the Medway Estuary and Marshes Ramsar also qualifies under Criterion 2a of the Ramsar Convention by supporting a number of species of rare plants and animals (Table 4.3).

4.14 The Medway Estuary and Marshes SPA was classified in 1993 and the citation prepared for that classification has been used to inform this assessment. The qualifying bird interest features listed in the SPA Citation and Ramsar citation, together with the criteria used for this assessment (in line with Natural England advice this is whichever provides the strongest protection) are presented in Table 4.4.

4.15 The Conservation Objectives for the SPA (as set out in http://publications.naturalengland.org.uk/publication/6672791487119360) are to 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.

Table 4.3 Medway Estuary and Marshes Ramsar Qualifying Plant and Invertebrate Species

Ramsar Criteria	Scientific Name	Species Name
Nationally-scarce plant species	*Hordeum marinum*	Sea Barley
	Parapholis incurva	Curved Hard-grass
	Polypogon monspeliensis	Annual Beard-grass
	Puccinellia fasciculate	Borrer's Saltmarsh-grass
	Bupleurum tenuissimum	Slender Hare`s-ear
	Trifolium squamosum	Sea Clover
	Chenopodium botryodes	Small Goose-foot
	Rumex maritimus	Golden Dock
	Ranunculus baudotii	Brackish Water-crowfoot
	Inula crithmoides	Golden Samphire
	Salicornia perennis	Perennial Glasswort
	Salicornia pusilla	One-flowered Glasswort
British Red Data Book invertebrates	*Polistichus connexus*	A ground beetle
	Cephalops perspicuus	A fly
	Poecilobothrus ducalis	A dancefly
	Anagnota collini	A fly
	Baris scolopacea	A weevil
	Berosus spinosus	A water beetle
	Malachius vulneratus	A beetle
	Philonthus punctus	A rove beetle
	Malacosoma castrensis	Ground Lackey Moth
	Atylotus latistriatus	A horsefly
	Campsicnemus magius	A fly
	Cantharis fusca	A soldier beetle
	Limonia danica	A cranefly

Table 4.4: Qualifying Bird Species of Medway Estuary and Marshes

	Scientific Name	SPA Citation	Ramsar	Assessment Criteria
Annex 1 Species Regularly Breeding in Numbers of European Importance				
Avocet	*Recurvirosta avosetta*	28 pairs representing 7% of the breeding population in Britain	~~28 pairs representing 7% of the breeding population in Britain~~	28 pairs
Little Tern	*Sterna albifrons*	24 pairs representing 1% of the breeding population in Britain	~~24 pairs representing 1% of the breeding population in Britain~~	28 pairs
Annex 1 Species Regularly Wintering in Numbers of European Importance				
Avocet	*Recurvirosta avosetta*	70 representing 7% of the ~~-~~population in Britain	-	314
Annex 1 Species Regularly On Passage in Numbers of European Importance				
Grey Plover	*Pluvialis squatarola*	-	3103 individuals, representing an average of 1.2% of the population	1,337
Common Redshank	*Tringa totanus*	3709 individuals, representing an average of 1.4% of the population~~-~~	3709 individuals, representing an average of 1.4% of the population	
Migratory Species Regularly Wintering in Numbers of European Importance				
Dark-bellied Brent Goose	*Branta bernicla bernicla*	4,130 representing 2.4% of the world population and 4.6% of British winter population~~-~~	4,130 representing 2.4% of the world population and 4.6% of British winter population	4,130
Shelduck	*Tadorna tadorna*	5,900 representing 2.3% of the North West European population and 7.9% of the British winter population~~-~~	5,900 representing 2.3% of the North West European population and 7.9% of the British winter population	5,900
Pintail	*Anas acuta*	980 representing 1.4% of the North West European wintering and 3.9% of the British winter population~~-~~	980 representing 1.4% of the North West European wintering and 3.9% of the British winter population	980

	Scientific Name	SPA Citation	Ramsar	Assessment Criteria
Ringed Plover	*Charadrius hiaticula*	740 representing 1.4% of the East Atlantic Flyway population and 3.2% of the British wintering population-	740 representing 1.4% of the East Atlantic Flyway population and 3.2% of the British wintering population	768
Knot	*Calidris canutus*	3,690 representing 1.0% of the East Atlantic Flyway and 1.6% of the British wintering population-	3,690 representing 1.0% of the East Atlantic Flyway and 1.6% of the British wintering population	3,690
Dunlin	*Calidris alpina*	22,900 representing 1.6% of the East Atlantic Flyway and 5.3% of the British wintering population-	22,900 representing 1.6% of the East Atlantic Flyway and 5.3% of the British wintering population	25,936
Regularly supports in winter a diverse assemblage of wintering species	-	53,900-	47,637-	65,496-
~~Regularly supports over 20,000 waterfowl~~	-	~~53,900~~	~~47,637~~	~~65,496~~
Diverse assemblage of breeding migratory waterfowl	-	-	-	-

4.16 The 1993 citation for the Medway ~~Esturay~~Estuary and Marshes SPA lists 18 species of waterfowl within the over-wintering assemblage occurring in internationally- or nationally-important numbers:

- Dark-bellied brent geese;
- Shelduck;
- Pintail;
- Ringed plover;
- Grey plover;
- Knot;

- Dunlin;
- Redshank;
- Great crested grebe;
- Wigeon;
- Teal;
- Shoveler;
- Oystercatcher;
- Black-tailed godwit;
- Curlew;
- Spotted redshank;
- Greenshank; and
- Turnstone

4.17 The Citation also lists 18 species comprising the diverse assemblage of wintering species including:

- Red-throated Diver;
- Great Crested Grebe;
- Cormorant;
- Shelduck;
- Mallard;
- Teal;
- Shoveler;
- Pochard;
- Oystercatcher;
- Ringed Plover;
- Dunlin;
- Redhsank;
- Bewick's Swan;
- Hen Harrier;
- Merlin;
- Golden Plover;

- Short-eared Owl; and
- Kingfisher.

4.18 With respect to the breeding assemblage, the Citation lists the following species:

- Oystercatcher;
- Lapwing;
- Ringed Plover;
- Redshank;
- Shelduck;
- Mallard;
- Teal;
- Shoveler; and
- Common Tern.

Thames Estuary and Marshes

4.19 The boundary of the Thames Estuary and Marshes SPA and Ramsar site lies just under 10 km from the area covered by the Proposal site.

4.20 The Thames Estuary and Marshes consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of north Kent. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. Whilst the majority is situated in Kent along the south shore of the Thames estuary, additional areas are located along the north shore of the Thames Estuary.

4.21 The Thames Estuary and Marshes Ramsar was designated in 2000. In addition to qualifying under Criterion 5 as it is used regularly by over 20,000 waterfowl in any season and under Criterion 6 as it is used regularly by 1% or more of the biogeographic populations of migratory species of waterfowl, it also qualifies under Criterion 2a of the Ramsar Convention by supporting a number of species of rare plants and animals (Table 4.5).

4.22 The Thames Estuary and Marshes SPA was classified in 2000. The qualifying bird interest features listed in the SPA Citation Ramsar citation, together with the criteria used for this assessment (in line with Natural England advice this is whichever provides the strongest protection) are presented in Table 4.6.

4.23 The Conservation Objectives for the SPA (as set out in http://publications.naturalengland.org.uk/publication/4698344811134976) are to 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.

Table 4.5 Qualifying Plant and Invertebrate Species for the Thames Estuary and Marshes Ramsar

Ramsar Criteria	Scientific Name	Species Name
Nationally rare plant species	*Chenopodium chenopodioides*	Saltmarsh Goosefoot
Nationally scarce plant species	*Alopecurus bulbosus*	Bulbous Foxtail
	Bupleurum tenuissimum	Slender Hare's-ear
	Carex divisa	Divided Sedge
	Hordeum marinum	Sea Barley
	Inula crithmoiodes	Golden Samphire
	Polypogon monspeliensis	Annual Beard Grass
	Puccinellia fasciculate	Borrer's Saltmarsh-grass
	Puccinellia rupestris	Stiff Saltmarsh-grass
	Salicornia pusilla	Glasswort
	Stratiotes aloides	Water Soldier
	Trifolium glomeratum	Clustered Clover
	Trifolium squamosum	Sea Clover
	Zostera angustifolia	Narrow-leaved Eelgrass
	Zostera noltii	Dwarf Eelgrass
Endangered invertebrate species	*Bagous longitarsis*	A weevil
Vulnerable invertebrate species	*Henestaris halophilus*	A groundbug
	Bagous cylindrus	A weevil
	Polystichus connexus	A ground beetle
	Erioptera bivittata	A cranefly
	Hybomitra expollicata	A horse fly
	Lejops vittata	A hoverfly
	Poecilobothrus ducalis	A dancefly
	Pteromicra leucopeza	A snail killing fly
	Philanthus triangulum	A solitary wasp
	Lestes dryas	A damselfly
Rare invertebrate species	*Cercyon bifenestratus*	A water beetle
	Hydrochus elongates	A water beetle
	H.ignicollis	A water beetle
	Ochthebius exaratus	A water beetle
	Hydrophilus piceus	A water beetle
	Malachius vulneratus	A beetle
	Philonthus punctus	A rove beetle

Ramsar Criteria	Scientific Name	Species Name
	Telmatophilus brevicollis	A fungus beetle
	Campsicnemus magius	A fly
	Haematopota bigoti	A horsefly
	Stratiomys longicornis	A soldier fly
	Baryphyma duffeyi.	A spider

Table 4.6 Qualifying Bird Species of the Thames Estuary and Marshes

	Scientific Name	SPA Citation	Ramsar	Assessment Criteria
Annex 1 Species Regularly Wintering in Numbers of European Importance				
Avocet	*Recurvirosta avosetta*	283 representing 28.3% of British wintering population	-	283
Hen Harrier	*Circus cyaneus*	7 representing 1.0% of the British wintering population	-	7
Migratory species regularly occurring ~~over winter~~on passage				
Ringed Plover	*Charadrius hiaticula*	1,324 individuals - passage 2.6% Europe/ Northern Africa (win)-	595 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)-	541
Migratory species regularly occurring over winter,				
Grey Plover	*Pluvialis squatarola*	2,593 representing 1.7% of the East Atlantic wintering population	2,593 representing 1.7% of the East Atlantic wintering population	2,593
Knot	*Calidris canutus*	4,848 representing 1.4% of Northeast Canada/ Greenland/Iceland/ North West Europe population	4,848 representing 1.4% of Northeast Canada/ Greenland/Iceland/ North West Europe population	4,848
Dunlin	*Calidris alpina*	29,646 representing 2.1% of North Siberia/Europe/ West Africa population	29,646 representing 2.1% of North Siberia/Europe/ West Africa population	29,646
Black-tailed	*Limosa limosa*	1,699 representing 2.4% of the	1,699	1,699

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	Scientific Name	SPA Citation	Ramsar	Assessment Criteria
Godwit		Iceland breeding population	representing 2.4% of the Iceland breeding population	
Redshank	*Tringa totanus*	3,251 representing 28.3% of the Eastern Atlantic wintering population	3,251 representing 28.3% of the Eastern Atlantic wintering population	3,251
Assemblage regularly supporting over 20,000 waterfowl		75,019	75,019	75,019

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Queendown Warren SAC

4.24 The qualifying interest feature at Queendown Warren is *Bromus erectus* grassland of the Annex I priority habitat Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites). This priority habitat type comprises calcareous grasslands containing an important assemblage of rare and scarce species, including Early Spider-orchid *Ophrys sphegodes*, Burnt Orchid *Orchis ustulata* and Man Orchid *Aceras anthropophorum*. Important orchid assemblage sites are defined in the Interpretation Manual of European Union Habitats (European Commission DG Environment 2007) as localities which meet one or more of the following criteria:

- hosts a rich suite of orchid species;
- hosts an important population of at least one orchid species considered not very common on the national territory; or
- hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory.

4.25 The conservation objectives for the site are to 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.

4.26 The key environmental conditions that support the features of European interest are:

- maintenance of grazing;
- minimal recreational trampling;
- minimal air pollution – nitrogen deposition may cause reduction in diversity, and sulphur deposition can cause acidification;
- absence of direct fertilisation; and
- well-drained soils.

Outer Thames Estuary SPA ~~/ pSPA~~

4.27 The Outer Thames Estuary SPA is located where the North Sea and the Thames Estuary meet, extending north to the sea off Great Yarmouth on the East Norfolk Coast. It supports the largest assemblage of wintering red-throated diver (*Gavia stellata*) in the UK, an estimated population of 6,466 individuals, which is 38% of the wintering population of Great Britain.

4.28 ~~A proposal to extend the area of t~~the recently-confirmed extension to the ~~he~~ SPA ~~is currently under consideration. The pSPA would also~~ also include~~s~~:

- Little Tern: 746 individuals (2011-2015) or 19.64% of GB population; and
- Common Tern: 532 individuals (2011-2015) or 2.66% of GB population.

4.29 The conservation objectives for both SPA ~~and pSPA~~ (http://publications.naturalengland.org.uk/publication/4927106139029504) are to 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.

