Stage 1 Habitats Regulations Assessment

Environment Agency record of screening for likely significant effects

This is a record of the screening for likely significant effects required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended), undertaken by the Environment Agency in respect of the permission, plan or project (PPP) detailed in Section 1, for the following relevant sites:

- North York Moors SAC (UK0030228)^.
- Durham Coast SAC (UK0030140)^.
- Teesmouth and Cleveland Coast SPA (UK9006061)^.
- Northumbria Coast SPA (UK9006131)^.
- North York Moors SPA (UK9006161)^.
- Teesmouth and Cleveland Coast Ramsar (UK11068).
- Northumbria Coast Ramsar (UK11049).
- Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site
- Teesmouth and Cleveland Coast SSSI

Version: Draft 1 29/07/2020

This record was sent to Natural England for consultation.

For EPR permits only (excluding Flood Risk Activity Permits): Was an additional component charge for habitats assessment levied for this application? **Yes**

1. Permission, plan or project details

Type of PPP: Environmental Permit (PPC Installations)

Environment Agency reference: EPR/LP3300PZ/A001 and EPR/XP3106PT/A001

National grid reference: NZ4898923828

Site/project name or reference: Saltholme North Power and Saltholme South Power

2. Description of proposal

The proposed facilities will consist of two sites each operating 4 x 12.6 megawatt electrical (MWe) spark ignition reciprocating gas engines and will operate to provide additional energy security during periods of peak electricity consumption within the UK operating under Section 1.1 Part A(1)(a) of the Environmental Permitting Regulations (EPR) for the burning of fuel in an appliance with a rated thermal input of 50 or more MW thermal (MWth).

The individual engines are also Medium Combustion Plant (MCP) under Schedule 25A of the Environmental Permitting Regulations.

For the purposes of this assessment the sites are considered as one larger site and assessed in combination.

The gas engines are designed to operate in the capacity market to provide electricity to the National Grid. The engines have an aggregated thermal input of approximately 105 MW. Each engine will be fuelled by natural gas and will discharge via an individual stack 15 meters high.

The Power Plant will supply electrical power on a short term basis meeting peak demand with the electrical distribution network. It will operate for a maximum of 3,500 hours per year.

The engines operate at a high rate of efficiency to minimise exhaust emissions to air, in addition Selective Catalytic Reduction (SCR) will be used to further abate emissions to meet Best Available Technique (BAT) requirements.

Lubricating oil for the engines will be stored in bunded containers, antifreeze will be stored as part of the radiator fluid mix within the generator's bunded closed cooling circuit and SCR reagents will be stored in a bunded area.

No process effluent is produced from the process. Surface water run-off will be captured by a drainage system prior to being discharged to the Belasis Beck via an attenuation pond.

3. Map(s) showing PPP location and European site(s)

It was agreed at the pre application stage that habitats screening would be 15K. To help with the assessment both 15K and 10K screenings are included.

