TECHNICAL NOTE REGARDING BEIS LETTER DATED 23/05/19

1. The following technical note sets out the Applicant's response to the questions raised by BEIS in their letter dated 23/05/19.

First Question

2. The first question sets out:

The Applicant is requested to clarify what quantitative or qualitative information is available to support the conclusion that the in-combination effects of the K4's operational emissions will not give rise to significant effects on the following designated sites:

- *The Swale Special Protection Area (SPA);*
- *The Swale Ramsar site;*
- *Medway Estuary and Marshes SPA;*
- *Medway Estuary and Marshes Ramsar site;*
- *Thames Estuary and Marshes SPA;*
- *Thames Estuary and Marshes Ramsar site;*
- *Queendown Warren Special Area of Conservation (SAC);*
- *Outer Thames Estuary SPA.*

Applicant's response:

3. At the time of the original assessment and subsequent Examination, the process by which in-combination air quality effects were assessed included the following test of significance (as per Appendix 5.5 of the ES):

*Maximum PC and PEC of NO_x and N/acid deposition have been compared against the relevant EQS for the relevant habitat type/interest feature. As per the Environment Agency's guidelines**[[i]]**, the following hierarchy of assessment has been followed:*

If PC < 1% (<100% for LNR/NNR) of relevant EQS the emission is considered not significant;

If PC > 1% but the resulting PEC < 70% (European and SSSI sites) of the relevant EQS, the emission is not considered significant;

If PC > 1% and PEC > 70% (for European and SSSI sites) the emission is considered to result a potentially significant result and further, more detailed assessment undertaken to determine likely significant effect.

*Further, as per EA 2007**[[ii]]**: "Where the concentration within the emission footprint in any part of the European site(s) is less than 1% of the relevant long-term benchmark (EAL, Critical Level or Critical Load), the emission is not likely to have a significant effect alone or in combination, irrespective of the background levels".*

4. At the time of the Examination, all Interested Parties were happy that the assessments completed to date accounted for the potential for in-combination effects due to emissions to air. It should also be noted that the background concentrations used in the assessments include a contribution from K1 with the contribution of K4 then added on top of this, essentially double counting the emissions. This is because K4 is a more efficient replacement of K1 with half the mass emission of NO_x and that the two stations will only operate simultaneously during the commissioning period for K4. Further, modelling includes emissions from the K2 facility present on the DS Smith Paper Mill site which has since ceased operation and is in the process of demolition.

5. Therefore, the information presented within the ES and below with respect to the assessment of potential effects of emissions to air, including in-combination, is extremely conservative. Qualitatively, therefore, any in-combination effects on designated sites with other plans and projects will be less than any impacts currently experienced, once K1 ceases to function.

Further evidence

6. In terms of qualitative evidence to support the conclusion of no in-combination effects, with respect to the Outer Thames Estuary SPA, the APIS website (www.apis.ac.uk) describes the habitat as inshore sublittoral sediment, which provides wintering habitat for the red-throated diver. APIS states that this habitat is not sensitive to increases in NO_x or nitrogen deposition or acid deposition. As such, there is no potential for in-combination effects on this designated site as it is not sensitive to such effects.

7. However, we are aware that Natural England would now require the effect of a proposed development relative to the 1% threshold to be considered on an in-combination basis. Therefore, to ensure there is no ambiguity on this matter, we set out the below, using a cumulative summed process contribution (PC) for all plans/projects considered in combination with K4 within the ES for which data were available to demonstrate that this has no material effect on the conclusions originally drawn:

   - Kemsley AD Plant (planning ref SW/11/1291);
   - Kemsley K3 SEP (planning ref SW/10/444);
   - Advanced thermal conversion and energy facility (planning ref SW/15/500348); and
   - Natural gas-fuelled reserve power plant (planning ref 18/500393/FULL).