Supporting Habitats

4.30 Whilst the qualifying species listed for SPA and Ramsar sites are referred to as interest features, the ecologically important habitats supporting each feature have also been identified as sub-features. The supporting habitats of The Swale SPA, Medway Estuary and Marshes SPA and Thames Estuary and Marshes SPA are presented in Table 4.7.

4.31 The Medway Estuary and Marshes SPA and Ramsar site, the Thames Estuary and Marshes SPA and Ramsar site and The Swale SPA and Ramsar site include terrestrial, intertidal and subtidal areas. Some species, such as the internationally important wintering population of Hen Harrier on the Thames Estuary and Marshes SPA, are dependent on the terrestrial supporting habitats, notably areas of grazing marsh. Other qualifying species

also use areas of the Natura 2000 sites above the highest astronomical tide for breeding (e.g. Avocet), feeding (e.g. Curlew and Redshank), or roosting when displaced from mudflats at high tide.

Table 4.7 Percentage of Supporting Habitat Sub-features

	Swale SPA	Medway SPA	Thames SPA
Estuaries, mudflats, sandflats and lagoons	39.0	67.0	57.3
Saltmarsh	5.0	15.0	1.5
Shingle and sea cliff	1.0	-	0.9
Standing water	2.0	1.0	5.6
Bogs, marshes and fens	-	1.0	3.7
Dry grassland	-	1.0	1.9
Wet grassland	-	15.0	29.1
Other arable land	47.0	-	-
Other land (waste land, industrial sites, etc.)	6.0	-	-
Total	100%	100%	100%

4.32 The intertidal and subtidal components of the Medway Estuary and Marshes SPA and Ramsar site, the Thames Estuary and Marshes SPA and Ramsar site and the Swale SPA and Ramsar site are termed European marine sites. Under Regulation 33(2a) of the Habitats Regulations, 2010, Natural England has a duty to advise other relevant authorities as to the conservation objectives of each European marine site. Conservation objectives focus on the habitat conditions necessary to support the interest features in recognition that bird populations may change as a reflection of national or international trends. Sub-features are identified which describe the key habitats within the marine site component of the SPA.

Marine Component of the Swale SPA

Internationally Important Assemblage of Waterfowl including Internationally Important Population of Regularly Occurring Migratory Bird Species

4.33 The two key supporting sub-features (habitats) are:

- Mudflats; and
- Saltmarsh.

4.34 Mudflats are a rich source of invertebrates and provide the main feeding ground for wintering species such as Grey Plover and Redshank, which occur on the SPA in internationally important numbers, and the other nationally important waterfowl species which contribute to the waterfowl assemblage. In addition mudflats do support plant life, including eel-grass and algae. These are valuable as food for the internationally important

populations of Dark-bellied Brent Goose and Wigeon that occur on the SPA, especially when inland feeding sites are frozen.

4.35 Saltmarsh is the predominantly vegetated part of the intertidal zone and its importance for birds is again for high tide roosting and feeding. Whilst the characteristics of the vegetation varies because the plants are adapted to a particular degree of tidal exposure, areas of Saltmarsh within the Swale SPA also varies because of grazing by domestic livestock. Where the vegetation is kept short by grazing livestock, wildfowl which are themselves grazers, including Wigeon and Dark-bellied Brent Goose, can feed. Around high tide, the creeks within the saltmarsh are the only exposed areas of mud, as mudflats in the lower parts of the estuary are still covered by the tide. Wading birds will feed within these creeks. Where there is shallow water within the saltings it is especially suitable for dabbling duck.

4.36 Subject to natural change, the conservation objective for these sub-features is to maintain them in favourable condition.

Marine Component of the Medway SPA

Internationally Important Populations of Regularly Occurring Annex 1 Species

4.37 The four key supporting sub-features (habitats) are:

- Mudflats;
- Saltmarsh;
- Shallow inshore waters; and
- Shingle beaches.

4.38 In summer, the mudflats provide a feeding area for Avocet, which are known to move their young into the intertidal area when feeding grounds on the landward side of the sea walls become unsuitable. The mudflats are also a rich source of invertebrates for wintering Avocet which occur on the SPA in internationally important numbers.

4.39 Saltmarsh is the predominantly vegetated part of the intertidal and varies because the plants at each level within its vertical profile are adapted to their particular degree of tidal exposure. The importance of the saltmarshes for birds is for high tide roosting by Avocet.

4.40 Shallow in-shore waters are listed as a sub-feature for the Medway (but not the Swale) because they are used by Little Tern, an Annex 1 species which occurs in nationally important numbers.

4.41 Shingle beaches, such as those that occur in Stoke Saltings, are used for nesting by Little Tern. They prefer a shallow sloping shoreline that provides protection against flooding.

4.42 Subject to natural change the conservation objective for these sub-features is to maintain them in favourable condition.

Internationally Important Assemblage of Waterfowl including Internationally Important Populations of Regularly Occurring Migratory Bird Species

4.43 The three key supporting sub-features (habitats) are:

- Mudflats;
- Saltmarsh; and
- Shallow coastal waters.

4.44 The mudflats in the Medway Estuary and Marshes SPA provide the main feeding ground for wintering species which occur on the SPA in internationally important numbers, such as Knot, Grey Plover, Dunlin and Redshank, as well as other nationally important waterfowl species which contribute to the waterfowl assemblage.

4.45 The saltmarsh in the Medway Estuary and Marshes SPA provide roosting and feeding grounds for wintering species which occur in internationally important numbers, as well as other nationally important waterfowl species which contribute to the waterfowl assemblage.

4.46 Great Crested Grebe feed in the shallow waters of the Medway, and at the time of classification, occurred in nationally important numbers.

4.47 Subject to natural change the conservation objective for these sub-features is to maintain them in favourable condition.

Marine Component of the Thames Estuary and Marshes SPA

Internationally Important Populations of Regularly Occurring Annex 1 Species

4.48 The two key supporting sub-features (habitats) are:

- Mudflats; and
- Saltmarsh.

4.49 Mudflats are extensive within the Thames Estuary and Marshes SPA, with over 2,250 ha on the south bank of the Thames. The mudflats are a rich source of invertebrates (shell fish and worms) and provide feeding grounds for wintering avocet. The mudflats at Higham and Mucking in the west of the site are particularly important for this species.

4.50 Saltmarshes are not extensive in the Thames Estuary and Marshes SPA, but nevertheless provide important high tide roost sites for birds, particularly at Higham in the west of the site. Shallow water within the saltings also provide suitable habitat for feeding birds.

4.51 Subject to natural change the conservation objective for these sub-features is to maintain them in favourable condition.

Internationally Important Assemblage of Waterfowl including Internationally Important Populations of Regularly Occurring Migratory Bird Species

4.52 The three key supporting sub-features (habitats) are:

- Mudflats;
- Saltmarsh; and
- Intertidal shingle.

4.53 Mudflats are a rich source of invertebrates and provide the main feeding ground for wintering species such as Dunlin, Knot and Black-tailed Godwit, which occur on the SPA in internationally important numbers, and the other nationally important waterfowl species which contribute to the waterfowl assemblage. In addition, mudflats do support plant life, including algae and some very limited eel-grass and algae. These can be valuable as food for wildfowl, especially when inland feeding sites are frozen. Mudflats also provide important roosting areas for internationally important assemblages of waterfowl and its qualifying species.

4.54 Saltmarsh is not extensive in the Thames Estuary and Marshes SPA, but nevertheless provide important high tide roost sites for the internationally important assemblage of waterfowl and its qualifying species. Upper saltmarsh in particular provide high tide roost sites. The vegetation varies because the plants at each level within its vertical profile are adapted to their particular degree of tidal exposure. Also in parts, the vegetation varies because of grazing by domestic livestock. Where the vegetation is kept short by grazing livestock, wildfowl which are themselves grazers, including Teal, can feed. Where there is shallow water within the saltings, it is especially suitable for dabbling duck.

4.55 Small areas of intertidal shingle and cobble beaches on the south bank of the Thames provide important roost sites for wading birds displaced from the mudflats at high tide.

4.56 Subject to natural change the conservation objective for these sub-features is to maintain them in favourable condition.

Queendown Warren SAC

4.57 The Queendown Warren SAC, on the south-facing slope of a dry chalk valley, comprises grassland and woodland. The former has a diverse flora and there are a good variety of invertebrates present, including the Adonis blue butterfly. Potter's Wood is mainly sweet chestnut coppice with oak standards, but with beech, hazel and other species along the southern edge. Uncommon plant species occur, such as lady orchid and yellow bird's nest.

5 STAGE 2 - LIKELY SIGNIFICANT EFFECT

5.1 This section deals with the screening of likely significant negative effects on the qualifying feature and sub-features of the relevant Natura 2000 and Ramsar sites as a result of the construction, operation and decommissioning of the proposed project. The environmental pathways that could lead to a significant effect may be summarised as:

- Direct loss or damage of habitats within a designated site or of nearby areas used by interest species;
- Change in management regimes (e.g. grazing / mowing of marshland) of habitats within a designated site or of nearby areas used by interest species;
- Loss of future space to allow for managed realignment to avoid coastal squeeze;
- Urbanisation that results in over shadowing, reduction of sight lines or which hinders flight paths;
- Air quality;
- Water quality;
- Hydrological changes, including in the balance of saline and non-saline conditions;
- Disturbance (activity, recreation, noise and lighting); and
- Introduction or spread of non-native invasive species

5.2 The possibility of the development proposed within the DCO application having a likely significant effect on any of the designated sites identified in Section 4 is discussed for each of these impact pathways in turn below.

~~5.2~~5.3 Screening matrices for all the sites identified in Section 3 above are provided in Appendix 1.

Direct loss or damage of habitats used by interest species

~~5.3~~5.4 As the development is a minimum of 275 m from the SPA~~/pSPA~~, SAC or Ramsar site, the proposal will not result in any direct loss of any designated habitat within any designated site.

~~5.4~~5.5 The Proposal Site does not support any of the plant species listed on the Swale Ramsar citation, nor does it have any habitat suitable of supporting such species. Therefore, impacts occurring from direct loss can be screened out, as no likely significant effects are anticipated.

~~5.5~~5.6 The Proposal Site, comprising hardstanding, is unlikely to support populations of any qualifying invertebrates' species of the Swale Ramsar site or Medway Estuary and Marshes Ramsar site. These species are mostly reliant on saline/brackish ditch habitats typical of these sites, which are not present with the Site boundary.

~~5.6~~5.7 Following bird surveys of the Proposal Site in 2009/2010 and 2016, no qualifying bird species of either The Swale SPA and Ramsar site or Medway Estuary and Marshes SPA and Ramsar site were recorded utilising the Proposal Site for breeding.

~~5.7~~5.8 The Proposal Site also provides no suitable habitat for any of the cited SPA / Ramsar wintering species for foraging. The Proposal site does not contain any habitat suitable for wintering Ramsar/SPA Citation/Review species or associated assemblage.

~~5.8~~5.9 There is no evidence that the Proposal site regularly supports significant numbers of roosting birds either of qualifying individual species or assemblages of The Swale SPA / Ramsar site or the Medway Estuary and Marshes SPA / Ramsar site.

~~5.9~~5.10 There is no evidence that the Proposal site is regularly used as a significant feeding or roosting site during passage or winter by any qualifying species of either The Swale SPA / Ramsar site or the Medway Estuary and Marshes SPA / Ramsar site.

~~5.10~~5.11 Consequently, it is concluded that the effects of direct habitat loss on qualifying features of any nearby Ramsar sites as well as breeding, passage and wintering birds of any nearby SPAs can be screened out, as no likely significant effects are anticipated.

Change in habitat management regimes

~~5.11~~5.12 The majority of the existing land use immediately surrounding, and in the vicinity of the Proposal site is in industrial use, pertaining to the Paper Mill. A capped tip lies to the east of the site.

~~5.12~~5.13 The current management regimes for the SPA / Ramsar sites focus on maintaining the habitats for the qualifying breeding and waterbird assemblages (Natural England, 2014).

~~5.13~~5.14 Given the distance from the SPA / Ramsar sites, the DCO application will therefore result in no change to current management regimes of any sub-feature of an SPA or Ramsar during either the construction or operation of the CHP.

~~5.14~~5.15 Given that there are further industrial buildings, in use as part of the wider Paper Mill operations between the Proposal Site and the SPA / Ramsar, it will also not result in any direct detrimental change in habitat management of any land adjacent to either The Swale SPA / Ramsar site or the Medway Estuary and Marshes SPA / Ramsar site.

~~5.15~~5.16 Therefore, impacts occurring from a change in habitat management regimes can be screened out, as no likely significant effects are anticipated at any designated site.

Loss of future space to allow for managed realignment

~~5.16~~5.17 There is evidence that rising sea levels are causing intertidal habitats, notably saltmarsh and mudflats, to migrate landwards across all the designated sites under consideration. However, such landward migration can be rendered impossible due the presence of sea walls and other flood defences, resulting in a reduction in both the extent and quality of some sub-features through coastal squeeze. The removal or landward relocation of defences is seldom possible in existing built up areas and new development which takes place immediately behind sea walls and flood defences can result in it no longer being possible to move the defences landwards to accommodate replacement of eroded or drowned out intertidal habitats.