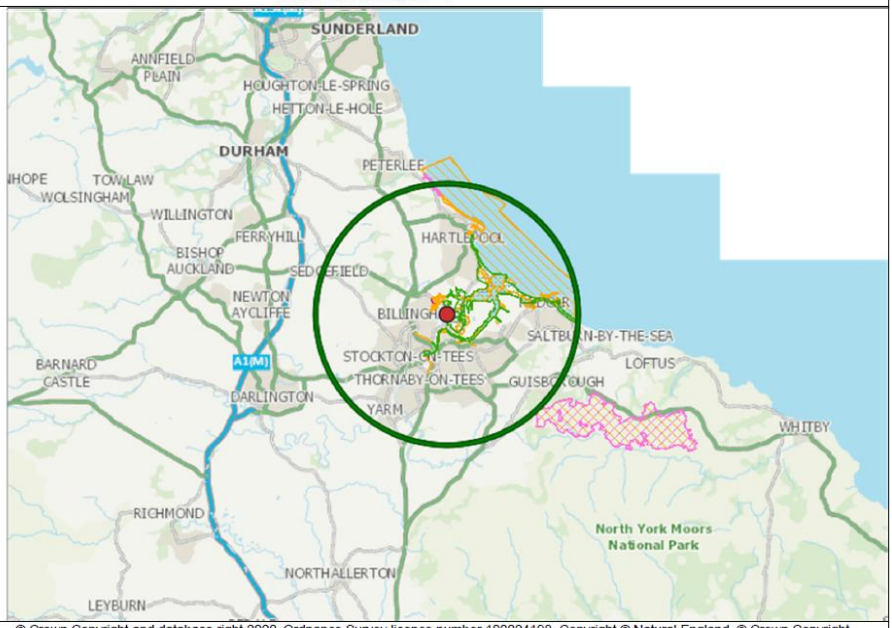
15K Habitats screening

Screening Results for:	IR EPR discharges to air (coal and oil fired power stations)	**Date Produced:**	17/08/2020
Reference number:	NZ 48987 23830	**NGR of search:**	NZ 48988 23830
Notes:		**Site centre distance (m):**	0

Environment Agency

Legend

- Search area
- Local Wildlife Sites
- SSSI (England)
- SAC (England)
- SPA (England)
- Ramsar (England)
- LNR (England)



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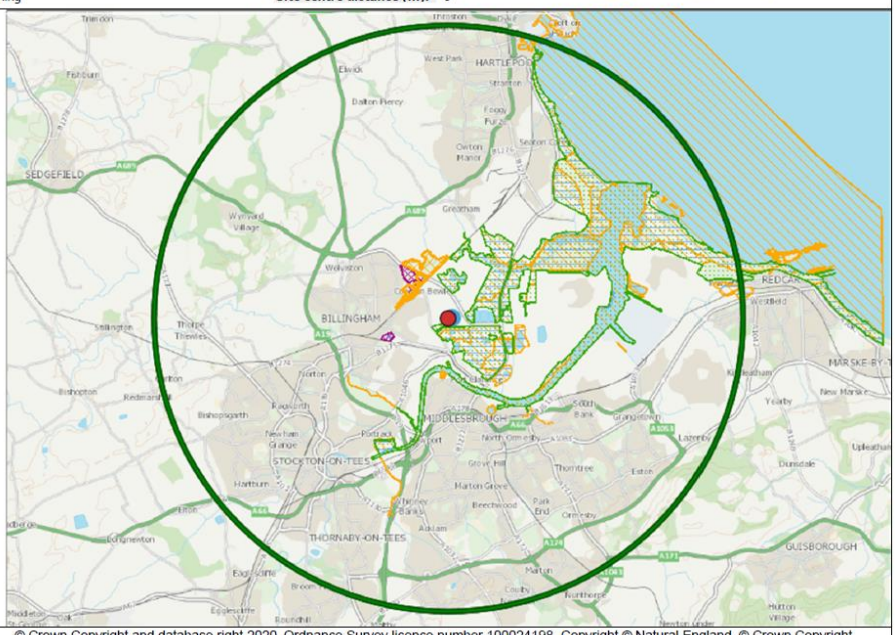
10K Habitats screening

Screening Results for:	IR EPR discharges to air	**Date Produced:**	17/08/2020
Reference number:	XP3106PT & LP3300PZ	**NGR of search:**	NZ 48855 23804
Notes:	10Km screening	**Site centre distance (m):**	0

Environment Agency

Legend

- Search area
- Local Wildlife Sites
- SSSI (England)
- SPA (England)
- Ramsar (England)
- LNR (England)