8. In addition to the projects listed above assessed in the original ES, the Applicant is aware that the proposed power upgrade to K3 and Wheelabrator Kemsley North (WKN) Waste to Energy Facility (reference EN010083) has now consulted pursuant to Section 42 of The Planning Act 2008. Data from this consultation has also been included in the assessment below.

9. In respect of operational emissions from K4, as set out in Appendix 5.5 of the ES, there are three potential effects:

- gaseous oxides of nitrogen (NO_x);
- nutrient nitrogen derived from NO_x; and
- acid deposition derived from NO_x.

Oxides of nitrogen (NO_x)

10. The potential in-combination effects of K4's operational emissions of NO_x with both the K2 and K3 generating stations on The Swale SPA/Ramsar, as the nearest designated site to K4, is set out in Appendix 5.5 of the ES where it states:

For The Swale SPA/SSSI/Ramsar, when the PC for K2, K3 and K4 is added to the ambient concentration of 12.3 µg.m^{-3}, the PEC is 14.2 µg.m^{-3} which is only 47% of the critical level. On that basis the effects at The Swale can also be screened out as insignificant.

11. This is further expanded in Section 7 of the Habitats Regulations Assessment Report (HRAR) where the Process Contribution (PC) of NO_x from K2, K3 & K4 is added to that modelled as being produced by the Kemsley AD Plant (planning ref SW/11/1291) at para 7.18:

The maximum PC NO_x for the AD Plant at The Swale SPA was modelled as 1.38 µg.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 5.4, the estimated PEC, in combination with K2, K3 and K4 would be 15.58 µg.m^{-3}, below the critical level of 30 µg.m^{-3}. Therefore, on this basis no in-combination impacts are likely.

12. The max PC NO_x for the Reserve Power Plant and Advanced Thermal Conversion and Energy Facility at The Swale SPA/Ramsar are 2.23 and 1.33 µg.m^{-3}, respectively, while that for the K3 upgrade and WKN is 1.4 µg.m^{-3} (taken from the relevant assessments for those projects). This gives a total cumulative PEC of 20.54 µg.m^{-3}, well below the critical level. Therefore, there is no potential for in-combination effects on designated sites due to NO_x emissions at The Swale SPA/Ramsar.

13. Similarly, for the other, more distant designated sites listed, there is also substantial headroom between the AC and critical level (data taken from APIS):

Designated Site	Ambient NO_x Concentration (µg.m^{-3})
Medway Estuary and Marshes SPA/Ramsar	24.42
Thames Estuary and Marshes SPA/Ramsar	18.27
Queendown Warren SAC	18.72

14. Therefore, there is no potential for in-combination effects from operational emissions of NO_x at these sites.

Nutrient nitrogen deposition

15. In respect of nutrient nitrogen, the minimum critical loads of all of the interest features of the various designated sites and their corresponding ambient deposition rate are set out in Table C2 of Appendix 5.5 of the ES. This has been expanded to include the relevant process contributions from each of the other developments for which sufficient data are available:

Designated Site	Interest Feature	Critical Load (kgN.ha^{-1}.yr^{-1})	Ambient deposition rate (kgN.ha^{-1}.yr^{-1})	Kemsley K4 CHP PC (kgN.ha^{-1}.yr^{-1})	K3 SEP (kgN.ha^{-1}.yr^{-1})	Kemsley AD (SW/11/1291) (kgN.ha^{-1}.yr^{-1})	Reserve Power Plant PC (18/500393/FULL) (kgN.ha^{-1}.yr^{-1})	Garden of England Energy Facility (15/500348/COUNTY) (kgN.ha^{-1}.yr^{-1})	Increased K3 and WKN (EN010083) (kgN.ha^{-1}.yr^{-1})	Cumulative PC (kgN.ha^{-1}.yr^{-1})	Cumulative PEC (kgN.ha^{-1}.yr^{-1})	Cumulative PC/CL (%)	Cumulative PEC/CL (%)
The Swale SPA	Breeding Lapwing	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Ringed plover	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Eurasian reed warbler	15	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	32.2	126.9
	Eurasian curlew	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Reed bunting	15	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	32.2	126.9
	Dark-bellied brent goose	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Common shelduck	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Eurasian teal	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2

