Appendix 9.6 Derivation of Residual Noise Limits	

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## Daytime period

		NSR has	Wind Speed	, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
STAGE 0 – Determine the existi	ng noise leve	l at each NSR a	arising from Al	L cumulative	turbines.							
Provided for information only ar	nd not used fo	or derivation of	noise limits.									
			Predicted le	vel from sma	ll turbines, dE	BL <sub>A90</sub>						
Crowber	NSR1	No	17.6	19.7	21.8	23.9	26.0	28.1	30.2	32.3	34.4	
Lesshamar	NSR2	No	12.4	14.5	16.6	18.7	20.8	22.9	25.0	27.1	29.2	
North Guith	NSR3	No	12.5	14.6	16.7	18.8	20.9	23.0	25.1	27.2	29.3	
Mid Guith	NSR4	No	15.4	17.5	19.6	21.7	23.8	25.9	28.0	30.1	32.2	
Benstonhall	NSR5	No	22.6	24.7	26.8	28.9	31.0	33.1	35.2	37.3	39.4	
Bredakirk	NSR6	Yes	26.0	28.1	30.2	32.3	34.4	36.5	38.6	40.7	42.8	
Shoehall	NSR7	No	21.7	23.8	25.9	28.0	30.1	32.2	34.3	36.4	38.5	
Newark	NSR8	Yes	27.8	29.9	32.0	34.1	36.2	38.3	40.4	42.5	44.6	
Fers Ness	NSR9	Yes	24.1	26.2	28.3	30.4	32.5	34.6	36.7	38.8	40.9	
High Hill	NSR10	No	3.6	5.7	7.8	9.9	12.0	14.1	16.2	18.3	20.4	
STAGE 1 – Determine the existi	_		_									
At NSRs which have their own to	urbine(s) and	may therefore l	be considered	to have Finan	cially Involved	(FI) noise limit	s applicable to	their own turbi	ine(s), predicte	d noise levels	exclude noise	from their turbine(s).
			Predicted le	vel from sma	ll turbines, dE	BL <sub>A90</sub>						
Crowber	NSR1	No	17.6	19.7	21.8	23.9	26.0	28.1	30.2	32.3	34.4	
Lesshamar	NSR2	No	12.4	14.5	16.6	18.7	20.8	22.9	25.0	27.1	29.2	
North Guith	NSR3	No	12.5	14.6	16.7	18.8	20.9	23.0	25.1	27.2	29.3	
Mid Guith	NSR4	No	15.4	17.5	19.6	21.7	23.8	25.9	28.0	30.1	32.2	
Benstonhall	NSR5	No	22.6	24.7	26.8	28.9	31.0	33.1	35.2	37.3	39.4	Predicted level exceeds 35 dB limit at higher wind speeds – upper extent of existing noise limits is 10m/s

Non	NCD ID	NSR has	Wind Speed	, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
Bredakirk	NSR6	Yes	13.6	15.7	17.8	19.9	22.0	24.1	26.2	28.3	30.4	Predicted levels exclude contribution of Bredakirk turbine
Shoehall	NSR7	No	21.7	23.8	25.9	28.0	30.1	32.2	34.3	36.4	38.5	
Newark	NSR8	Yes	14.3	16.4	18.5	20.6	22.7	24.8	26.9	29.0	31.1	Predicted levels exclude contribution of Newark turbine
Fers Ness	NSR9	Yes	0.0	0.0	0.0	1.5	3.6	5.7	7.8	9.9	12.0	Predicted levels exclude contribution of Fers Ness turbine
High Hill	NSR10	No	3.6	5.7	7.8	9.9	12.0	14.1	16.2	18.3	20.4	

## STAGE 2 – Where the predicted level from cumulative turbines is ≥10 dB below the 35 dB simplified ETSU limit, no significant cumulative effects with the Proposed Development will occur.

## Predicted level from small turbines ≥10 dB below simplified ETSU limit/FI limit (where applicable)?

Where TRUE the Proposed Development can meet simplified ETSU 35 dB limit without cumulative noise causing exceedance.

Where FALSE predicted level from small turbines is within 10 dB of simplified ETSU noise limit and cumulative effects may occur.

Note: simplified ETSU limit in planning conditions only covers up to 10 m/s wind speed.