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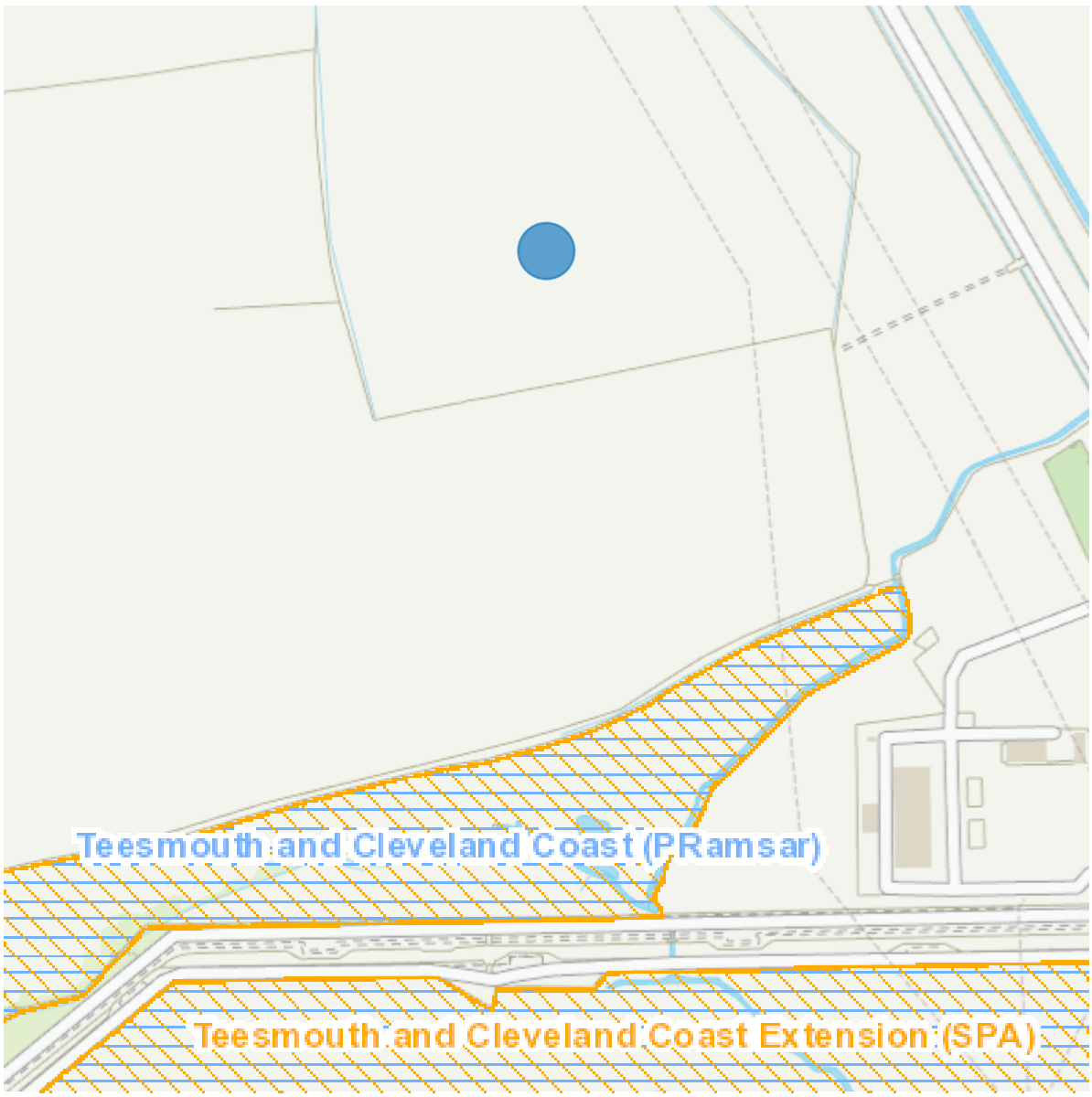


/// Special Area of Conservation (SAC)

\\\ Special Protection Area (SPA)

/// Marine potential SPA

/// Marine Conservation Zone (MCZ)