~~5.17~~5.18 The Proposal site is located to the north-west of Milton Creek and is currently an existing CHP Plant. Much of the land in the area is predominantly low-lying and the majority is within Flood Zone 3 on the Environment Agency Flood Map. As detailed in the Flood Risk Assessment, the entire Proposal site is considered to be an area benefiting from defences.

~~5.18~~5.19 Given that the site is already developed land, it can be concluded that impacts occurring from a loss of future space can be screened out, as no likely significant effects are anticipated at any designated site.

Urbanisation

~~5.19~~5.20 Industrial development has the potential to overshadow areas of habitat within designated sites, or areas used by the interest features of such sites, as well as obstruct flight paths and lines of sight, reducing the appeal of the habitat or increasing the risk of fatalities through collisions.

~~5.20~~5.21 The proposed building will be visible from part of the intertidal area within the Swale SPA which supports wintering populations of waterbirds. The buildings nearest the Swale SPA / Ramsar boundary will be in keeping with other buildings in the area and the tallest building will be set around 275 metres away from the boundary of the Swale SPA / Ramsar site.

~~5.21~~5.22 Due to the presence of the existing Paper Mill to the west, the K3 Plant to the east, and ridge of higher land beyond (the capped landfill), the Proposal site is not seen as being strategically located between the Swale SPA /Ramsar site and the Medway Estuary and Marshes SPA / Ramsar site in terms of flight paths. Therefore, no further assessment is required in terms of the movement of birds between the Medway Estuary and Marshes and the Swale.

~~5.22~~5.23 Consequently, although the intertidal area surrounding the site is considered to be of importance for the birds of the Swale SPA/Ramsar, given the highly urban setting of the site and backdrop of existing industrial buildings, there is little potential for increased urbanisation to impact the interest features for which the SPA/Ramsar are designated.

~~5.23~~5.24 Therefore, any impacts occurring from increased urbanisation can be screened out, as no likely significant effects are anticipated at any designated site.

Air quality

~~5.24~~5.25 The two air quality issues during construction are dust and increased traffic emissions. Levels of understanding of air quality effects on semi-natural habitats and qualifying interest species of Natura 2000 sites are relatively in their infancy. The Air Pollution Information System (APIS) is a publicly available support tool for UK conservation and regulatory agencies, industry and local authorities to help assess the potential effects of air pollutants on habitats and species. It aims to enable a consistent approach to air pollution assessment across the UK. This specifically includes informing assessments required under the Habitats Regulations. Consequently, reference has been made to the information contained within the APIS website.

Construction dust

~~5.25~~5.26 The potential for dust release exists during the construction ~~and decommissioning~~ phase~~s~~, with potential sources including site clearance, earthworks and vehicle movements.

5.265.27 Based on studies elsewhere, it is anticipated that the majority of dust would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site.

5.275.28 The boundary of the Swale SPA and Ramsar site is over 275 metres to the north east of the Proposal site and therefore outside the area potentially most affected. However, likely significant effects cannot be excluded without further assessment and/or application of mitigation as necessary.

5.285.29 The closest part of the Medway Estuary and Marshes SPA and Ramsar to the Proposal site where construction works is 2.6 km to the north and therefore outside the area potentially affected by dust. This, and more distant designated sites can be screened out as no likely significant effects are anticipated.

Traffic - construction

5.295.30 For sensitive ecological receptors, the IAQM Guidance on the assessment of dust from demolition and construction sets out 50 m as the distance from the site boundary and from the site traffic route(s) within which there could potentially be nuisance dust and PM10 effects. There is scrub habitat along the haul road that is within 50 m of construction traffic, but the nearest designated site boundary is located over 275 metres to the north east of the Proposal site and therefore outside the area potentially most affected. Additionally, as set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment.

5.305.31 It can be concluded that in relation to dust relating to construction traffic, impacts can be screened out for all designated sites, as no likely significant effects are anticipated.

Traffic - Operational

5.315.32 The major impacts of air pollutants on coastal habitats and grasslands in the UK as a result of traffic are ozone, nitrogen deposition and acidification. According to the Department for Transport's Transport Analysis Guidance, the contribution of vehicle emissions from the roadside to local pollution levels is not significant beyond 200 metres from a road (Department for Transport 2009). This is therefore the distance that has been used to determine whether Natura 2000 and Ramsar sites are likely to be significantly affected by traffic emissions associated with the proposed development.

5.325.33 The proposed development is within the boundary of an existing papermill which has significant associated vehicle movements. The nearest designated site boundary is situated 275 m from this location.

5.335.34 Given that the Proposal site is already in use, the proposed development is not anticipated to increase traffic on the A429, nor on the local service roads. The issue of pollution from increased traffic is therefore screened out from further assessment as it can be concluded it will not have a likely significant effect on any designated site.

Operational emissions

5.345.35 The principal source of operational emissions will be gases exhausted from the stack after treatment in the flue gas treatment system. The combustion of waste during the operation

of the CHP will give rise to atmospheric emissions of a number of substances in low concentrations which will be regulated under the Waste Incineration Directive (WID) 2000/76/EC.

5.36 The methods for screening of potential likely significant effects with respect to operational emissions is described in ~~Appendix 5.3 of~~ Chapter 5 Air Quality while the data relating to designated sites is presented in Appendix 5.4~~5~~.

5.37 For all pollutants (NO_x, NH_3, nutrient nitrogen deposition and acid deposition), either the PEC did not exceed the EQS or the PC was ≤~~<~~1% of the EQS for all interest features of all designated sites in the study area.

5.38 The critical loads within APIS presented in Appendix 5.4~~5~~45 for the bird interest features of the various SPAs are those of the habitats that support the birds, since the birds themselves are not susceptible to nutrient nitrogen/acid deposition *per se*. Therefore, no effects are predicted on any of the habitats that support the SPA bird interest features.

5.39 With respect to the habitats of The Swale Ramsar that support the birds, rare plants and rare invertebrates for which this site is designated, these are primarily grazing marsh and salt marsh, and have been included in Appendix 5.4. Both of these have a critical load of 20+ kgN.ha^{-1}.yr^{-1} (www.apis.ac.uk). Therefore, given that no effect on either reed bunting or reed warbler (for The Swale SPA) is predicted in Appendix 5.4~~5~~5, both of which have a critical load of 15 kgN.ha^{-1}.yr^{-1}, no effect is predicted on the less sensitive habitats for which the Ramsar is designated.

~~5.35~~

5.~~36~~40 Impacts occurring from operational air quality issues on all designated sites can therefore be screened out, as no likely significant effects are anticipated.

Water quality

5.~~37~~41 The quality of the water entering Natura 2000 and Ramsar sites is an important determinant of habitat condition and hence the species they support. Poor water quality can have a range of ecological impacts.

5.~~38~~42 Likely significant effects on the Swale SPA/Ramsar site cannot be excluded due to the relatively close proximity of the nearest boundary to the proposed site.

5.~~39~~43 There is a substantially greater separation distance between the proposed site and other designated sites. This means that direct effects on water quality by the proposed project are either not possible as there is no direct mechanism by which they could occur, or dilution effects mean they would not be significant. This means that they can be screened out, as no likely significant effects are anticipated.

Hydrological changes

5.~~40~~44 The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the Swale SPA / Ramsar site, other SPA / Ramsar site or area which supports an SPA / Ramsar site species, including to the reedbed

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to the east of the Proposal Site, will occur as a result of the proposed development.

Disturbance

5.415.45 Disturbance can be caused by activity, recreation, noise and lighting. Because of the relative complexity of these issues, and their ability to have impacts on waterbirds within several hundred metres depending on the nature of the activity and the receptors, likely significant effects due to this impact pathway cannot be excluded at the Swale SPA/Ramsar without further assessment and/or application of mitigation as necessary.

5.425.46 For other designated sites, the separation distances between their boundaries and the proposed site means that disturbance impacts can be screened out, as no likely significant effects are anticipated.

Introduction or spread of non-native invasive species

5.435.47 The movement of people and traffic, as well as importation of material and plants to a site, can result in the introduction of non-native species to a site. The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasives to site.

5.445.48 The issue of introducing and spread of non-native species is therefore screened out from further consideration in this assessment on the grounds of not likely to have a significant effect.

6 STAGE 3 – APPROPRIATE ASSESSMENT

6.1 A summary of the outcomes of Stage 2 is presented in Table 6.1, and Appropriate Assessment for the relevant impact pathways provided below this. Mitigation (Stage 4) is also included where appropriate. Integrity matrices are provided in Appendix 2.

Table 6.1 Summary of Stage 2 Conclusions

Impact Pathway	Screening Outcome	Designated Site	Feature
Direct loss of habitats	No Likely Significant Effect		
Change in management regimes	No Likely Significant Effect		
Loss of future space for managed realignment	No Likely Significant Effect		
Urbanisation	No Likely Significant Effect		
Air quality (construction dust)	Likely Significant Effect cannot be excluded	The Swale SPA / Ramsar	All
Air quality all other issues	No Likely Significant Effect		
Water quality	Likely Significant Effect cannot be excluded	The Swale SPA / Ramsar	All
Hydrological changes	Likely Significant Effect cannot be excluded	The Swale SPA / Ramsar	All
Disturbance	Likely Significant Effect cannot be excluded	The Swale SPA / Ramsar	All
Introduction or spread of non-native invasives	No Likely Significant Effect		

Air quality (construction dust)

6.2 Whilst studies suggest most of dust from construction of the proposed project would be deposited in the area immediately surrounding the source (up to 50 m, which is outside the

boundary of the Swale SPA/Ramsar site), and that no change in level of exposure is expected beyond 300 m from the site, this does mean that some impacts are possible within the Swale SPA/Ramsar boundary, which is located 275 m to the north east of the Proposal site.

6.3 To ensure compliance with relevant standards and guidelines relating to dust and airborne particulate matter, various techniques not relating to the avoidance or reduction in effect on a European site will be implemented during the construction phase. Measures are expected to include:

- commitment to the considerate contractors scheme;
- minimisation of dust generation wherever appropriate (e.g. cutting rather than breaking);
- damping down when conditions require;
- wheel and body washing of vehicles where appropriate; and
- vehicles carrying material to be sheeted as required;

6.4 Following more detailed assessment and implementation of mitigation measures, no adverse effect on site integrity of the Swale SPA/Ramsar site is anticipated as a result of the proposed project due to emissions, either during construction or operation.

Water quality

6.5 Poor water quality can result in a range of impacts. These include:

- 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 behaviour;
- some 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; and
- eutrophication, the enrichment of plant nutrients in water, increases plant growth with high levels of macroalgal growth potentially smothering the mudflats used as feeding areas by qualifying bird species. The decomposition of organic matter that often accompanies eutrophication can deoxygenate water. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.

6.6 Because the Swale SPA/Ramsar site is within 275 m of the proposed development, measures are required to prevent the release of contaminated water into the SPA, directly or otherwise.

6.7 A site-wide surface water pollution prevention system will be developed to prevent the discharge of any contaminated surface water from the site. The key measures to prevent water pollution are as follows:

- the surface water drainage, including the primary gravity drainage channels and associated systems will remain the responsibility of DS Smith and will continue to use existing drainage channels currently in use for K1;
- appropriate treatment (e.g. settlement) and pollution prevention measures (e.g. interceptors) will be provided to prevent polluted flows from being discharged into any of the designated sites (SPA / Ramsar); and
- any chemical storage on site will be suitably bunded.

6.8 The overall philosophy for the design of the surface water pollution prevention system for the site is to manage surface water sustainably and to ensure that discharged waters do not constitute a pollution risk. Further details are provided within Chapter 9 of the ES.

6.9 Process water from the Proposed Development will be neutralised in a desiccated sump and transferred to the existing waste water treatment plant within the Mill site. This is operated under an existing permit (EPR BJ7468IC-V009) which sets pH and water temperature limits (amongst others) for discharge into The Swale (See ES Chapter 9). The volume of water discharged will not be any higher than the levels of that which currently exist on K1 with all outputs to The Swale monitored regularly under the terms of the existing permit.

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6.10 Implementation of these measures during both construction and operational phases of the proposed development limits the risk of a significant pollution incident. Following implementation of mitigation measures, no adverse effect on site integrity of the Swale SPA/Ramsar site is anticipated as a result of the proposed project.

Hydrological changes

6.11 A site-wide Drainage Strategy will be developed with the aim of ensuring that surface water runoff is suitably managed, and not substantially altered as a result of the proposed project. The key features will be as follows:

- the site will be expected, wherever possible, to utilise practical systems for the collection and re-use of water, particularly from roof areas, to help reduce both potable water demand and surface water runoff all surface water drainage will continue to be discharged to the Swale;
- the surface water drainage, including the existing primary gravity drainage channels will be utilised for K4 and will remain in place and managed by DS Smith.

6.12 Following implementation of mitigation measures, no adverse effect on site integrity of the Swale SPA/Ramsar site is anticipated as a result of the proposed project.