	Mallard	Not available	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	-	-
	Common moorhen	Not available	9.8	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	14.6	-	-
	Gadwall	Not available	9.8	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	14.6	-	-
	Grey plover	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Dunlin	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Common coot	Not available	9.8	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	14.6	-	-
	Common redshank	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Eurasian oystercatcher	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
Medway Estuary and Marshes SPA	Common tern	8	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	3	169.5
	Red-throated diver	Not sensitive	10.81	0.01	0.09	0.0005	-	0.19	0.06	0.4	11.1605	-	-
	Eurasian curlew	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Common greenshank	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Little tern	8	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	3	169.5
	Hen harrier	10	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	3	135.6
	Merlin	10	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	3	135.6
	Ringed plover	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8

	Short-eared owl	10	Not available	0.01	0.09	0.0005	-	0.19	0.06	0.4	-	3	-
	Great crested grebe	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Great cormorant	Not available	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	-	-
	Dark-bellied brent goose	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Eurasian teal	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Mallard	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Northern shoveler	Not available	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	-	-
	Common shelduck	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Eurasian wigeon	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Northern pintail	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Common pochard	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Eurasian oystercatcher	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Pied avocet	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Grey plover	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Red knot	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Dunlin	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8

	Black-tailed godwit	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Common redshank	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Ruddy turnstone	20	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	1	67.8
	Tundra swan	Not sensitive	13.21	0.01	0.09	0.0005	-	0.19	0.06	0.4	13.5605	-	-
	Common kingfisher	Not available	10	0.01	0.09	0.0005	-	0.19	0.06	0.4	10.3505	-	-
Thames Estuary and Marshes SPA	Ringed plover	8	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	1	152.0
	Hen harrier	10	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	1	121.6
	Pied avocet	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8
	Grey plover	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8
	Red knot	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8
	Dunlin	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8
	Black-tailed godwit	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8
	Common redshank	20	12.05	0.01	0.05	0.0001	-	0.03	0.02	0.1	12.1601	0	60.8

Queendown Warren SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates	15	15.4	0.01	0.02	0.0001	-	0.03	0.02	0.1	15.4801	0	103.2
The Swale Ramsar	Intertidal habitats (coastal saltmarsh)	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Saltmarsh (coastal saltmarsh)	20	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	24.2	95.2
	Shingle & sea cliff (dunes, shingle & machair)	10	14.2	0.1	0.5	0.0142	1.92	1.9	0.4	4.8	19.0	48.3	190.3
	Arable (horticultural & arable)	Not sensitive	-	-	-	-	-	-	-	-	-	-	-
	Standing water (standing open water)	No CL	-	-	-	-	-	-	-	-	-	-	-

	Waste land, industrial (no corresponding APIS habitat)	Not sensitive	-	-	-	-	-	-	-	-	-	-	-
Medway Estuary and Marshes Ramsar	Intertidal habitats (coastal saltmarsh)	20	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	2	68.0
	Saltmarsh (coastal saltmarsh)	20	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	2	68.0
	Shingle & sea cliff (dunes, shingle & machair)	10	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	4	136.0
	Wet grassland (grazing marsh)	20	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	2	68.0
	Dry grassland (grazing marsh)	20	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	2	68.0
	Bogs, marshes, fens (fen, marsh & swamp)	15	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	3	90.7

	Standing water (standing open water)	No CL	-	-	-	-	-	-	-	-	-	-	-
	Intertidal habitats (coastal saltmarsh)	20	13.21	0.01	0.09	0.0005	-	0.19	0.1	0.4	13.6005	2	68.0
Thames Estuary and Marshes Ramsar	Intertidal habitats (coastal saltmarsh)	20	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.5	60.7
	Saltmarsh (coastal saltmarsh)	20	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.5	60.7
	Shingle & sea cliff (dunes, shingle & machair)	10	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.9	121.4
	Wet grassland (grazing marsh)	20	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.5	60.7
	Dry grassland (grazing marsh)	20	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.5	60.7