● PPP location

4. European sites requiring assessment[1]

European site	Complete list of qualifying features
North York Moors SAC (UK0030228)^	Blanket bog *
	European dry heaths
	Northern Atlantic wet heaths with Erica tetralix
Durham Coast SAC (UK0030140)^	Vegetated sea cliffs of the Atlantic and Baltic coasts
Teesmouth and Cleveland Coast SPA (UK9006061)^	Knot (non-breeding)
	Little tern (breeding)
	Redshank (non-breeding)
	Sandwich tern (non-breeding)
	Waterbird assemblage
Northumbria Coast SPA (UK9006131)^	Arctic tern (breeding)
	Little tern (breeding)
	Purple sandpiper (non-breeding)
	Turnstone (non-breeding)
North York Moors SPA (UK9006161)^	Golden plover (breeding)
	Merlin (breeding)
Teesmouth and Cleveland Coast Ramsar (UK11068)	Knot (wintering)
	Redshank (wintering)
	Sandwich tern (breeding)
	Waterbird assemblage (wintering)

[1] This is based on screening criteria the Environment Agency consider appropriate to identify possible significant risk.

European site	Complete list of qualifying features
Northumbria Coast Ramsar (UK11049)	Little tern (breeding)
	Purple sandpiper (wintering)
	Turnstone (breeding)

^ Protected area under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

* Priority natural habitat/priority species

Feature information sourced from Natural England

5. Conservation objectives

The screening for likely significant effects (and appropriate assessment, if required) will consider the implications of the proposal in view of the site's conservation objectives.

North York Moors SAC (UK0030228)^ **Version:** **Date:**
http://publications.naturalengland.org.uk/publication/6048216608931840?category=4698884316069888
Durham Coast SAC (UK0030140)^ **Version:** **Date:**
http://publications.naturalengland.org.uk/publication/4949450761961472?category=4698884316069888
Teesmouth and Cleveland Coast SPA (UK9006061)^ **Version:** **Date:**
http://publications.naturalengland.org.uk/publication/6619918699069440?category=4698884316069888
Northumbria Coast SPA (UK9006131)^ **Version:** **Date:**
http://publications.naturalengland.org.uk/publication/6372874327687168?category=4698884316069888
North York Moors SPA (UK9006161)^ **Version:** **Date:**
http://publications.naturalengland.org.uk/publication/6207512114102272?category=4698884316069888

Teesmouth and Cleveland Coast Ramsar (UK11068) Version: Date:
There are currently no conservation objectives for Ramsar sites. The SAC/SPA conservation objectives will be used when the qualifying features are the same, and advice sought from Natural England in other cases if necessary.
Northumbria Coast Ramsar (UK11049) Version: Date:
There are currently no conservation objectives for Ramsar sites. The SAC/SPA conservation objectives will be used when the qualifying features are the same, and advice sought from Natural England in other cases if necessary.

6. Risks (pressures) relevant to the type of PPP being assessed

Acidification

Disturbance

Nutrient enrichment

Toxic contamination

Risks screened out as not relevant

The following risks are identified as reasonably foreseeable for generic PPP's affecting the designated sites. They are, however, judged not relevant to this specific PPP, as explained below, and so are excluded from further consideration in the HRA Stage 1 screening table in section 7:

Change in salinity regime – not relevant as no discharge to water, therefore no risk source.

Changes in thermal regime – not relevant as no discharge to water, therefore no pollutant source.

Entrapment/impingement – not relevant as no water abstraction, therefore no risk source.

Habitat loss – not relevant as PPP is not located within any of the designated sites, therefore no source-pathway-receptor linkage.

Physical damage – not relevant as PPP is not located within any of the designated sites, therefore no source-pathway-receptor linkage.

Siltation – not relevant as no discharges to water, therefore no risk source.

Smothering – not relevant as there are no emissions of smothering pollutants, therefore no risk source.

Turbidity – not relevant as no discharge to water, therefore risk source.