Disturbance

Activity

6.13 The movement of people and plant during both the construction phase and operation of the proposed development may be visible to waterbirds using the intertidal areas of the Swale SPA / Ramsar site. Such activity can disturb birds through causing increased anxiety and

flight. The distance at which a bird will take flight due to perceived danger is variable between species, activity type and habituation to human contact. The greatest effect is associated with human presence on the intertidal zone of estuaries (Cutts *et al.* 2013) Davidson and Rothwell 1993).

6.14 Studies also suggest disturbance is less significant when human presence is restricted to the edge of inter-tidal areas and even less significant when some distance from intertidal areas. Numbers of species such as Shelduck, Black-tailed Godwit, Curlew and Redshank, have though been shown to be lower on the upper shore where a footpath, as in the case here, is used close to where they would otherwise occur (Burton *et al*. 2002a). Cutts *et al.* (2013) determined that with respect to visual disturbance, high impact activities occur exclusively within or directly adjacent to the intertidal area.

6.15 It is considered there is a limited potential for disturbance to waterbirds to be caused by activity associated with the Proposal when account is taken of the fact that:

- the closest part of the Proposal site which could potentially result in activity disturbance is approximately 275 metres from boundary of the Swale SPA / Ramsar site;
- the nearest intertidal zones of the Swale to the Proposal site already receive a high degree of visual protection from the Proposal site due to the presence of the intervening development;
- ~~waterbirds feeding or loafing on the Swale or Milton Creek in the vicinity of the Proposal site have a high degree of habituation to people due to the presence of the Saxon Shore Way public footpath along the seawall, sailing on the Swale and use of personalised watercraft (jet skis) along Long Reach of the Swale; and~~
- concentrations of waterbirds occurring on the opposite shore of the Swale are over 800 metres from the Proposal site and separated from it by the Swale channel and seawall.

6.16 Consequently, it is concluded that activity disturbance on the waterbird assemblage using the Swale SPA / Ramsar site will not compromise any of the conservation objectives listed in Section 4.

6.17 While the reedbed that supports breeding and roosting Marsh Harrier within the Paper Mill site is >400 m from the main Proposal site, it is within 100 m of the proposed haul road from the laydown area. However, the extent that this would cause disturbance of the Marsh Harrier is considered limited when account is taken of:

- The haul road is already heavily trafficked by HGVs associated with the activities of the Paper Mill; and
- The regular disturbance from activity on the track way immediately to the north of the reedbed running to the Knauf gypsum jetty. This can involve up to 30 20-tonne tipper lorry movements an hour with vehicles travelling at speed up the private road. No impact (in the form of flight from nest) of such lorry movement on the breeding

pair of Marsh Harrier was observed during surveys in either 2009 or more recently in 2016 (RPS 2016).

- The fact that marsh harriers are frequently tolerant of human disturbance (Ruddock and Whitfield 2007)

6.18 Consequently, it is concluded that activity disturbance on the breeding Marsh Harrier using the site in the form of plant (machinery) or people movement during the construction of the proposed development does not compromise the conservation objectives of the Swale SPA.

Recreation

6.19 People from a wide-ranging catchment area use the shoreline of the Swale for recreational activity. This includes waterborne activities e.g. personal watercraft on Long Reach of the Swale by Kingsferry Bridge, sailing on the Swale and land-based activities e.g. dog walking. Activities of walkers (particularly dog walkers) and water-borne recreation can, particularly if carried out in winter, have a significant disturbing effect upon large numbers of waterfowl thus increasing energetic expenditure (as birds have to take flight more frequently) and competition on the less disturbed mudflats. Ultimately, this can result in increased mortality rates for designated species. That being said, the ornithological component of this SPA can be assumed to be highly habituated to anthropogenic activity.

6.20 The potential for disturbance to SPA / Ramsar Citation species from recreational activities by either construction or subsequent operational staff is considered low. Whilst there is access to the Saxon Shore Way from the wider Kemsley Paper Mill, currently very little or no use is made of this by Kemsley Mill staff. It is possible that there will be increased recreational usage made of the Saxon Shore Way during both construction of the site, as Sittingbourne is within potential travel distance over lunch break. However, it should be bourne in mind that Milton Creek is outside the SPA and that dogs will not be permitted on site. It is anticipated that few if any construction and operational staff will access the Swale SPA.

6.21 Consequently, it is concluded that activity disturbance in the form increased recreation as a result of the proposed development will not compromise the conservation objectives of The Swale SPA.

Noise

6.22 The Proposal site has the potential to generate noise during both site preparation and construction stages, notably as a result of ground clearance, vehicle movements and piling. Very loud noise (which can be defined as greater than 80 dBL_{Amax}) and percussive noises have the potential to disturb birds, increasing time spent alert and in flight, reducing the available time to feed and increasing mortality.

6.23 A disturbance event may cause birds to take flight (either returning to the same area or departing), to cease feeding or roosting and to temporarily abandon eggs or chicks, leaving them susceptible to chilling and predation. It may also not result in any visible impacts, but could cause birds to forage less efficiently. Taking flight or ceasing to feed does not have immediate effects on the survival or productivity of that bird. The increased energy expenditure or reduction in energy intake (feeding interrupted) if repeated, or occurring over

an extended period, can place individual birds at risk of starvation/exposure during adverse weather or being in a weakened state preventing successful fattening before migration or preventing that bird coming in to breeding condition. The result can be an effect on survival or productivity.

6.24 Loud but discontinuous noises, as can be produced by machinery during construction processes, have been shown to cause disturbance when that noise is above certain recorded levels. The following effects have been noted:

- noise events from aircraft at a level of 60 dBA caused no noticeable disruption to typical activity budgets of waterbirds (Flemming *et al*. 2000);
- harlequin duck reacted with alert behaviour to noise generated by military jets, especially when the noise exceeded 80 dBA (Goudie & Jones 2004);
- black duck, American wigeon, gadwall and green-winged teal were not adversely affected by aircraft disturbance (using a time activity budget approach) at below 85 dBA (Conomy *et al.* 1998); and
- noise events at 100 dBA could cause temporary or permanent hearing impairment if the subject is within 15 m and chronic, intense noise may induce physiological stress in some birds if they cannot avoid exposure (West *et al*., 2007).

6.25 Birds have been shown to habituate to regular, loud noise events, although this may vary between species, for example black ducks became habituated to loud aircraft noises whilst wood ducks did not under the same circumstances (Conomy *et al*., 1998).

6.26 Short, sharp percussive noise, most familiar as gunshot but also produced during construction processes by for instance the hammering in of metal piles, have been shown to cause disturbance. The following effects have been noted:

- Cutts *et al*. (2013) suggests that for a sharp, sudden noise to qualify as a high level effect, it must be over 60 dB, and over 55 dB for a medium level effect;
- shooting can cause temporary disruption of normal activities of waterbirds, altering their diurnal rhythms and increasing recorded escape flight distances, as well as displacing waterbirds from their preferred feeding and roosting habitats (Madsen & Fox, 1995 & Mahaulpatha *et al*., 2000); and
- on heavily disturbed days, including those when shooting was occurring, brent geese fed at night during mid-winter in order to balance their daily energy budget (Riddington *et al*., 1996).

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6.27 The reedbed habitat supports breeding (and wintering) Marsh Harrier, which is listed on The Swale SPA as a component species of the breeding bird assemblage

6.28 Modelling of the noise levels expected during the loudest operation during construction (percussive impact piling) has been undertaken with contours of anticipated L_{Amax} levels (in dB) plotted. These show that the reedbed that supports the Marsh Harrier would be subject to noise levels between 50 and 55 dBL_{Amax}, which is below the impact threshold. Therefore,

it is highly unlikely that noise disturbance during construction would have any significant effect on the Marsh Harrier population and therefore the conservation objectives for this species listed in Section 4 are not compromised.

6.29 The main intertidal areas of the Swale Ramsar/SPA used by wintering citation birds recorded by the foreshore monitoring are over 275 m from the source of significant noise events. Modelling of the noise generated by the loudest events during construction (percussive piling) has been undertaken (see Chapter 7 of the ES – Noise for details of the methods employed). The highest noise that would be received by birds using the SPA/Ramsar is between 65 and 70 dBL_{Amax}, covering an area of some 20 ha with the designated site.

6.30 In order to ensure that birds using this intertidal area are not subject to disturbance that could compromise their ability to survive through increased flight responses, the following piling strategy has been agreed with Natural England:

- No impact piling is to take place between the months January and February inclusive.
- Limited impact piling is permissible between the months of November and December provided that any impact piling activity does not accrue to more than a total of 10 days consecutively or otherwise.
- Impact piling is permissible unrestricted outside of these time periods.

~~6.29 Such piling would only take place for a period of six weeks in total. The resulting noise contours have been plotted with the nearby designated sites shown (see Figure 10.5); the highest noise that would be received by birds using the SPA/Ramsar is between 65 and 70 dBLAmax, covering an area of some 20 ha within the designated site, essentially at the mouth of the Milton Creek. This equates to 0.32% of the 6,514 ha site.~~

~~6.31 While this area has been recorded as supporting SPA/Ramsar interest bird species, including both dunlin and grey plover,~~

~~6.30~~6.32 Therefore, on the basis of the agreed piling methodology avoiding impacts to any birds using the intertidal areas near the Proposed Development ~~the very small total area and very short temporal nature of works means that the potential for disturbance of birds using the SPA foreshore is limited. These factors mean that~~ this activity will not compromise the conservation objectives of the SPA and ~~that~~ therefore no adverse effect on the integrity of the site is predicted.

~~6.31~~6.33 Under normal operating conditions, the Proposed Development will produce a low hum, rather than any loud, sudden noises that might elicit a disturbance response from nearby interest-feature birds using the intertidal areas of The Swale. It will furthermore not result in noise levels of greater than 55dB LAmax within the SPA.

~~6.32~~6.34 A noise modelling exercise with respect to the emergency release valve (as the only activity associated with the operation of the Proposed Development that would produce such a noise) showed that, at the nearest point within The Swale SPA/Ramsar, the noise level would be around 69 dBL_{Amax}. While this level is towards the upper end of the impact threshold, it would only occur very infrequently and only in an emergency event. K4 will

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include an oversized dump condenser that is not present within K1. This will decrease the need to operate the emergency release valve compared to the current situation for K1 (less than 4 times per annum, see Chapter 7 Noise).

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6.336.35 On this basis, therefore, it can be stated that the issue of noise-related disturbance will not compromise the objectives of the Swale SPA.

Lighting

6.346.36 Lighting during both construction and operational phases of the proposed development has the potential to disturb the qualifying species of the Swale SPA / Ramsar site. Available research indicates that ecological impacts following introduction of lighting could potentially include:

- disruption of the daily rhythms of some species of plant resulting in changes in growth and flowering times;
- prolonged settling of nocturnal insects resulting in reduced feeding, breeding and egg laying;
- reduced ability of female moths such as the Ground Lackey Moth to attract males and increased mortality of larvae due to delayed or failure to produce wintering pupae; and
- disruption of nocturnal bird behaviour such as roosting and feeding,

6.356.37 Although there is limited data on the extent to which the area covered be the application is used by birds at night, given that the site is currently hardstanding with an existing CHP Plant, it is considered highly unlikely that any SPA / Ramsar citation species would be using the Proposal Site.

6.366.38 Further to this, given the distance of the proposed development to the SPA / Ramsar, and that there is further development between the Proposal Site and designated sites; light from the proposed development does not have the potential to illuminate either the terrestrial or inter-tidal habitats above that which it is currently. As per the relevant requirement within the DCO, All all lighting will be designed as per best practice standards to ensure that no additional light spill above the current situation would occur. Therefore, this issue does not compromise the conservation objectives of any designated site.

Conclusion

6.376.39 Following the Appropriate Assessment provided above, and provision of mitigation measures as appropriate, it is concluded that the DCO application for the Kemsley CHP Plant will not compromise the conservation objectives of Natura 2000 sites, and there will be no adverse effect on site integrity.

7 STAGE ~~5~~ 4 – IN-COMBINATION ASSESSMENT

7.1 The purpose of this section is to assess the cumulative effects of the scheme, with proposed developments near the site that are currently in the planning process or have been approved but are not yet constructed. These have been reviewed for relevance with respect to European designated sites with the following considered further (planning references given before each project):

1. SW/10/444 Development of a sustainable energy plant to serve Kemsley Paper Mill, comprising pre-treated waste fuel reception, moving grate technology, power generation and export facility, air cooled condenser, 2 no. stacks (90 metres high), transformer, bottom ash facility, steam pipe connection, office accommodation, vehicle parking, landscaping, drainage and access. Land to the East of Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2TD. Permitted April 2011, located immediately east of the application boundary~~.~~

2. EN010083 Proposed application by K3 CHP Ltd., for an Order Granting Development Consent for the Wheelabrator Kemsley Power Upgrade Project. Scoping Opinion submitted December 2016, located immediately east of the application boundary~~.~~

3. 16/507687/COUNTY County matters application for the construction and operation of an Incinerator Bottom Ash (IBA) Recycling Facility on land adjacent to the Kemsley Sustainable Energy Plant. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted February 2017.Located immediately east of the application boundary.