At NSR9 and NSR10 Stage 1 confirms that no cumulative effects will occur at 11 or 12 m/s, given the negligible contributions from existing turbines, so further consideration of cumulative effects are screened out at these NSRs.

			cumulative e	ffects are scree	ened out at the	ese NSRs.						
Crowber	NSR1	No	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE			Potential cumulative effects at higher wind speeds
Lesshamar	NSR2	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE			Potential cumulative effects at higher wind speeds
North Guith	NSR3	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE			Potential cumulative effects at higher wind speeds
Mid Guith	NSR4	No	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE			Potential cumulative effects at higher wind speeds
Benstonhall	NSR5	No	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE			Potential cumulative effects at mid-high wind speeds
Bredakirk	NSR6	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE			Potential cumulative effects at higher wind speeds
Shoehall	NSR7	No	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE			Potential cumulative effects at mid-high wind speeds
Newark	NSR8	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE			Potential cumulative effects at higher wind speeds
Fers Ness	NSR9	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	No cumulative effects at any wind speed
High Hill	NSR10	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	No cumulative effects at any wind speed
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STAGE 3 – At wind speeds at which potential cumulative effects may occur, the predicted cumulative level (excluding noise from the Proposed Development and noise from FI turbines at NSRs which are FI with those turbines, the presence of significant headroom (>5 dB) is determined.

	At wind speeds where potential cumulative effects identified, comparison of predicted noise level from small turbines with derived Overall Noise Limit (ONL).
	Noise limit minus predicted level, dB

		NSR has	Wind Speed	, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
Crowber	NSR1	No	-	-	-	-	14.3	14.9	16.2	14.1	12.0	Significant headroom (>5 dB) at all wind speeds
Lesshamar	NSR2	No	-	-	-	-	-	-	21.4	19.3	17.2	Significant headroom (>5 dB) at all wind speeds
North Guith	NSR3	No	-	-	-	-	-	-	21.3	19.2	17.1	Significant headroom (>5 dB) at all wind speeds
Mid Guith	NSR4	No	-	-	-	-	-	17.1	18.4	16.3	14.2	Significant headroom (>5 dB) at all wind speeds
Benstonhall	NSR5	No	-	-	8.9	9.0	9.3	9.9	11.2	9.1	7.0	Significant headroom (>5 dB) at all wind speeds
Bredakirk	NSR6	Yes	-	-	-	-	-	-	20.2	18.1	16.0	Significant headroom (>5 dB) at all wind speeds
Shoehall	NSR7	No	-	-	9.8	9.9	10.2	10.8	12.1	10.0	7.9	Significant headroom (>5 dB) at all wind speeds
Newark	NSR8	Yes	-	-	-	-	-	-	19.5	17.4	15.3	Significant headroom (>5 dB) at all wind speeds
Fers Ness	NSR9	Yes	-	-	-	-	-	-	-	-	-	No cumulative effects
High Hill	NSR10	No	-	-	-	-	-	-	-	-	-	No cumulative effects
STAGE 4 – Where significant I	neadroom is	determined to	be present, a	cautious pre	diction (inclu	ding a +2 dB	correction) of	cumulative n	oise is made.			
			Cautious pro		ISRs/wind spe	eds where pot	ential cumulativ	ve effects iden	tified.			
Crowber	NSR1	No	-	-	-	-	28.0	30.1	32.2	34.3	36.4	
Lesshamar	NSR2	No	-	-	-	-	-	-	27.0	29.1	31.2	
North Guith	NSR3	No	-	-	-	-	-	-	27.1	29.2	31.3	
Mid Guith	NSR4	No	-	-	-	-	-	19.1	30.0	32.1	34.2	
Benstonhall	NSR5	No	-	-	28.8	30.9	33.0	35.0	35.0	39.3	41.4	Cautious predictions exceed noise limits of small turbines at 9 &10 m/s. Amended to 35 dB
Bredakirk	NSR6	Yes	-	-	-	-	-	-	28.2	30.3	32.4	
Shoehall	NSR7	No	-	-	27.9	30.0	32.1	34.2	35.0	38.4	40.5	Cautious predictions exceed noise limits of small turbines at 10 m/s. Amended to 35 dB
Newark	NSR8	Yes	-	-	-	-	-	-	28.9	31.0	33.1	
Fers Ness	NSR9	Yes	-	-	-	-	-	-	-	-	-	No cumulative effects