	Bogs, marshes, fens (fen, marsh & swamp)	15	12.05	0.01	0.05	0.0001	-	0.03	<0.05	0.1	12.1401	0.6	80.9
	Standing water (standing open water)	No CL	-	-	-	-	-	-	-	-	-	-	-

16. For the majority of interest features, the cumulative PEC nutrient nitrogen deposition rates are below the minimum critical load and/or the in-combination PC does not exceed 1% of the minimum critical load. For those interest features where the cumulative PEC is >70% of the critical load but <100%, no cumulative effect is predicated on the basis that critical loads are defined as *" a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*" (definition taken from APIS) and that the critical loads used above are the minimum presented on APIS. Therefore, following this definition of the minimum critical load, no in-combination effect is predicted.

17. The exception to this in the table above (highlighted yellow) would be Eurasian reed warbler and reed bunting at The Swale SPA and hen harrier/merlin for the Medway Estuary & Marshes SPA. All of these species are associated with both reedbed and grazing marsh habitats within which they breed (in the case of the reed warbler and reed bunting) and forage. Both habitats are not considered very sensitive to nutrient nitrogen deposition; the APIS website from which the information with respect to critical loads is derived incorporates reedbed with other wetland habitats such as marsh and fens. It notes that the minimum critical load for these habitats and used in Appendix 5.5 (15 $kgN.ha^{-1}.yr^{-1}$) is most appropriate at higher latitudes rather than the low latitudes of Kent. Reedbeds are, by their nature, monospecific, dominated by common reed. As such, their susceptibility to competitive exclusion by other graminoid species is low. The upper end of the critical load range is therefore considered more appropriate for these habitats. Using the upper critical load for this habitat of 30 $kgN.ha^{-1}.yr^{-1}$ is therefore more appropriate meaning that any cumulative PEC will not exceed the critical load and, as such, cumulative effects in combination with K4 would not be significant.

18. With respect to hen harrier and merlin, the 10 $kgN.ha^{-1}.yr^{-1}$ critical load used represents upland habitats (including, heathland) that these species are also associated with elsewhere in the country and that will be naturally more nutrient poor and therefore more susceptible to species composition change due to atmospheric nitrogen input than the grazing marsh habitats over which they forage during winter in Kent. The majority of such habitats within the Medway system are agriculturally-improved and therefore the upper end of the critical load range is therefore considered more appropriate for these habitats of 30 $kgN.ha^{-1}.yr^{-1}$. On this basis, any cumulative PEC will not exceed the critical load and, as such, cumulative effects in combination with K4 would not be significant.

19. In respect of the two interest features at the Medway Estuary & Marshes SPA where the ambient deposition rate already exceeds the minimum critical load (breeding little tern and breeding common tern), the minimum critical load used is 8-10 $kgN.ha^{-1}.yr^{-1}$ listed on APIS as representing acid stable dune

grasslands. This is a habitat that both species do breed on in other parts of the country, but does not occur within the Medway Estuary system***[iii]***; both species instead breed on the many salt marsh islands (Burntwick Island, for example) that occur in the river channel. As such, a more appropriate critical load would be that for early-pioneer salt marsh of 30 kgN.ha^{-1}.yr^{-1}. Using this figure, the cumulative PEC is only circa 48% of the critical load meaning that the cumulative PEC does not exceed the critical load and, as such, cumulative effects in combination with K4 are not significant.