4. 16/501484/COUNTY County matter - The construction and operation of a gypsum recycling building with plant and machinery to recycle plasterboard and the re-configuration of the existing lorry park to include office/welfare facilities and ancillary supporting activities, including rain water harvesting tanks, container storage, new weighbridges, fuel tanks, hardstanding, safe lorry sheeting access platform and automated lorry wash. Countrystyle Recycling Storage Land Ridham Dock Road Sittingbourne Kent ME9 8SR. Permitted April 2016. Located 300m north of the application boundary.

5. SW/11/1291 Anaerobic digester and associated ground profiling and landscaping. Land To The North Of The DS Smith Paper Mill, Kemsley, Sittingbourne, Kent, ME9 8SR. Permitted July 2012. Located immediately east of the application boundary.

6. 14/500327/OUT Outline (Access not reserved) - Up to 8000m2 of Class B1 and B2 floor space and all necessary supporting infrastructure including roads, parking, open space, amenity landscaping, biodiversity enhancement and buffer to proposed extension to Milton Creek Country Park. Detailed approval for Phase 1 including (i)

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vehicular and pedestrian access to Swale Way; (ii) 30 space (approximately) informal car park to serve extension to Milton Creek Country Park; Change of use of approximately 13.31 ha of Kemsley Marshes as an extension to Milton Creek Country Park with footpath connections to the proposed informal car park. Land South Of Kemsley Mill, Swale Way Sittingbourne. Permitted July 2016. Located 230 m south west of the application boundary.

7. 14/502737/EIASCO Request for Scoping Opinion to determine the extent of an application for a combined heat and power plant at Ridham Docks. Ridham Docks, 3 Kemsley Fields Business Park, Ridham Dock Road, Sittingbourne. July 2014. Located 1.3 km north-east of the application boundary.

8. 16/506935/COUNTY County Matters application for steam pipeline connecting the Ridham Dock Biomass Facility to the DS Smith Paper Mill14/501181/COUNTY KCC Regulation 13 - Scoping opinion as to the scope of an environmental impact assessment for a proposed combined heat and power plant at Ridham B. Ridham Dock, Sittingbourne, Kent. July 2014. Ridham Docks, Sittingbourne. Permitted October 2016. Located immediately adjacent to the application boundary.

9. 17/505073/FULL Erection of a tile factory including service yard, storage yard and car parking area. Located 650 m south of the application boundary.

10. 16/506193/ENVSCR EIA Screening Opinion - Outline application for proposed residential development of 275 dwellings including affordable housing with open spaces, appropriate landscaping and minor alterations to the surrounding highway network (access). Located 1.8 km west of the application boundary.

11. 17/503713/ENVSCR | EIA Screening Opinion | Land East Of Iwade Woodpecker Drive Iwade Kent ME9 8ST. Located 1.0 km north-west of the application boundary.

12. 18/500257/EIFUL Proposed development of 155 dwellings (9 x 2 bed flats, 13 x 2 bed houses, 66 x 3 bed houses, and 67 x 4 bed houses) together with associated new access road, car parking, linear park with acoustic barrier to the A249, dedicated LEAP, allotments, areas of surface water drainage attenuation and ecological enhancement, and new planting, including an area planted in the style of an orchard. Located 2.5 km west of the application boundary.

13. 15/500348/COUNTY | Install advance thermal conversion and energy facility at Kemsley Fields Business Park to produce energy and heat, including construction of new buildings to house thermal conversion and energy generation plant and equipment; construction of associated offices; erection of external plant including storage tanks; and erection of discharge stack (KCC planning application KCC/SW/0010/2015 refers). Located 400 m west of the application boundary.

14. 18/500393/FULL Erection of a natural gas fuelled reserve power plant with a maximum export capacity of up to 12MW. Located 1.2 km south of the application

boundary.

15. 16/506014/EIASCO EIA Scoping Opinion - A sustainable urban extension comprising up to 1,100 new dwellings (of a range of sizes, types and tenures, including affordable housing), a site of 10.50 ha for a secondary and primary school, and public open and amenity space, together with associated landscaping, access, highways (including footpaths and cycle ways), parking , drainage (including a foul water pumping station), utilities and service infrastructure works. Located 1.5 km west of the application boundary.

16. SW/15/500348 – Construction of advanced thermal conversion and energy facility (4Evergreen Technologies Ltd.) Located 400 m west of the application boundary.

17. 16/501228/FULL – Construction of a new baling plant building - Construction of a new baling plant building within an existing waste paper storage yard. Located immediately west of the application boundary.

18. 15/510/589/OUT – Construction of a Business Park. Located 1.9 km south of the application boundary.

19. SW/12/0816 – Relocation of Nicholls Transport depot from Lydbrook Close - iRelocation of Nicholls Transport depot from Lydbrook Close, Sittingbourne to land north of Swale Way (accommodating a notional 15% increase in the size of the company) with access to Swale Way; strategic landscaping buffer to A249; ancillary offices/amenity block; vehicle workshop; ancillary warehouse; vehicle wash-down and refuelling facilities; tractor and trailer parking area; surface water attenuation ponds and biodiversity enhancement; strategic footpath/cycleway link; staff parking; safeguarding of land fronting Swale Way and all necessary infrastructure. Located 1.4 km south-east of the application boundary.

20. SW/14/0224 – Application for a solar farm - Solar farm, comprising the erection of solar arrays of photovoltaic panels, inverter and transformer sheds, fencing, site storage cabin, combined DNO and EPC switchgear housing, internal gravel access road, and associated equipment. Located 1.0 km west of the application boundary.

21. SW/12/1211 – Construction of materials recycling facilities and waste transfer station - Construction and operation of a Materials Recycling Facility (MRF) and Waste Transfer Station (WTS) for Commercial and Industrial and Municipal Solid Waste and ancillary staff and fleet vehicle parking, vehicle workshop, 2 x weighbridges, fuel tank, sprinkler tank, pump house, substation, fencing and improved access and office and welfare facility. Located 1.5 km north.

7.2 The potential for cumulative effects between the proposed development and the other proposals is dependent on those developments resulting in residual effects for the same habitats, species and populations as those using the development site.

7.3 Given the distance of the majority of these developments from the site, potential cumulative impacts with the proposals could occur to the following sites and associated interest features:

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

SW/10/444 Kemsley K3 SEP Plant

7.4 The proposed Kemsley SEP Plant is located 85 m north east of the proposed development. In-combination impacts to the Swale/Ramsar could occur via increased disturbance during construction, and the effects of urbanisation on the breeding Marsh Harrier using the reedbed.

7.5 A detailed consideration of these impacts is provided in the ES that accompanied the planning application (WTI 2013). Following the reasoning presented there, it is possible that the general construction activity within the proposed development could further make the reedbed unattractive to this species. However, the existing proposed mitigation for this (1 ha of new reedbed habitat in an appropriate location on the Isle of Sheppey to provide alternative breeding habitat during the development) would also provide sufficient mitigation for any further disturbance/urbanisation associated with the proposed development in combination with the AD Plant.

7.6 To further avoid any activity disturbance related to human activity during the SEP construction, a 2.4 m closed-board wooden fence has been erected along the northern site boundary, as per the requirements of the K3 EcoIMMP. This is still in place, and will be for the remaining construction of the development; therefore, it is considered that the reedbed is appropriately screened from the construction traffic travelling to and from the laydown area and therefore no in-combination effects are likely.

7.7 The assessment of cumulative impacts due to the operation of both K3 and K4 has been assessed within Chapter 5 (Appendix 5.~~3~~4); no significant effects are predicted as the PEC NO_x is significantly less than the EQS (PEC = 14.2 $\mu g.m^{-3}$).

EN010083

7.8 Proposed application by K3 CHP Ltd., for an Order Granting Development Consent for the Wheelabrator Kemsley Power Upgrade Project. Scoping Opinion submitted December 2016. In-combination impacts to the Swale/Ramsar could occur via increased disturbance during construction, and the effects of urbanisation on the breeding Marsh Harrier using the reedbed.

7.9 A detailed consideration of these impacts is provided in the ES that accompanied the planning application (WTI 2016). Following the reasoning presented there, it is possible that the general construction activity within the proposed development could further make the reedbed unattractive to this species. However, the existing proposed mitigation for this (1 ha of new reedbed habitat in an appropriate location on the Isle of Sheppey to provide alternative breeding habitat during the development) would also provide sufficient mitigation for any further disturbance/urbanisation associated with the proposed development in combination with the AD Plant.

7.10 To further avoid any activity disturbance related to human activity during the SEP construction, a 2.4 m closed-board wooden fence has been erected along the northern site boundary, as per the requirements of the K3 EcoIMMP. This is still in place, and will be for the remaining construction of the development; therefore, it is considered that the reedbed is appropriately screened from the construction traffic travelling to and from the laydown area and therefore no in-combination effects are likely

16/507687/COUNTY

7.11 County matters application for the construction and operation of an Incinerator Bottom Ash (IBA) Recycling Facility on land adjacent to the Kemsley Sustainable Energy Plant. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted February 2017. A detailed consideration of these impacts is provided in the ES that accompanied the planning application. Following the reasoning presented there, it is possible that the general construction activity within the proposed development could further make the reedbed unattractive to this species. However, the existing proposed mitigation for this (1 ha of new reedbed habitat in an appropriate location on the Isle of Sheppey to provide alternative breeding habitat during the development) would also provide sufficient mitigation for any further disturbance/urbanisation associated with the proposed development in combination with the Proposed Development.

7.12 To further avoid any activity disturbance related to human activity during the SEP construction, a 2.4 m closed-board wooden fence has been erected along the northern site boundary, as per the requirements of the K3 EcoIMMP. This is still in place, and will be for the remaining construction of the development; therefore, it is considered that the reedbed is appropriately screened from the construction traffic travelling to and from the laydown area and therefore no in-combination effects are likely.

16/501484/COUNTY

7.13 Various developments have been proposed or are being constructed at the Countrystyle Recycling Ltd. site 650 m to the north of the proposed development. The largest of these includes 16/501484/COUNTY - Gypsum Recycling Building for which the Habitats Regulations Assessment submitted (SLR 2016) identified potential impacts from the development with respect to changes in water quality and disturbance of wintering birds during impact piling. The proposed mitigation to avoid such impacts included a detailed surface water management plan and the timing of piling works to occur between May and September.

7.14 Given this, the lack of impacts associated with either of these pathways identified above from the proposed development and that all other developments on the site are minor and not considered to have any effect on The Swale, it is concluded that no in-combination effects with the Kemsley generating station or associated activities are likely.

SW/11/1291 - Kemsley AD Plant (DS Smith Paper)

7.15 The proposed Kemsley AD Plant is located on the far side of the reedbed 700 m to the north of the proposed development. In-combination impacts to the Swale SPA/Ramsar could occur via increased disturbance during construction and the effects of urbanisation on breeding Marsh Harrier using the reedbed.

7.16 A detailed consideration of these impacts is provided in the ES that accompanied the planning application (DSSP 2010). Following the reasoning presented there, it is possible that the general construction activity within the proposed development could further make the reedbed unattractive to this species. However, the existing proposed mitigation for this (1 ha of new reedbed habitat in an appropriate location on the Isle of Sheppey to provide alternative breeding habitat during the development) would also provide sufficient mitigation for any further disturbance/urbanisation associated with the proposed development in combination with the AD Plant.

7.17 The maximum PC NO_x for the AD Plant at The Swale SPA was modelled as 1.38 $\mu g.m^{-3}$ (taken from Table 4.1 in Appendix 10.2 of the ES that accompanied the application [Ref 10.22]). Using the data in Appendix 5.35, the estimated PEC, in combination with K2, K3 and K4 would be 15.58 $\mu g.m^{-3}$, below the critical level of 30 $\mu g.m^{-3}$. Therefore, on the basis that no in-combination impacts are likely.

SW /12/1001 - New rear access road and extension to trailer park to serve Kemsley Paper Mill (DS Smith Paper).

7.18 In addition to the AD Plant, DS Smith Paper has also submitted an application to extend their current trailer park 100 m to the north east of the proposal site. This application includes designs for the main access road into the generating station and, therefore, impacts associated with it have been assessed above and no additional in-combination effects are considered likely.

14/500327/OUT

7.19 The proposed creation of up to 8,000 m2 of new Class B1 and B2 floor space along with the extension of the Milton Creek Country Park 600 m to the south of the proposed development is in close proximity to The Swale SPA/SSSI/Ramsar. However, potential impacts associated with the development on these sites derive from an increased recreational use of the foreshore area by visitors to the Country Park. Since there are no such increases in recreational use associated with the proposed development, there are no overlapping pathways for effects to occur and therefore no in-combination effects.

14/502737/EIASCO and 16/506935/COUNTY

7.20 Ridham Docks is 1.8 km to the north of the proposed development and comprises a range of industrial uses including a biomass incinerator (constructed), Materials Recycling Facility (MRF) and various storage facilities (including wood for the biomass incinerator). All of the current applications (submitted and not determined) relate to variations to existing permissions, none of which are considered likely to have an in-combination effect with the proposed development.