NCD	NCD ID											
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
High Hill	NSR10	No	-	-	-	-	-	-	-	-	-	No cumulative effects
STAGE 5 – Determination of the applicable RNL.  At wind speeds where no cumulative effects identified, the RNL = the ONL.  At wind speeds where cumulative effects could occur and significant headroom is available, the RNL = ONL minus the simplified ETSU noise limit (35 dB)												

At wind speeds where cumulative effects could occur and significant headroom is available, but simply subtracting the simplified ETSU noise limit would be overly and unnecessarily restrictive, the RNL = ONL minus the cautious

Derivation of Residual Noise Limit (RNL) applicable to Proposed Development from ONL ONL = no cumulative effects therefore ONL applies ONL-SP = potential cumulative effects but significant headroom available, ONL minus logarithmic subtraction of 35 dB simplified ETSU limit applies ONL-CP = potential cumulative effects but significant headroom available, ONL minus logarithmic subtraction of 35 dB simplified ETSU limit is overly restrictive (substantially 35 dB or no existing limit applies, small turbines >10 m/s), therefore ONL minus logarithmic subtraction of Cautious Prediction applies.  Crowber NSR1 No ONL ONL ONL ONL ONL-ONL-35 ONL-35 ONL-35 ONL-CP ONL-CP  Lesshamar NSR2 No ONL ONL ONL ONL ONL ONL ONL ONL ONL-ONL-ONL-ONL-OP ONL-CP  North Guith NSR3 No ONL ONL ONL ONL ONL ONL ONL ONL-ONL-ONL-OP ONL-CP  Mid Guith NSR4 No ONL ONL ONL ONL ONL-OP ONL-35 ONL-35 ONL-35 ONL-CP  Benstonhall NSR5 No ONL ONL ONL ONL-OP ONL-CP ONL-CP  Bredakirk NSR6 Yes ONL ONL ONL ONL-ONL-ONL-ONL-ONL-ONL-ONL-ONL-OP-ONL-CP  Shoehall NSR7 No ONL-ONL-ONL-ONL-ONL-ONL-ONL-ONL-ONL-ONL-														prediction of cumulative turbing
ONL-35 = potential cumulative effects but significant headroom available, ONL minus logarithmic subtraction of 35 dB simplified ETSU limit applies ONL-CP = potential cumulative effects but significant headroom available, ONL minus logarithmic subtraction of 35 dB simplified ETSU limit is overly restrictive (substantially 35 dB or no existing limit applies; small turbines >10 m/s), therefore ONL minus logarithmic subtraction of 35 dB simplified ETSU limit is overly restrictive (substantially 35 dB or no existing limit applies; small turbines >10 m/s), therefore ONL minus logarithmic subtraction of Cautious Prediction applies.  Crowber NSR1 No ONL					NL	opment from O	oposed Devel	pplicable to Pi	e Limit (RNL) a	Residual Nois	Derivation of			
Crowber         NSR1         No         ONL         ONL-35         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-CP           Lesshamar         NSR2         No         ONL         ONL-CP         ON		ETSU limit applies	dB simplified E	btraction of 35	logarithmic sul	le, ONL minus	droom availab	• •						
Lesshamar         NSR2         No         ONL         O	antially less than	· · · · · · · · · · · · · · · · · · ·	•		•			•						
North Guith         NSR3         No         ONL         ONL         ONL         ONL         ONL         ONL         ONL-GP         ONL-GP         ONL-GP           Mid Guith         NSR4         No         ONL         ONL         ONL         ONL         ONL         ONL         ONL-35         ONL-35         ONL-35         ONL-GP         ONL-GP           Benstonhall         NSR5         No         ONL         ONL         ONL-GP         ONL-GP         ONL-35         ONL-35         ONL-GP         ONL-GP           Bredakirk         NSR6         Yes         ONL         ONL         ONL         ONL         ONL         ONL-GP         ONL-35         ONL-35         ONL-GP         ONL-GP           Shoehall         NSR7         No         ONL         ONL         ONL-GP         ONL-GP         ONL-35         ONL-35         ONL-GP         ONL-GP           Newark         NSR8         Yes         ONL         ONL         ONL         ONL         ONL         ONL         ONL         ONL         ONL         ONL-GP			ONL-CP	ONL-CP	ONL-35	ONL-35	ONL-35	ONL	ONL	ONL	ONL	No	NSR1	Crowber
Mid Guith         NSR4         No         ONL         ONL         ONL ONL         ONL ONL ONL ONL ONL-OP         ONL-35         ONL-35         ONL-35         ONL-0P         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-35         ONL-OP         ONL-CP         ONL-35         ONL-35         ONL-OP         ONL-CP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-OP         ONL-OP         ONL-35         ONL-35         ONL-CP         ONL-CP         ONL-CP         ONL-OP         ONL-OP <th< td=""><td></td><td></td><td>ONL-CP</td><td>ONL-CP</td><td>ONL-35</td><td>ONL</td><td>ONL</td><td>ONL</td><td>ONL</td><td>ONL</td><td>ONL</td><td>No</td><td>NSR2</td><td>Lesshamar</td></th<>			ONL-CP	ONL-CP	ONL-35	ONL	ONL	ONL	ONL	ONL	ONL	No	NSR2	Lesshamar
Benstonhall			ONL-CP	ONL-CP	ONL-35	ONL	ONL	ONL	ONL	ONL	ONL	No	NSR3	North Guith
Bredakirk NSR6 Yes ONL ONL ONL ONL ONL ONL ONL-35 ONL-CP ONL-CP Shoehall NSR7 No ONL ONL ONL ONL ONL ONL ONL ONL ONL-35 ONL-35 ONL-CP ONL-CP Newark NSR8 Yes ONL			ONL-CP	ONL-CP	ONL-35	ONL-35	ONL-35	ONL	ONL	ONL	ONL	No	NSR4	Mid Guith
Shoehall NSR7 No ONL			ONL-CP	ONL-CP	ONL-35	ONL-35	ONL-35	ONL-CP	ONL-CP	ONL	ONL	No	NSR5	Benstonhall
Newark NSR8 Yes ONL			ONL-CP	ONL-CP	ONL-35	ONL	ONL	ONL	ONL	ONL	ONL	Yes	NSR6	Bredakirk
ONE ONE ONE ONE ONE ONE OF ONE OF			ONL-CP	ONL-CP	ONL-35	ONL-35	ONL-35	ONL-CP	ONL-CP	ONL	ONL	No	NSR7	Shoehall
Fore Nose			ONL-CP	ONL-CP	ONL-35	ONL	ONL	ONL	ONL	ONL	ONL	Yes	NSR8	Newark
Tels ness No.   ONL			ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	Yes	NSR9	Fers Ness
High Hill NSR10 No ONL			ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	No	NSR10	High Hill
Stage 6 – RNL numerical values													s	Stage 6 – RNL numerical value
Residual Noise Limit applicable to the Proposed Development, dBL <sub>A90,10min</sub>		Residual Noise Limit applicable to the Proposed Development, dBL <sub>A90,10min</sub>												
Crowber         NSR1         No         35.0         35.0         35.7         37.9         38.7         42.3         46.1         46.1         45.9			45.9	46.1	46.1	42.3	38.7	37.9	35.7	35.0	35.0	No	NSR1	Crowber
Lesshamar NSR2 No 35.0 35.0 35.7 37.9 40.3 43.0 46.1 46.3 46.3			46.3	46.3	46.1	43.0	40.3	37.9	35.7	35.0	35.0	No	NSR2	Lesshamar
North Guith NSR3 No 35.0 35.0 35.7 37.9 40.3 43.0 46.1 46.3 46.3			46.3	46.3	46.1	43.0	40.3	37.9	35.7	35.0	35.0	No	NSR3	North Guith