7. HRA Stage 1 screening table[2]

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
North York Moors SAC (UK0030228)^					
Blanket bog *	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes	No		N\A

[2] Only features the Environment Agency consider likely to be sensitive to the type of PPP being assessed are included, see 'Habitats Regulations Assessment: Risk definitions and matrices'

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		that impacts can be screened out alone. See alone assessment for further details.			
European dry heaths	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N/A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Northern Atlantic wet heaths with Erica tetralix	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Durham Coast SAC (UK0030140)^					
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic	No significant effect alone – the applicant has undertaken detailed air	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	contamination	dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.			
Teesmouth and Cleveland Coast SPA (UK9006061)^					
Knot (non-breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		out alone. See alone assessment for further details.			
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Little tern (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Redshank (non-breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		impact cannot be screened out alone. See alone assessment for further details.			
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Sandwich tern (non-breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Waterbird assemblage	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		that acidification impacts can be screened out alone. See alone assessment for further details.			
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
Northumbria Coast SPA (UK9006131)^					
Arctic tern (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N/A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		that impacts can be screened out alone. See alone assessment for further details.			
Little tern (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Purple sandpiper (non-breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		See alone assessment for further details.			
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Turnstone (non-breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient	No significant effect alone – the applicant has undertaken detailed air	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	enrichment	dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.			
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
North York Moors SPA (UK9006161)^					
Golden plover (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		assessment for further details.			
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Merlin (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.			
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Teesmouth and Cleveland Coast Ramsar (UK11068)					
Knot (wintering)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		assessment for further details.			
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Redshank (wintering)	Acidification	No significant effect alone – the applicant has undertaken detailed air	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.			
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		details.			
Sandwich tern (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
	Toxic	Significant effect alone – the applicant has undertaken detailed air dispersion	Yes	Significant effects could not be screened out. See in combination	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	contamination	modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.		assessment for further details.	
Waterbird assemblage (wintering)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that acidification impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	Significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that noise impact cannot be screened out alone. See alone assessment for further details.	No	Significant effects could not be screened out. See stage 2 assessment for further details.	Yes
	Nutrient enrichment	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that nutrient nitrogen deposition cannot be screened out alone. See alone assessment for	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		further details.			
	Toxic contamination	Significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that the short term NOx cannot be screened out alone. See alone assessment for further details.	Yes	Significant effects could not be screened out. See in combination assessment for further details.	Yes
Northumbria Coast Ramsar (UK11049)					
Little tern (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Purple sandpiper (wintering)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
		can be screened out alone. See alone assessment for further details.			
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
Turnstone (breeding)	Acidification	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A

Qualifying feature	Risk (Pressure)	Likely significant effect alone	Yes or No	Likely significant effect in combination	Yes or No
	Disturbance	No significant effect alone – the applicant has undertaken detailed noise modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Nutrient enrichment	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A
	Toxic contamination	No significant effect alone – the applicant has undertaken detailed air dispersion modelling, which concludes that impacts can be screened out alone. See alone assessment for further details.	No		N\A

^ Protected area under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

* Priority natural habitat/priority species

8. Alone assessment (further details)

The Applicant's assessment of the impact of air quality is set out in appendix C of the Application. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the site.
- A study of the impact of emissions on nearby sensitive habitat / conservation sites.

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon local conservation and habitat sites and human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions using the ADMS 5.2 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 3 years of meteorological data (2012 – 2013) collected from the weather station at Durham Tees Valley Airport, which is approximately 15 km south west of the site with a prevailing south westerly wind direction.

Airflow around buildings may create zones of turbulence and downward mixing on the lee side. To account for the downwash effect, the consultant has included 4 on site buildings within their model. Our checks indicate that the applicant has included all buildings that are likely to influence dispersion.

The Applicant has not included terrain in their assessment. The area around the facility has a gradient lower than 1 in 10 and therefore we agree with this approach.

Surface roughness is a parameter used in dispersion modelling to express the land surface characteristics that influence the mechanical turbulence. The Applicant used a surface roughness length of 0.5m indicative of open parkland and suburbia at the dispersion site and 0.3m indicative of agriculture minimum at the meteorological site. The land use around the site is rural to the east but with industrial buildings and extensive residential buildings to the west, therefore we consider the surface roughness length selected for the dispersion site appropriate.