SW/15/500348 – Construction of advanced thermal conversion and energy facility (4Evergreen Technologies Ltd.)

7.21 The proposed energy facility will pyroloyse refuse-derived fuel to generate syngas that can then be burnt to generate heat and, subsequently, electricity. The process of burning the syngas leads to the emission to air of a range of chemicals, similar to those emitted by the proposed development. As part of the planning application, an assessment of the potential ecological effects of these emissions was completed (Argus Ecology 2015). This included an assumed in-combination assessment with the original K1 included in the background on

nearby sensitive receptors that concluded such effects were unlikely to be significant. Since the emissions from the current application are less than those data included in the Argus Ecology assessment, it can be concluded that in-combination effects as a result of emissions to air from the proposed development with the 4Evergreen facility are unlikely.

17/505073/FULL Erection of a tile factory including service yard, storage yard and car parking area.

7.22 The application is for a new tile factory, along with a storage yard, car park and associated landscaping features. As part of the planning application, a suite of ecological surveys were undertaken, including reptile, GCN, bird, otter and water vole. The assessment also looked at impacts on the nearby designated sites, however, it was concluded that, given the site was already highly disturbed, that the slight increase in noise would not negatively impact the birds using the SPA/Ramsar, especially given the mitigation measures, such as the creation of a bund. Therefore, although the site is located 1.2 km from the K4 site, no in-combination impacts are anticipated.

16/506193/ENVSCR EIA Screening Opinion - Outline application for proposed residential development of 275 dwellings including affordable housing with open spaces, appropriate landscaping and minor alterations to the surrounding highway network (access).

7.23 An EIA screening opinion has been requested on the above site. Limited information (apart form an illustrative masterplan) is available at this stage. However, given that the site is over 2 km from the Paper Mill, and the SPA/Ramsar, no in-combination impacts are anticipated.

17/503713/ENVSCR | EIA Screening Opinion | Land East Of Iwade Woodpecker Drive Iwade Kent ME9 8ST.

7.24 The proposals include a new residential housing development, of circa 440 new dwellings. To support the planning application, a suite of ecological surveys were carried out. The development is located within proximity to a number of designated sites, including The Swale SPA and Ramsar, The Thames Estuary and Marshes SPA and the Medway SPA and Marshes.

7.25 However, the main pathway through which impacts were anticipated were via recreational pressure. It was considered that there was a large enough buffer between the site and the designated sites that noise and air impacts could be sufficiently ruled out with a Construction Environmental Management Plan (CEMP). On this basis, no in-combination impacts are expected between this development and K4.

18/500257/EIFUL Proposed development of 155 dwellings

7.26 Proposed development of 155 dwellings together with associated new access road, car parking, linear park with acoustic barrier to the A249, dedicated LEAP, allotments, areas of surface water drainage attenuation and ecological enhancement, and new planting, including an area planted in the style of an orchard.

7.27 This development, was subject to a suite of ecological surveys, which found limited protected species to be using the site. The main ecological impacts identified were on the SPA / Ramsar, focusing in particular on recreational pressures due to the increased residential properties. However, it was concluded and agreed with Natural England, that

through providing an alternative area of greenspace, and via S.106 agreements, that these recreational impacts could be offset.

7.28 Air and noise quality impacts were not considered as an issue, due to the distance between the site and the development site; given this, no in-combination impacts are anticipated.

15/500348/COUNTY | Install advance thermal conversion and energy facility at Kemsley Fields Business Park

7.29 To produce energy and heat, including construction of new buildings to house thermal conversion and energy generation plant and equipment; construction of associated offices; erection of external plant including storage tanks; and erection of discharge stack (KCC planning application KCC/SW/0010/2015 refers).

7.30 An air quality assessment was undertaken for the site (Environmental Compliance 2014), which found that the proposed development would not negatively impacts The Swale SPA / Ramsar, as the nitrogen, sulphur dioxide and ammonia levels were not modelled to be above the critical loads.

7.31 Therefore, given that background concentrations/deposition rates are well below the relevant thresholds, no in combination effects are anticipated.

18/500393/FULL Erection of a natural gas fuelled reserve power plant with a maximum export capacity of up to 12MW.

7.32 Natural England have recently provided a response to this application, requiring more information on the air quality impacts on the SPA and Ramsar sites prior to a decision being issued. However, given that the Proposed Development replaces the older K1 and that background concentrations/depositions are well below relevant thresholds, it is unlikely that any in combination effects would occur.

16/506014/EIASCO EIA Scoping Opinion - A sustainable urban extension comprising up to 1,100 new dwellings

7.33 A sustainable urban extension comprising up to 1,100 new dwellings, of a range of sizes, types and tenures, including affordable housing), a site of 10.50 ha for a secondary and primary school, and public open and amenity space , together with associated landscaping, access, highways (including footpaths and cycle ways), parking , drainage (including a foul water pumping station), utilities and service infrastructure works. The main pathway for impacts to the designated sites considered here from the proposed urban extension would be via increased recreational pressure, an issue screened out from the Proposed Development. Therefore, no in combination assessments are likely.

In preparation – access road at Kemsley Paper Mill (DS Smith Paper ltd.)

7.34 DS Smith Paper are proposing to provide a new access to the south of the paper mill site that has included the removal of the scrub habitat to the south of the K4 site and will also include the breaking out of concrete on the K4 site for use as hardcore in the new road construction. In order to avoid in-combination disturbance effects on birds using the nearby Swale SPA/Ramsar, no more than 10 days of concrete breaking will be permitted between November and February inclusive. This approach will be secured by condition as part of that permission.

Formatted: (none)

~~7.34 The removal of scrub habitat was completed in winter 2017 (i.e. outside of the breeding bird season) and will be mitigated through the planting of a similar area of new scrub habitat elsewhere within the wider paper mill site to ensure that the total area of breeding Cetti's Warbler habitat is maintained. Therefore, in-combination impacts with K4 on this species are unlikely.~~

7.35 The breaking out of concrete will also be undertaken using all best-practice dust suppression methods. ~~The effects of noise disturbance have not yet been specifically assessed for the application. However, concrete peckers have a lower noise power level than percussive piling. Therefore, overall noise levels will be less than assessed for K4 in isolation and will not overlap in a temporal sense.~~ As such, in-combination impacts are considered unlikely.

16/501228/FULL – Construction of a new baling plant building;

7.36 The proposed baling plant building is within the existing Kemsley Mill, the proposal is for a new building to house equipment to bale loose waste paper which is presently stored on site.

7.37 The building is to be constructed on land that is entirely hardstanding, and no protected species surveys were undertaken as part of the application. Natural England were consulted in conjunction with this application, and concluded that it is not likely to have a significant effect on the interest features for which The Swale Ramsar and SPA have been classified. Natural England advised that an Appropriate Assessment was not necessary.

7.38 Given that no noise/air impacts are anticipated from the operation of the new baling house, no in-combination impacts are considered likely. Traffic levels are not considered to increase either, and so, no in-combination impacts are considered further.

SW/12/0816 – Relocation of Nicholls Transport depot from Lydbrook Close;

7.39 Relocation of Nicholls Transport depot from Lydbrook Close, Sittingbourne to land north of Swale Way (accommodating a notional 15% increase in the size of the company).

7.40 A range of ecological surveys and a screening assessment were undertaken as part of the planning application. Noise impacts were screened out on the basis that the site is closer to the much louder A249 road, and so the expected noise levels associated with the development are going to be lower than that of the road.

7.41 Any air quality issues have been mitigated via using appropriate mitigation measures, such as dust suppression and limits on traffic. Further to this, it is expected that the railway embankment will be acting as a significant barrier between the site and SPA, ultimately limiting any negative impacts, and by association, ruling out any in-combination impacts.

SW/14/0224 – Application for a solar farm;

7.42 An application for a solar farm, on 38 hectares of arable farmland on the Tonge Corner Farm, near Sittingbourne, Kent.

7.43 Wintering bird surveys found that the arable fields provided occasional opportunities for curlew and golden plover. Redshank and Lapwing were also recorded within the arable land but in very low numbers and on only a small number of occasions (Michael Woods and Associates, 2014). Other species associated with the nearby SPA and Ramsar site

were recorded in adjacent habitats, in particular over the sheep grazed pasture to the north of the application area.

7.44 In order to ensure that no negative impacts occur on the SPA / Ramsar, all good-practise dust suppression measures were used during the construction phase of the development. Noise was not considered to be an issue, during either the construction or the operational phase. The increased ecological landscaping, aimed at providing habitat for wintering birds, will also increase the carrying capacity of the site.

7.45 Given this, the lack of impacts associated with any of these pathways identified above from the proposed development and that all other developments on the site are minor and not considered to have any effect on The Swale, it is concluded that no in-combination effects with the Kemsley generating station or associated activities are likely.

SW/12/1211 – Construction of materials recycling facilities and waste transfer station.

7.46 Construction and operation of a Materials Recycling Facility (MRF) and Waste Transfer Station (WTS) for Commercial and Industrial and Municipal Solid Waste and ancillary staff and fleet vehicle parking, vehicle workshop, 2 x weighbridges, fuel tank, sprinkler tank, pump house, substation, fencing and improved access and office and welfare facility.

7.47 Prior to development, the land comprised hardstanding with a thin strip of ruderal vegetation present (SLR Consulting, 2012). The application site was located nearby to The Swale SPA and Ramsar, and so a HRA was undertaken.

7.48 Given the distance of the site from the SPA / Ramsar, no impacts from air quality/noise are anticipated (as no dust etc. would settle within the SPA / Ramsar). Therefore, no in-combination impacts are anticipated.

15/510/589/OUT – Construction of a Business Park

7.49 Outline application (now with reserved matters consent) for the development of a new business park north of Swale Way in Sittingbourne. No potential pathways for effects on nearby designated sites from the application were identified by Natural England in their consultation response to the application. Therefore, in combination effects with the Proposed Development are considered unlikely.

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Appendix 1 – Screening Matrices

Matrix 1 – Screening of Likely Significant Effects: The Swale SPA

Name of European Site	**The Swale Special Protection Area**																			
EU Code	UK9012011																			
Distance to Proposal site	275 m																			
	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality - dust		Air quality - emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
European site features	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Migratory Wintering species regularly occurring in internationally-important numbers over winter – **Dark bellied brent geese**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Migratory Wintering species regularly occurring in internationally-important numbers over winter – **Dunlin**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l

Formatted Table

Regularly supporting over 20,000 waterfowl over winter	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Diverse assemblage of breeding birds	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the SPA, the DCO application will result in no change to current management regimes of any supporting habitat of The Swale SPA during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and >200 m from The Swale SPA. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 275 m from The Swale SPA and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the Swale SPA site is over 275 metres to the north east of the Proposal site and therefore outside the area potentially most affected. However, likely significant effects cannot be excluded without further assessment and/or application of mitigation as necessary.
f.	No dust-generating activities are associated with the operational of the proposed K4. Therefore, no likely significant effect is predicted on any interest feature.
g.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-

	5.31).
h.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
i.	The Proposal site is currently hard standing and drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the Swale SPA or area which supports an SPA species, including to the reedbed to the east of the Proposal Site, will occur as a result of the proposed development (ref HRAR para 5.44).
j.	In the absence of mitigation, likely significant effects on The Swale SPA due to changes in water quality cannot be excluded due to the relatively close proximity of the nearest boundary to the proposed site.
k.	Because of the relative complexity of these issues, and their ability to have impacts on waterbirds within several hundred metres depending on the nature of the activity and the receptors, likely significant effects due to disturbance cannot be excluded at The Swale SPA without further assessment and/or application of mitigation as necessary.
l.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 2 – Screening of Likely Significant Effects: The Swale Ramsar

Name of European Site	**The Swale Ramsar**																			
EU Code	N/A																			
Distance to Proposal site	275 m																			
	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality - dust		Air quality - emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
European site features	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Ramsar Criterion 2 - **Nationally rare and scarce plant species**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Ramsar Criterion 2 - **Red Data Book invertebrates**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Ramsar Criterion 5 – **Overwinter assemblage of international importance**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Ramsar Criterion 6 - Numbers of International Importance during spring/autumn	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l

passage **Redshank**																			
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Dark bellied brent geese**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Grey Plover**	×a	×a	×b	×b	×c	×c	×d	×d	✓e	×f	×g	×h	×i	×i	✓j	✓j	✓k	✓k	×l	×l

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. No habitat occurs on site that could support interest feature invertebrates or plants. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the Ramsar site, the DCO application will result in no change to current management regimes of any supporting habitat of The Swale Ramsar during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and >200 m from The Swale Ramsar. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 275 m from The Swale Ramsar and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the Swale Ramsar site is over 275 metres to the north east of the Proposal site and therefore outside the area potentially most

	affected. However, likely significant effects cannot be excluded without further assessment and/or application of mitigation as necessary.
f.	No dust-generating activities are associated with the operational of the proposed K4. Therefore, no likely significant effect is predicted on any interest feature.
g.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
h.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
i.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the Swale Ramsar will occur as a result of the proposed development (ref HRAR para 5.44).
j.	In the absence of mitigation, likely significant effects on The Swale Ramsar due to changes in water quality cannot be excluded due to the relatively close proximity of the nearest boundary to the proposed site.
k.	Because of the relative complexity of these issues, and their ability to have impacts on waterbirds within several hundred metres depending on the nature of the activity and the receptors, likely significant effects due to disturbance cannot be excluded at The Swale Ramsar without further assessment and/or application of mitigation as necessary.
l.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 3 – Screening of Likely Significant Effects: Medway Estuary and Marshes SPA