		NSR has	Wind Speed	l, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
Mid Guith	NSR4	No	35.0	35.0	35.7	37.9	38.7	42.3	46.1	46.2	46.1	
Benstonhall	NSR5	No	35.0	35.0	34.7	36.9	38.7	42.3	46.1	45.5	44.7	
Bredakirk	NSR6	Yes	35.0	35.0	35.7	37.9	40.3	45.0	46.3	46.3	45.7	
Shoehall	NSR7	No	35.0	35.0	34.9	37.1	38.7	42.3	46.1	45.6	44.4	
Newark	NSR8	Yes	35.0	35.0	35.7	37.9	46.7	48.2	48.9	46.3	45.7	
Fers Ness	NSR9	Yes	38.3	40.3	42.5	44.7	46.7	48.2	49.0	49.0	49.0	
High Hill	NSR10	No	38.3	40.3	42.5	44.7	46.7	48.2	49.0	49.0	49.0	
Stage 7 – Calculation of any po	otential cum	ulative noise e	effect at NSRs	s with their ow	n turbine(s).							
				on of potential ovel from small t			se where the pr	edicted levels are <10 dB different.				
Bredakirk	NSR6	Yes	-0.7	-3.4	-5.0	-3.6	Potential cumulative effects at all wind speeds					
Newark	NSR8	Yes	2.3	-0.5	-2.1	-0.6	1.5	3.6	5.7	7.8	10.0	Potential cumulative effects at 4 – 11 m/s. No cumulative effect at 12 m/s
Fers Ness	NSR9	Yes	-1.0	-3.8	-5.4	-3.9	-1.8	0.3	2.4	4.5	6.6	Potential cumulative effects at all wind speeds
Stage 8 – At wind speeds when	re potential o	cumulative effe	ects identifie	d, derivation o	f a Financially	/-Involved (FI	) RNL by sub	traction of cau	itious predict	ion of cumula	ative turbine n	oise (not including Proposed Development)
			FI ONL minu	us cautious pre	diction of all sr	nall turbines (i	ncluding turbir	nes owned by N	ISR)			
Bredakirk	NSR6	Yes	44.9	44.9	44.8	44.6	44.4	43.9	45.1	44.0	41.3	
Newark	NSR8	Yes	44.9	44.8	44.6	44.4	44.0	43.2	44.2	41.9	-	Note – no cumulative effect at 12 m/s
Fers Ness	NSR9	Yes	44.9 44.9 44.8 46.4 47.9 48.6 48.3 47.8									
Stage 9 – Resultant RNL at NS	at NSRs with their own turbine(s)											
			RNL applica	ble at NSRs w	ith own turbine	s; the lower of	the RNL and	the FI RNL, dB				
Bredakirk	NSR6	Yes	35.0	35.0	35.7	37.9	40.3	43.9	45.1	44.0	41.3	
Newark	NSR8	Yes	35.0	35.0	35.7	37.9	44.0	43.2	44.2	41.9	45.7	