20. Two habitats that may support Ramsar interest features are shown as having exceedances for nutrient nitrogen (shingle & sea cliff on The Swale Ramsar and Medway Estuary & Marshes Ramsar) – highlighted yellow in the table above. However, the closest area of this habitat type within The Swale is on the eastern end of the Isle of Sheppey some 12 km from any of the developments considered. While modelling has not been undertaken in this location, given the distance, cumulative effects are considered very unlikely. The data presented above combines the maximum PCs from each development to give a summed PC. This is highly conservative as there would be very little geographic overlap between where these maximum rates of deposition occurred, especially given the large area of the two sites in question; none of them will occur 12 km from K4. The nearest shingle habitats to K4 within the Medway Estuary & Marshes Ramsar are to the north west, on the north of Deadman's Island and the southern edge of the Isle of Grain where the Medway meets the Thames Estuary & Marshes Ramsar. While some shingle beaches may be potentially susceptible to atmospheric nitrogen inputs, in particular where the shingle is stable and becoming vegetated, the shingle that occurs in these locations within the Medway is mostly tidal, being inundated by sea water on a twice-daily basis. This means that, in this location, they are considered to be insensitive to atmospheric nutrient nitrogen deposition with their nutrient status controlled by that of the inundating tide. On this basis, no in-combination effects are predicted.

Acid deposition

21. As set out in Appendix 5.5, the supporting habitats of the three Ramsar sites in the study area are not sensitive to acid deposition. Therefore, there is no potential for in-combination effects at these sites as they are not sensitive to acid deposition. Similarly, although APIS provides critical load function data for some of the bird interest features of the SPAs (as shown in Appendix 5.5), it also notes that there is "no expected negative impact on the species due to impacts on the species' broad habitat" from acid deposition. On this basis, therefore, there are no potential in-combination effects due to acid deposition on any of the SPAs.

22. Queendown Warren SAC is designated for its orchid-rich calcareous grassland habitat, occurring on a south-facing escarpment of the North Downs. Being calcareous in nature, the soils are inherently very well buffered against acidification with a critical load of 4.856 keq.ha^{-1}.yr^{-1}. The current background acid deposition at this site is 1.1 keq.ha^{-1}.yr^{-1}, meaning that there is substantial headroom before any in-combination effect may occur. Given the distance from the projects considered (>10 km), and correspondingly small rates of associated acid deposition, there will be no potential for in-combination effects on this site from such deposition.

Summary

23. The table below sets out a summary of the above evidence in respect of Question 1 that allows a conclusion of no in-combination effects on any of the above designated sites to be reached.

Designated site	Oxides of nitrogen (NO_x)	Nutrient nitrogen deposition	Acid deposition
The Swale SPA	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	Ambient background deposition rate and in-combination PC not sufficient to exceed critical load for majority of interest features. Using more accurate critical load (instead of simply using the minimum CL) for two interest features leads to conclusion of no exceedance.	Habitats and interest features not sensitive to acid deposition.
The Swale Ramsar	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	Ambient background deposition rate and in-combination PC not sufficient to exceed critical load for majority of supporting habitats. Only supporting habitat where exceedance modelled as possible does not occur within 10 km of K4 where deposition would be far smaller.	Habitats and interest features not sensitive to acid deposition.
Medway Estuary & Marshes SPA	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	Ambient background deposition rate and in-combination PC not sufficient to exceed critical load for majority of interest features. Using more accurate critical load (instead of simply using the minimum CL) for four interest features leads to conclusion of no exceedance.	Habitats and interest features not sensitive to acid deposition.
Medway Estuary & Marshes Ramsar	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	Ambient background deposition rate and in-combination PC not sufficient to exceed critical load supporting habitats. Only supporting habitat where exceedance modelled as possible does not occur within 8.5 km of K4 where deposition would be far smaller.	Habitats and interest features not sensitive to acid deposition.

Thames Estuary & Marshes SPA	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	In-combination PC less 1% of critical load.	Habitats and interest features not sensitive to acid deposition.
Thames Estuary & Marshes Ramsar	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	In-combination PC less 1% of critical load.	Habitats and interest features not sensitive to acid deposition
Outer Thames Estuary SPA	Habitats and interest features not sensitive to ambient NO_x concentrations.	Habitats and interest features not sensitive to nutrient nitrogen deposition.	Habitats and interest features not sensitive to acid deposition.
Queendown Warren SAC	Ambient background concentration well below critical level so in-combination PC not sufficient to lead to exceedance of critical level.	In-combination PC less 1% of critical load.	Background deposition rate not sufficient to exceed critical load function. In-combination PC very small, given distance to SAC.