Name of European Site	**Medway Estuary and Marshes SPA**																			
EU Code	UK9012031																			
Distance to Proposal site	2.1 km																			
	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality - dust		Air quality – emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
European site features	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Regularly supporting more than 1% of the GB breeding population of an Annex 1 species in summer – **Avocet**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Regularly supporting more than 1% of the GB breeding population of an Annex 1 species in summer – **Little tern**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Annex 1 Species Regularly	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Wintering in Numbers of European Importance - **Avocet**																				
Annex 1 Species Regularly on Passage in Numbers of European Importance – **Grey Plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Annex 1 Species Regularly on Passage in Numbers of European Importance – **Common Redshank**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Dark-bellied Brent Goose**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Shelduck**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

European Importance - **Pintail**																				
Migratory Species Regularly Wintering in Numbers of European Importance - **Ringed plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Knot**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Dunlin**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Regularly supports in winter a diverse assemblage of wintering species	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Regularly supports over 20,000 waterfowl	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Diverse assemblage of breeding migratory waterfowl	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the SPA, the DCO application will result in no change to current management regimes of any supporting habitat of the SPA during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and >2 km from the Medway Estuary & Marshes SPA. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 2.1 km from the Medway Estuary and Marshes SPA and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the SPA site is over 2 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the SPA or area which supports an SPA species will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the SPA, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the SPA, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR

	para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 4 – Screening of Likely Significant Effects: Medway Estuary and Marshes Ramsar

Name of European Site	**Medway Estuary and Marshes Ramsar**																			
EU Code	N/A																			
Distance to Proposal site	2.1 km																			
	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality - dust		Air quality – emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
European site features	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Ramsar Criterion 2 - **Nationally rare and scarce plant species**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 2 - **Red Data Book invertebrates**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 5 – **Overwinter**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

assemblage of international importance																				
Ramsar Criterion 6 - Regularly on Passage in Numbers of International Importance – **Grey Plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly on Passage in Numbers of International Importance – **Common Redshank**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Dark-bellied Brent Goose**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Shelduck**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Regularly Wintering in Numbers of	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

International Importance - **Pintail**																				
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Ringed plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Knot**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Dunlin**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the Ramsar, the DCO application will result in no change to current management regimes of any supporting habitat of the Ramsar during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and >2 km from the Medway Estuary & Marshes Ramsar. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).

d.	The Proposal Site is 2.1 km from the Medway Estuary and Marshes Ramsar and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the Ramsar site is over 2 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the Ramsar or area which supports a Ramsar species will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the Ramsar, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the Ramsar, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 5 – Screening of Likely Significant Effects: Thames Estuary and Marshes SPA

Name of European Site	**Thames Estuary and Marshes SPA**									
EU Code	UK9012021									
Distance to Proposal site	10 km									
European site features	Direct loss or damage	Change in Habitat Management	Loss of future space to	Urbanisation	Air quality – dust	Air quality - emissions	Hydrological Changes	Water quality	Disturbance	Introduction or spread of non-

	of habitats used by interest species		Regime		allow for managed realignment														native invasive species	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Annex 1 Species Regularly Wintering in Numbers of European Importance - **Avocet**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Annex 1 Species Regularly Wintering in Numbers of European Importance – **Hen harrier**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory species regularly occurring on passage – **Ringed plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Dunlin**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Numbers of European Importance - **Knot**																				
Migratory Species Regularly Wintering in Numbers of European Importance – **Black-tailed godwit**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Redshank**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Migratory Species Regularly Wintering in Numbers of European Importance - **Grey plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Assemblage regularly supporting over 20,000 waterfowl	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the SPA, the DCO application will result in no change to current management regimes of any supporting habitat of the SPA during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and 10 km from the Thames Estuary & Marshes SPA. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 10 km from the Thames Estuary and Marshes SPA and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the SPA site is 10 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30 - 5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the SPA or area which supports an SPA species will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the SPA, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the SPA, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 6 – Screening of Likely Significant Effects: Thames Estuary and Marshes Ramsar

Name of European Site	**Thames Estuary and Marshes Ramsar**																			
EU Code	N/A																			
Distance to Proposal site	10 km																			
	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality – dust		Air quality - emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
European site features	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Ramsar Criterion 2 - **Nationally rare and scarce plant species**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 2 - **Red Data Book invertebrates**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 5 – **Overwinter assemblage of international importance**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

occurring on passage in Numbers of International Importance - **Ringed plover**																				
Ramsar Criterion 6 - Species Regularly Wintering in Numbers of International Importance - **Knot**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly Wintering in Numbers of International Importance - **Dunlin**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly Wintering in Numbers of International Importance - **Ringed plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly Wintering in Numbers of International Importance - **Black-tailed**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

godwit																				
Ramsar Criterion 6 - Species Regularly occurring on passage in Numbers of International Importance – **Grey plover**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Ramsar Criterion 6 - Species Regularly occurring on passage in Numbers of International Importance – **Redshank**	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the Ramsar, the DCO application will result in no change to current management regimes of any supporting habitat of the Ramsar during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and 10 km from the Thames Estuary & Marshes Ramsar. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 10 km from the Thames Estuary and Marshes Ramsar and set against a backdrop of existing industrial buildings. No likely

	significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the Ramsar site is 10 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the Ramsar or area which supports a Ramsar species will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the Ramsar, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the Ramsar, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 7 – Screening of Likely Significant Effects: Outer Thames Estuary SPA

Name of European Site	**Outer Thames Estuary SPA**																			
EU Code	**UK9020309**																			
Distance to Proposal site	10 km																			
European site features	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality - dust		Air quality - emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
	C	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Red throated diver	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Common tern	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k
Little tern	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the SPA, the DCO application will result in no change to current management regimes of any supporting habitat of the SPA during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and 10 km from the Thames Estuary & Marshes SPA. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 10 km from the Thames Estuary and Marshes SPA and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the SPA site is 10 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the SPA or area which supports a SPA species will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the SPA, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the SPA, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

Matrix 8 – Screening of Likely Significant Effects: Queendown Warren SAC

Name of European Site	Queendown Warren SAC																			
EU Code	UK0012833																			
Distance to Proposal site	10 km																			
European site features	Direct loss or damage of habitats used by interest species		Change in Habitat Management Regime		Loss of future space to allow for managed realignment		Urbanisation		Air quality – dust		Air quality - emissions		Hydrological Changes		Water quality		Disturbance		Introduction or spread of non-native invasive species	
	C	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×g	×h	×h	×i	×i	×j	×j	×k	×k

Evidence supporting conclusions

a.	No likely significant effect from direct loss of habitat on any interest feature. The Proposal Site comprises hard standing and is an active area of the Paper Mill. Therefore, it does not support habitat suitable for any citation species (ref HRAR para 5.4 – 5.11).
b.	Given the distance from the SAC, the DCO application will result in no change to current management regimes of the Annex I habitat for which the SAC is designated during either the construction or operation of the CHP (ref HRAR para 5.12 – 5.16).
c.	The site is already developed land and 10 km from the SAC. No loss of land for managed realignment is therefore expected (ref HRAR para 5.17 – 5.19).
d.	The Proposal Site is 10 km from the SAC and set against a backdrop of existing industrial buildings. No likely significant effect on any interest feature from increased urbanisation is therefore predicted (ref HRAR para 5.20 – 5.24).
e.	Based on studies elsewhere, it is anticipated that the majority of dust generated during construction would be deposited in the area immediately surrounding the source (up to 50 metres away) and that no change in level of exposure is expected beyond 300 metres from the site. The boundary of the SAC is 10 km to the north east of the Proposal Site and therefore outside the area potentially affected by any dust. Therefore, no likely significant effect is predicted on any interest feature.
f.	As set out in Chapter 5 of the ES, the number of HGV movements associated with such construction is below the 100-movement threshold that would necessitate further assessment. Therefore, no likely significant effect is predicted from traffic emissions during construction (ref HRAR para 5.30-5.31).
g.	No likely significant effects from operational emissions are predicted on any interest feature or supporting habitat as all process contributions are <1% and/or the predicted environmental concentration is less than the Environmental Quality Standard (ref HRAR para 5.35 – 5.40).
h.	The Proposal site is currently drained via a series of drainage channels which are already in place and being used as part of the existing K1. K4 will use the same system. Therefore, no hydrological changes to terrestrial areas of the SAC will occur as a result of the proposed development (ref HRAR para 5.44).
i.	Given the distance between the proposal site and the SAC, no changes to water quality are anticipated (ref HRAR para 5.43).
j.	Given the distance between the proposal site and the SAC, no likely significant effect on any interest feature is predicted from disturbance (ref HRAR para 5.46).
k.	The only non-native invasive species currently known to be in the area, though not on the Proposal site, is Japanese Knotweed. No importation of material is required to build K4 and no final planting is proposed that could inadvertently import non-native invasive to site, as such no likely significant effect is predicted (ref HRAR para 5.47 – 5.48).

K4 CHP – Habitats Regulations Assessment Integrity Matrices

Matrix 9 – Integrity matrices: The Swale SPA

Name of European Site	The Swale SPA												
EU Code	UK9012011												
Distance to Proposal site	275 m												
	Air Quality - dust	Water quality		Disturbance – Activity		Disturbance – Recreation		Disturbance – Noise		Disturbance - Lighting		In-combination effects	
European site features	*C*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Regularly supporting more than 1% of the GB breeding population of an Annex 1 species in summer – **Avocet**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Regularly used by 1% or more of the GB population of an Annex 1 species during passage – **Redshank**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Migratory Wintering species regularly occurring in internationally-important	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h

numbers over winter – **Dark bellied brent geese**													
Migratory Wintering species regularly occurring in internationally-important numbers over winter – **Grey Plover**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Migratory Wintering species regularly occurring in internationally-important numbers over winter – **Dunlin**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h

Evidence supporting conclusions

a.	Whilst studies suggest most dust from construction of the proposed project would be deposited in the area immediately surrounding the source (up to 50 m, which is outside the boundary of the Swale SPA), and that no change in level of exposure is expected beyond 300 m from the site, this does mean that some impacts are possible within the Swale SPA boundary, which is located 275 m to the north east of the Proposal site. To ensure compliance with relevant standards and guidelines relating to dust and airborne particulate matter, various techniques not relating to the avoidance or reduction in effect on a European site will be implemented during the construction phase. This will ensure that dust is managed in line with good practice such that a conclusion of no adverse effect on integrity, once mitigation is incorporated, can be reached (ref HRAR – para 6.2-6.4).
b.	A site-wide surface water pollution prevention system will be developed to prevent the discharge of any contaminated surface water from the site. The overall philosophy for the design of the surface water pollution prevention system for the site is to manage surface water sustainably and to ensure that discharged waters do not constitute a pollution risk. Process water from the Proposed Development will be neutralised in a desiccated sump and transferred to the existing waste water treatment plant within the Mill site. This is operated under an existing permit (EPR BJ7468IC-V009) which sets pH and water temperature limits (amongst others) for discharge into The Swale (ref ES Chapter 9). The volume of water discharged will not be any higher than the levels of that which currently exist. Therefore, a conclusion of no adverse effect on integrity can be reached, once this mitigation is included (ref HRAH – 6.5-6.10).
c.	It is considered there is a limited potential for disturbance to waterbirds to be caused by activity associated with the Proposal when account is taken of the fact that, given the distance to The Swale from the proposal site and existing, intervening buildings. On this basis, a conclusion of no adverse effect on integrity can be reached (ref HRAH – 6.13 - 6.18).
d.	The potential for disturbance to SPA Citation species from recreational activities by either construction or subsequent operational staff is considered low. Whilst there is access to the Saxon Shore Way from the wider Kemsley Paper Mill, currently very little or no use is made of this by Kemsley Mill staff. It is possible that there will be increased recreational usage made of the Saxon Shore Way during both construction of the site, as Sittingbourne is within potential travel distance over lunch break. However, it should be borne in mind that Milton Creek is outside the SPA and that dogs will not be permitted on site. It is anticipated that few if any construction and operational staff will access the Swale SPA. On this basis, no adverse effect on integrity is predicted (ref HRAH – 6.19 – 6.21).
e.	Modelling of the noise levels expected during the loudest operation during construction (percussive impact piling) has been undertaken with contours of anticipated L_{Amax} levels (in dB) plotted. These show that the reedbed that supports breeding Marsh Harrier (part of the breeding bird assemblage) would be subject to noise levels between 50 and 55 dBL_{Amax}, which is below the impact threshold. Therefore, it is highly unlikely that noise disturbance during construction would have any significant effect on the Marsh Harrier population and therefore the conservation objectives for this species listed in Section 4 are not compromised. The main intertidal areas of the Swale SPA used by wintering citation birds recorded by the foreshore monitoring are over 275 m from the source of significant noise events. Modelling of the noise generated by the loudest events during construction (percussive piling) has been undertaken. The resulting noise contours have been plotted with the nearby designated sites shown, the highest noise that would be received by birds using the SPA

	is between 65 and 70 dBL_{Amax}, covering an area of some 20 ha within the designated site, essentially at the mouth of the Milton Creek. This equates to 0.32% of the 6,514 ha site. In order to avoid impacts to the SPA, a suitable piling strategy has been agreed with Natural England. On this basis, it can be concluded there will be no adverse impacts on the integrity of the SPA (ref HRAR – para 6.30).
f.	Under normal operating conditions, the Proposed Development will produce a low hum, rather than any loud, sudden noises that might elicit a disturbance response from nearby interest-feature birds using the intertidal areas of The Swale. It will furthermore not result in noise levels of greater than 55 dBL_{Amax} within the SPA. On this basis, no adverse effect on integrity is predicted (ref HRAR – para 6.33 – 6.35).
g.	Given the distance of the proposed development to the SPA, and that there is further development between the Proposal Site and designated site, light from the proposed development does not have the potential to illuminate either the terrestrial or inter-tidal habitats above that which it is currently. All lighting will be designed as per best practice standards to ensure that no additional light spill above the current situation would occur. On this basis, no adverse effect on integrity is predicted (ref HRAR – 6.36 – 6.38).
h.	The in-combination assessment has concluded that there are no adverse effects on the integrity of designated sites, either because there are no ecological pathways via which to do this, or because the in-combination modelling (for noise, air, etc) do not exceed the maximum thresholds. Therefore, no adverse effect on integrity is predicted (ref HRAR Section 7).