NCD nome	NCD ID	1 TOTA TIGO	Wind Speed	, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
Fers Ness	NSR9	Yes	38.3	40.3	42.5	44.7	46.4	47.9	48.6	48.3	47.8	

APPENDIX 9.6

## Night-time period

		NSR has	Wind Speed,	m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
STAGE 1 – Determine the existi	ng noise leve	l at each NSR a	rising from cu	mulative turb	ines.							
At NSRs which have their own to	urbine(s) and	may therefore	be considered	l to have Finar	ncially Involved	l (FI) noise limi	its applicable t	o their own tu	ırbine(s), predi	cted noise lev	els exclude no	ise from their turbine(s).
			Predicted le	vel from smal	ll turbines, dB	L <sub>A90</sub>						
Crowber	NSR1	No	17.6	19.7	21.8	23.9	26.0	28.1	30.2	32.3	34.4	
Lesshamar	NSR2	No	12.4	14.5	16.6	18.7	20.8	22.9	25.0	27.1	29.2	
North Guith	NSR3	No	12.5	14.6	16.7	18.8	20.9	23.0	25.1	27.2	29.3	
Mid Guith	NSR4	No	15.4	17.5	19.6	21.7	23.8	25.9	28.0	30.1	32.2	
Benstonhall	NSR5	No	22.6	24.7	26.8	28.9	31.0	33.1	35.2	37.3	39.4	
Bredakirk	NSR6	Yes	13.6	15.7	17.8	19.9	22.0	24.1	26.2	28.3	30.4	
Shoehall	NSR7	No	21.7	23.8	25.9	28.0	30.1	32.2	34.3	36.4	38.5	
Newark	NSR8	Yes	14.3	16.4	18.5	20.6	22.7	24.8	26.9	29.0	31.1	
Fers Ness	NSR9	Yes	0.0	0.0	0.0	1.5	3.6	5.7	7.8	9.9	12.0	
High Hill	NSR10	No	3.6	5.7	7.8	9.9	12.0	14.1	16.2	18.3	20.4	
STAGE 2 – Where the predicte	ed level from	cumulative tu	rbines is ≥10 o	dB below the	35 dB simplif	ed ETSU limit	t, no significa	nt cumulative	effects with t	he Proposed	Development	will occur.
			Where TRUE	the Proposed E predicted lev	l Development vel from small	can meet simp turbines is with	olified ETSU 35	5 dB limit witho		noise causing	exceedance. ects may occu	r.
Crowber	NSR1	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	
Lesshamar	NSR2	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
North Guith	NSR3	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
Mid Guith	NSR4	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
Benstonhall	NSR5	No	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	