Second Question

24. The second Question sets out:

The information provided to inform an Appropriate Assessment looks at the effect of changes to water quality, increased airborne dust and increased disturbance. An in-combination assessment is provided in Section 7 of the report with a list of projects currently in the planning process, or approved but not yet constructed. The Applicant is requested to clarify what assessment it has made of potential in-combination effects associated with existing operational projects.

Applicants Response:

25. With respect to all three impacts, the Appropriate Assessment stage of the HRAR relies on the implementation of measures to avoid any adverse effects occurring. As such, by avoiding effects from occurring, there is no potential for in-combination effects with existing operational projects.

26. Notwithstsanding this, operational projects that could act in-combination with K4 are those with potential effects on The Swale SPA/Ramsar and the Medway Estuary and Marshes SPA/Ramsar. The following have therefore been considered:

- Existing operations at Kemsley Paper Mill;
- Existing operations from other industry in the area, in particular the Knauf factory, those at Ridham Docks, Sittingbourne GPark (including the Morrison's distribution depot) and Countrystyle Recycling; and
- Activities that discharge water into the designated sites.

27. All existing industrial operations, listed above, where any potential dust generation could occur will be implementing standard dust control measures, the control of which would have been a consideration at consenting stage for the activity. Therefore, given that these operations will be avoiding the generation of dust, there is no potential for any in-combination effect.

28. All existing discharges to The Swale or Medway are regulated by the Environment Agency, including through the Environmental Permitting process, with the consents for such discharge subject to their own Habitats Regulations Assessment. The consents granted are periodically reviewed through the Review of Consents process to ensure they are all still appropriate with any necessary amendments made, depending on the findings. For example, process water from K4 will be discharged via an Effluent Treatment Plant pursuant to an Environment Agency IPPC permit for the ETP which sets water quality limits and requires ongoing monitoring. Moreover, discharge from K4 has also been the subject of a Water Framework Directive assessment and Marine Conservation Zone Assessment provided pursuant to the Statement of Common Ground agreed and signed with Natural England and the Environment Agency. Therefore, given this tight control of discharges (including that from Kemsley Paper Mill), there is no potential for in-combination effects. As with the response to the first question, it also should be noted that K4 is a replacement for K1; therefore, water discharged from K4 will simply replace that currently discharged from K1, albeit reduced in volume.

29. The only pathway by which disturbance impacts could occur in combination with K4 from operational activities would be through loud, sudden noise generation that could illicit startle responses. By their nature, industrial activities can result in occasional, sudden noise generation. However, any activities that would result in frequent occurrences of such noise would have been subject to their own controls at consenting stage, through the Habitats Regulations Assessment process; they may be subject to timing restrictions etc. to avoid the periods of the year when birds using the SPA are most vulnerable, for example. Therefore, when such avoidance mechanisms are combined with those described in the HRAR for K4, there is no potential for in-combination effects.

30. All avoidance measures for K4 are secured by Requirements within the DCO and represent industry standard practices meaning there is high confidence they are effective.

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[i] Environment Agency (2012a) Operational Instruction 66_12 Simple assessment of the impact of aerial emissions from new or expanding IPPC regulated Industry for impacts on nature conservation. EA.

Environment Agency (2012b) Operational Instruction 67_12 Detailed assessment of the impact of aerial emissions from new and expanding IPPC regulated industry for impacts on nature conservation. EA.

[ii] Environment Agency, 2007, Stage 1 and 2 Assessment of new PIR permissions under the Habitat Regulations.

[iii] http://jncc.defra.gov.uk/pdf/SPA/UK9012031.pdf