Appendix 2: Integrity Matrices

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Matrix 9 – Integrity matrices: The Swale Ramsar

Name of European Site	The Swale Ramsar												
EU Code	N/A												
Distance to Proposal site	275 m												
	Air Quality - dust	Water quality		Disturbance – Activity		Disturbance – Recreation		Disturbance – Noise		Disturbance - Lighting		In-combination effects	
European site features	*C*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*	*C*	*O*
Ramsar Criterion 2 - **Nationally rare and scarce plant species**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Ramsar Criterion 2 - **Red Data Book invertebrates**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Ramsar Criterion 5 – **Overwinter assemblage of international importance**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Ramsar Criterion 6 - Regularly Wintering in Numbers of International	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h

Importance **Redshank**													
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Dark bellied brent geese**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h
Ramsar Criterion 6 - Regularly Wintering in Numbers of International Importance - **Grey Plover**	×a	×b	×b	×c	×c	×d	×d	×e	×f	×g	×g	×h	×h

Evidence supporting conclusions

a.	Whilst studies suggest most dust from construction of the proposed project would be deposited in the area immediately surrounding the source (up to 50 m, which is outside the boundary of the Swale Ramsar), and that no change in level of exposure is expected beyond 300 m from the site, this does mean that some impacts are possible within the Swale Ramsar boundary, which is located 275 m to the north east of the Proposal site. To ensure compliance with relevant standards and guidelines relating to dust and airborne particulate matter, various techniques not relating to the avoidance or reduction in effect on a European site will be implemented during the construction phase. This will ensure that dust is managed in line with good practice such that a conclusion of no adverse effect on integrity, once mitigation is incorporated, can be reached (ref HRAR – para 6.2-6.4).
b.	A site-wide surface water pollution prevention system will be developed to prevent the discharge of any contaminated surface water from the site. The overall philosophy for the design of the surface water pollution prevention system for the site is to manage surface water sustainably and to ensure that discharged waters do not constitute a pollution risk. Process water from the Proposed Development will be neutralised in a desiccated sump and transferred to the existing waste water treatment plant

	within the Mill site. This is operated under an existing permit (EPR BJ7468IC-V009) which sets pH and water temperature limits (amongst others) for discharge into The Swale (ref ES Chapter 9). The volume of water discharged will not be any higher than the levels of that which currently exist. Therefore, a conclusion of no adverse effect on integrity can be reached, once this mitigation is included (ref HRAH – 6.5-6.10).
c.	It is considered there is a limited potential for disturbance to waterbirds to be caused by activity associated with the Proposal when account is taken of the fact that, given the distance to The Swale from the proposal site and existing, intervening buildings. On this basis, a conclusion of no adverse effect on integrity can be reached (ref HRAH – 6.13 - 6.18).
d.	The potential for disturbance to Ramsar Citation species from recreational activities by either construction or subsequent operational staff is considered low. Whilst there is access to the Saxon Shore Way from the wider Kemsley Paper Mill, currently very little or no use is made of this by Kemsley Mill staff. It is possible that there will be increased recreational usage made of the Saxon Shore Way during both construction of the site, as Sittingbourne is within potential travel distance over lunch break. However, it should be borne in mind that Milton Creek is outside the Ramsar and that dogs will not be permitted on site. It is anticipated that few if any construction and operational staff will access the Swale Ramsar. On this basis, no adverse effect on integrity is predicted (ref HRAH – 6.19 – 6.21).
e.	The main intertidal areas of the Swale Ramsar used by wintering citation birds recorded by the foreshore monitoring are over 275 m from the source of significant noise events. Modelling of the noise generated by the loudest events during construction (percussive piling) has been undertaken. The resulting noise contours have been plotted with the nearby designated sites shown, the highest noise that would be received by birds using the Ramsar is between 65 and 70 dBL_{Amax}, covering an area of some 20 ha within the designated site, essentially at the mouth of the Milton Creek. This equates to 0.32% of the 6,514 ha site. In order to avoid impacts to the Ramsar, a suitable piling strategy has been agreed with Natural England. On this basis,, it can be concluded there will be no adverse impacts on the integrity of the Ramsar (ref HRAR – para 6.30).
f.	Under normal operating conditions, the Proposed Development will produce a low hum, rather than any loud, sudden noises that might elicit a disturbance response from nearby interest-feature birds using the intertidal areas of The Swale. It will furthermore not result in noise levels of greater than 55 dBL_{Amax} within the Ramsar. On this basis, no adverse effect on integrity is predicted (ref HRAR – para 6.50 – 6.52).
g.	Given the distance of the proposed development to the Ramsar, and that there is further development between the Proposal Site and designated site, light from the proposed development does not have the potential to illuminate either the terrestrial or inter-tidal habitats above that which it is currently. All lighting will be designed as per best practice standards to ensure that no additional light spill above the current situation would occur. On this basis, no adverse effect on integrity is predicted (ref HRAR – 6.53 – 6.55).
h.	The in-combination assessment has concluded that there are no adverse effects on the integrity of designated sites, either because there are no ecological pathways via which to do this, or because the in-combination modelling (for noise, air, etc) do not exceed the maximum thresholds (ref HRAR Section 7).

Appendix 1. Comparison of seasonal peak counts of waterbirds recorded at Kemsley in 2009/10 and 2016. Species associated with the designation on The Swale SPA are shown in bold

Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5-year peak mean[2]
Avocet	80	15.9	125	26.5	60	12.0	98	20.8	46	9.2	103	
Bar-tailed Godwit	11	1.2	34	4.1	1	0.1	5	0.6	5	0.6	33	
Black-headed Gull	128	6.8	653	23.9	186	9.9	534	19.6	86	6.1	807	
Black-tailed Godwit	1500	94.8	570	38.4	919	58.1	476	32.1	329	20.8	120	
Black Tern	0	0	0	0	0	0	0	0	4	400.0	0	
Brent Goose (Dark-bellied)	24	1.2	1	0.04	12	0.6	4	0.2	0	0	11	
Canada Goose	4	1.7	3	1.2	0	0	0	0	0	0	4	

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Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]
Common Gull	9	1.7	30	56.6	2	0.4	18	34.0	10	1.9	6	
Common Sandpiper	1	6.3	0	0	2	12.5	1	11.1	0	0	3	
Common Tern	0	0	0	0	3	10.3	4	25.0	0	0	4	
Coot	43	4.4	12	1.8	0	0	2	0.3	0	0	2	
Cormorant	2	2.0	22	14.6	3	3.0	2	1.3	7	6.9	31	
Curlew	51	3.1	118	10.4	156	9.6	42	3.7	49	3.0	96	
Dunlin	1678	20.6	2325	34.7	1	0.01	598	8.9	537	6.6	256	
Egyptian Goose	0	0	0	0	0	0	1		0	0	0	
Gadwall	4	2.9	2	1.9	1	0.7	3	2.8	0	0	0	
Goldeneye	2	11.1	0	0	0	0	0	0	0	0	0	

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Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]
Golden Plover	16	0.1	0	0	0	0	0	0	192	1.7	0	
Great Black-backed Gull	3	8.8	3	27.3	1	2.9	2	18.2	3	8.8	2	
Great Crested Grebe	6	6.5	9	20.0	9	9.8	7	15.6	5	5.4	3	
Great Northern Diver	1	100.0	1		0	0	0	0	0	0	0	
Greenshank	13	56.5	2	8.0	3	13.0	1	4.0	9	39.1	6	
Green Sandpiper	2	13.3	0	0	0	0	0	0	3	20.0	0	
Grey Heron	4	8.7	3	9.7	0	0	0	0	4	8.7	4	
Grey Plover	62	3.4	87	7.1	27	1.5	19	1.6	98	5.4	83	

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Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]
Herring Gull	3	0.5	70	24.8	5	0.8	40	0.4	4	0.6	43	
Kingfisher	2	200.0	2	100.0	0	0	0	0	2	200.0	0	
Knot	940	25.1	130	5.5	10	0.3	85	3.6	67	1.8	0	
Lapwing	553	4.1	958	14.7	0	0	1	0.02	383	2.8	67	
Lesser Black-backed Gull	3	7.5	6	14.6	1	2.5	22	2.4	1	2.5	125	
Little Egret	3	2.5	11	9.2	2	1.7	1	0.8	23	19.2	54	
Little Grebe	26	42.6	29	46.8	2	3.3	2	1.6	5	8.2	5	
Little Ringed Plover	0	0	0	0	0	0	2		0	0	0	
Little Tern	0	0	0	0	0	0	1	10.0	0	0	0	

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Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]
Long-tailed Duck	0	0	1	0.2	0	0	0	0	0	0	0	
Mallard	5	0.2	10	0.9	4	0.2	10	0.1	13	0.6	14	
Mediterranean Gull	0	0	6	21.4	2	20.0	2	7.1	0	0	1	
Moorhen	19	39.6	4	15.4	0	0	4	15.4	16	33.3	6	
Mute Swan	1	0.5	6	4.9	0	0	2	1.6	1	0.5	0	
Oystercatcher	847	17.2	1006	19.4	240	4.9	166	3.2	583	11.9	604	
Pintail	218	37.3	2	0.7	36	6.2	18	5.9	10	1.7	0	
Pochard	1	0.5	1	0.7	0	0	12	8.8	0	0	5	
Red-breasted Merganser	14	43.8	1	6.7	7	21.9	3	20.0	1	3.1	0	

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Species	Winter				Spring				Autumn			
	2009/10		2016		2009/10		2016		2009/10		2016	
	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[1]	Peak count from intertidal surveys	% of SPA population based on applicable 5 year peak mean[2]
Redshank	357	25.3	230	20.5	210	14.9	110	9.8	463	32.9	515	
Red-throated Diver	0	0	0	0	0	0	1	25.0	0	0	0	
Ringed Plover	40	6.9	14	4.4	4	0.7	7	2.2	55	9.5	48	
Sandwich Tern	0	0	0	0	0	0	1	2.6	0	0	0	
Scaup	1	25.0	0	0	0	0	0	0	0	0	0	
Shag	1		0	0	0	0	0	0	0	0	0	
Shelduck	257	14.1	81	14.5	76	4.2	28	2.9	110	6.0	61	
Shoveler	5	1.8	0	0	0	0	0	0	0	0	0	
Snipe	28	52.8	18	37.5	24	45.3	21	10.9	1	1.9	2	
Spotted Redshank	1	10.0	0	0	0	0	0	0	1	10.0	15	

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Species	Winter				Spring				Autumn			
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Teal	549	9.6	527	14.1	269	4.7	192	5.1	139	2.4	177	
Tufted Duck	1	0.9	10	6.8	1	0.9	21	14.4	0	0	12	
Turnstone	68	17.4	90	26.1	68	17.4	22	6.4	88	22.6	133	
Velvet Scoter	0	0	14	-	0	0	0	0	0	0	0	
Water Rail	1	20.0	0	0	0	0	0	0	0	0	0	
Whimbrel	0	0	0	0	9	40.9	11	78.6	2	9.1	5	
Wigeon	766	5.2	347	3.2	72	0.5	180	1.7	216	1.5	299	
Yellow-legged Gull	0	0	0	0	0	0	0	0	0	0	3	

[1]Frost et al. (2016)

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