		NSR has	Wind Speed	, m/s								
NSR name	NSR ID	own turbine?	4	5	6	7	8	9	10	11	12	Notes / commentary
Bredakirk	NSR6	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
Shoehall	NSR7	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE	
Newark	NSR8	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
Fers Ness	NSR9	Yes	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
High Hill	NSR10	No	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
STAGE 3 – At wind speeds presence of significant hea				occur, the pre	edicted cumul	ative level (ex	cluding noise	from the Pro	posed Develo	pment and no	ise from FI tu	rbines at NSRs which are FI with those turbines, the
				eds where pote minus predict	d Overall Noise Limit (ONL).							
Crowber	NSR1	No	-	-	-	-	-	-	-	-	8.6	
Lesshamar	NSR2	No	-	-	-	-	-	-	-	-	-	
North Guith	NSR3	No	-	-	-	-	-	-	-	-	-	
Mid Guith	NSR4	No	-	-	-	-	-	-	-	-	-	
Benstonhall	NSR5	No	-	-	-	-	-	12.2	10.7	8.6	6.5	
Bredakirk	NSR6	Yes	-	-	-	-	-	-	-	-	-	
Shoehall	NSR7	No	-	-	-	-	-	-	11.6	9.5	7.4	
Newark	NSR8	Yes	-	-	-	-	-	-	-	-	-	
Fers Ness	NSR9	Yes	-	-	-	-	-	-	-	-	-	
High Hill	NSR10	No	-	-	-	-	-	-	-	-	-	

NSR name		NSR has own turbine?	Wind Speed, m/s									
	NSR ID		4	5	6	7	8	9	10	11	12	Notes / commentary
STAGE 4 – Where significant	headroom is	determined to	be present, a	cautious pre	diction (inclu	ding a +2 dB	correction) of	cumulative no	oise is made.			
			Cautious prediction, dB (predicted level +2 dB) at NSRs/wind speeds where potential cumulative effects identified.									
Crowber	NSR1	No	-	-	-	-	-	-	-	-	36.4	
Lesshamar	NSR2	No	-	-	-	-	-	-	-	-	-	
North Guith	NSR3	No	-	-	-	-	-	-	-	-	-	
Mid Guith	NSR4	No	-	-	-	-	-	-	-	-	-	
Benstonhall	NSR5	No	-	-	-	-	-	35.0	35.0	39.3	41.4	Cautious predictions exceed noise limits of small turbines. Amended to 35 dB where this occurs ( <b>bold</b> ).
Bredakirk	NSR6	Yes	-	-	-	-	-	-	-	-	-	
Shoehall	NSR7	No	-	-	-	-	-	-	36.3	38.4	40.5	Cautious predictions exceed noise limits of small turbines. Amended to 35 dB where this occurs ( <b>bold</b> ).
Newark	NSR8	Yes	-	-	-	-	-	-	-	-	-	
Fers Ness	NSR9	Yes	-	-	-	-	-	-	-	-	-	
High Hill	NSR10	No	-	-	-	-	-	-	-	-	-	
STAGE 5 – Determination of the At wind speeds where no cumulated At wind speeds where cumulated At wind speeds where cumulated prediction of cumulative turbiness.	ulative effects of tive effects of the control of t	ts identified, t could occur ar	nd significant	headroom is a			_		-		y and unneces	sarily restrictive, the RNL = ONL minus the cautious
			ONL = no cu ONL-35 = po ONL-CP = p	mulative effect tential cumula otential cumula	ts therefore ON tive effects but ative effects bu	IL applies significant heat t significant he	adroom availal adroom availa	ble, ONL minu	s logarithmic s s logarithmic s	subtraction of	•	ETSU limit applies I ETSU limit is overly restrictive (substantially less than oplies.
Crowber	NSR1	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL-CP	
Lesshamar	NSR2	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
North Guith	NSR3	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
Mid Guith	NSR4	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	