The key pollutant emissions associated with combustion processes are oxides of nitrogen (NOx), carbon monoxide, sulphur dioxide, volatile organic compounds (VOCs), water and other pollutants in trace quantities. However for gas-fired spark-ignition engines, the pollutant of local concern is NOx.

The air impact assessments, and the dispersion modelling upon which they were based, employed the following assumptions.

- The model assumed that the ELVs in the Permit would be below the maximum permitted by Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions. The Directive states that an ELV of 75 mg/m^3 is considered BAT for engines fired on natural gas however due to the engines being fitted with Selective Catalytic Reduction (SCR) they can operate with an ELV of 30 mg/m^3 for oxides of nitrogen, expressed as NO_2.

- The model assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate.
- Long term impacts were calculated by adjusting the predicted annual average concentrations to 3500 operational hours rather than using a time-varying source file which aligns with peak demand times.
- Saltholme South and the adjoining Saltholme North site were assumed to operate at the same time and for 24hrs per day in the modelling of short term impacts.

- The model assumes a 70% NOx to NO_2 conversion for the long term and 35% for the short term assessment in line with Environment Agency guidance on the use of air dispersion modelling.
- The Applicant used the maximum process contribution (PC) for each given ecological site when assessing the impact of the facility against the feature specific critical loads.
- The model also considered emissions of ammonia (NH_3).

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary.

As well as calculating the peak ground level concentration, the Applicant has modelled the concentration of key pollutants at a number of specified locations within the surrounding area.

The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by the Environment Agency's modelling specialists to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts and impact on habitats and conservation sites.

Our review of the Applicant's assessment leads us to agree with the Applicant's conclusions.

Air dispersion modelling enables the PC to be predicted at any environmental receptor that might be impacted by the emissions from a plant. Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES).

PCs calculated by detailed air dispersion modelling, can be considered insignificant if:

- the long-term process contribution is less than 1% of the relevant ES or critical level; and
- the short-term process contribution is less than 10% of the relevant ES.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality; and
- the threshold provides a substantial safety margin to protect the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions; and
- the threshold provides a substantial safety margin to protect the environment.

Where an emission is screened out in this way, we would normally consider that the applicant's proposals for the prevention and control of the emission to be acceptable. However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedances of the relevant ES are likely. This is done through detailed audit and review of the applicant's air dispersion modelling, taking background concentrations and modelling uncertainties into account.

Where the PC is greater than these thresholds, the assessment must continue to determine the impact by considering the predicted environmental concentration (PEC). The PEC is the

combination of the PC substance to air and the background concentration of the substance which is already present in the environment.

The PECs can be considered ‘not significant’ if the assessment has shown that both the following apply:

- proposed emissions comply with associated emission levels (AELs) or the equivalent requirements where there is no AEL; and
- the resulting PECs won’t exceed 100% of the environmental standards.

Acidification

The process contributions at the North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA, Teesmouth and Cleveland Coast Ramsar and Northumbria Coast Ramsar are all below 1% therefore we conclude that there will be no likely significant effect.

The maximum acid deposition PC exceeds 1% of the critical load function at the Teesmouth and Cleveland Coast SSSI and pSPA. However, the predicted environmental concentration at these sites do not exceed the minimum critical loads therefore we conclude that there will be no likely significant effect on the habitats site and will not damage the special features of the SSSI.