	NSR ID	NSR has own turbine?	Wind Speed	d, m/s								
NSR name			4	5	6	7	8	9	10	11	12	Notes / commentary
Benstonhall	NSR5	No	ONL	ONL	ONL	ONL	ONL	ONL-35	ONL-35	ONL-CP	ONL-CP	
Bredakirk	NSR6	Yes	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
Shoehall	NSR7	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL-35	ONL-CP	ONL-CP	
Newark	NSR8	Yes	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
Fers Ness	NSR9	Yes	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
High Hill	NSR10	No	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	ONL	
Stage 6 – RNL numerical values												
			Residual Noise Limit applicable to the Proposed Development, dBL <sub>A90,10min</sub>									
Crowber	NSR1	No	43.0	43.0	43.0	43.0	43.0	45.3	45.9	45.9	45.4	
Lesshamar	NSR2	No	43.0	43.0	43.0	43.0	43.0	45.3	45.9	45.9	45.9	
North Guith	NSR3	No	43.0	43.0	43.0	43.0	43.0	45.3	45.9	45.9	45.9	
Mid Guith	NSR4	No	43.0	43.0	43.0	43.0	43.0	45.3	45.9	45.9	45.9	
Benstonhall	NSR5	No	43.0	43.0	43.0	43.0	43.0	44.9	45.5	44.8	44.0	
Bredakirk	NSR6	Yes	43.0	43.0	43.0	43.0	43.0	45.3	45.9	45.9	45.9	
Shoehall	NSR7	No	43.0	43.0	43.0	43.0	43.0	45.3	45.5	45.9	45.9	
Newark	NSR8	Yes	43.0	43.0	43.0	45.0	46.6	47.5	47.8	47.8	47.8	
Fers Ness	NSR9	Yes	43.0	43.0	43.0	44.5	46.6	47.5	47.8	47.8	47.8	
High Hill	NSR10	No	43.0	43.0	43.0	44.5	46.6	47.5	47.8	47.8	47.8	

NSR name	NSR ID	NSR has own turbine?	Wind Speed	, m/s								
			4	5	6	7	8	9	10	11	12	Notes / commentary
Stage 7 – Calculation of any potential cumulative noise effect at NSRs with their own turbine(s).												
	Determination of potential cumulative effect at NSRs with their own turbines; potential cumulative effects may arise where the predicted levels are <10 dB different.  Predicted level from small turbines minus predicted level from proposed development, dB											
Bredakirk	NSR6	Yes	-0.7	-3.4	-5.0	-3.6	-1.5	0.7	2.8	4.9	7.0	Potential cumulative effects at all wind speeds
Newark	NSR8	Yes	2.3	-0.5	-2.1	-0.6	1.5	3.6	5.7	7.8	10.0	Potential cumulative effects at 4 – 11 m/s. No cumulative effect at 12 m/s
Fers Ness	NSR9	Yes	-1.0	-3.8	-5.4	-3.9	-1.8	0.3	2.4	4.5	6.6	Potential cumulative effects at all wind speeds
Stage 8 – At wind speeds where potential cumulative effects identified, derivation of a Financially-Involved (FI) RNL by subtraction of cautious prediction of cumulative turbine noise (not including Proposed Development)												
			FI ONL minus cautious prediction of all small turbines (including turbines owned by NSR) FI RNL, dB									
Bredakirk	NSR6	Yes	44.9	44.9	44.8	44.6	44.4	44.3	44.4	43.1	39.4	
Newark	NSR8	Yes	44.9	44.8	44.6	44.4	44.0	43.6	43.3	40.3	-	Predicted cumulative level greater than FI limit at 12m/s, but predicted level from proposed development >10 dB below predicted level from cumulative turbines therefore no cumulative effect
Fers Ness	NSR9	Yes	44.9	44.9	44.9	44.8	46.3	47.2	47.2	46.8	46.1	
Stage 9 – Resultant RNL at NSRs with their own turbine(s)												
			RNL applicable at NSRs with own turbines; the lower of the RNL and the FI RNL, dB									
Bredakirk	NSR6	Yes	43.0	43.0	43.0	43.0	43.0	44.3	44.4	43.1	39.4	
Newark	NSR8	Yes	43.0	43.0	43.0	44.4	44.0	43.6	43.3	40.3	47.8	
Fers Ness	NSR9	Yes	43.0	43.0	43.0	44.5	46.3	47.2	47.2	46.8	46.1	