Table 1 Predicted Acid Deposition

Designation	Site Name	Interest Feature	Critical Load CLmaxN (keq.ha^{-1}.yr^{-1})	AC (keq.ha^{-1}.yr^{-1})	Teesside REP PC (keq.ha^{-1}.yr^{-1})*	Tees CCPP PC (keq.ha^{-1}.yr^{-1})**	Billingham Reach PC (keq.ha^{-1}.yr^{-1})***	Saltholme North + Saltholme South PC (keq.ha^{-1}.yr^{-1})	PEC (keq.ha^{-1}.yr^{-1})	Salthome N+S PC/min CL (%)	PEC/ CL (%)
SPA / Ramsar	Teesmouth & Cleveland Coast	Sterna sandvicensis (Western Europe/Western Africa) - Sandwich tern	1.998	0.84	0.03	0.0061	0.04	0.02	0.94	1	47
		Sterna albifrons (Eastern Atlantic - breeding) - Little tern	1.998	0.84	0.03	0.01	0.04	0.94	0.94	1	47
		Anas crecca (North-western Europe) - Eurasian teal	1.998	0.84	0.03	0.01	0.04	0.94	0.94	1	47
		Anas clypeata (North-western/Central Europe) - Northern shoveler	1.998	0.84	0.03	0.01	0.04	0.94	0.94	1	47
		Tringa totanus (Eastern Atlantic - wintering) - Common redshank	1.998	0.84	0.03	0.01	0.04	0.94	0.94	1	47
	Northumbria Coast	Sterna albifrons (Eastern Atlantic - breeding) - Little tern (A195)	0.786	0.8	0.03	0.01	0.04	<0.005	0.87	0	**111**

Designation	Site Name	Interest Feature	Critical Load CLmaxN (keq.ha^{-1}.yr^{-1})	AC (keq.ha^{-1}.yr^{-1})	Teesside REP PC (keq.ha^{-1}.yr^{-1})*	Tees CCPP PC (keq.ha^{-1}.yr^{-1})**	Billingham Reach PC (keq.ha^{-1}.yr^{-1})***	Saltholme North + Saltholme South PC (keq.ha^{-1}.yr^{-1})	PEC (keq.ha^{-1}.yr^{-1})	Salthome N+S PC/min CL (%)	PEC/ CL (%)
		Arenaria interpres (Western Palearctic - wintering) - Ruddy turnstone (A169)	4.856	0.8	0.03	0.01	0.04	<0.005	0.87	0	18
SPA	North York Moors	Pluvialis apricaria [North-western Europe - breeding] - European golden plover (A140)	0.471	1.36	0.03	0.01	0.04	<0.005	1.43	0	**304**
		Falco columbarius - Merlin (A098)	0.792	1.36	0.03	0.01	0.04	<0.005	1.43	0	**181**
SSSI	Teesmouth & Cleveland Coast SSSI	Various	1.998	0.99	0.03	0.01	0.04	0.06	1.12	**3**	56
pSPA	Teesmouth & Cleveland Coast	Various	1.998	0.84	0.03	0.01	0.04	0.06	0.97	**3**	48
SAC	North York Moors SAC	Blanket bogs (if active bog) (H7130)	0.54	1.36	0.03	0.01	0.04	<0.005	1.43	0	**265**
		Northern Atlantic wet heaths with Erica tetralix (H4010)	0.792	1.36	0.03	0.01	0.04	<0.005	1.43	0	**181**
		European dry heaths (H4030)	0.792	1.36	0.03	0.01	0.04	<0.005	1.43	0	**181**

Note: CLF = Critical Load Function
*Maximum predicted acid deposition rate presented in Air Quality Environmental Impact Assessment Addendum (REC, April 2015)
** Maximum predicted acid deposition rate presented in Tees CCPP Project, Volume 1 – Chapter 7 (Sembcorp Utilities UK, May 2018)
*** Maximum predicted acid deposition rate presented in Billingham Reach ES Addendum, Chapter 7 (Tees Eco Energy Limited, August 2016)

Disturbance

The noise modelling concentrated on the habitats sites which are in close proximity to the installations, these are;

- Teesmouth and Cleveland Coast SPA (UK9006061)
- Teesmouth and Cleveland Coast Ramsar (UK11068).
- Teesmouth and Cleveland Coast SSSI

All of the other sites are too far away for noise generated from the installations to have any significant effect.

The consultant carried out a noise assessment at the Teesmouth and Cleveland Coast SPA/Ramsar habitat site. The impact on the habitats sites is detailed in two memoranda (Memo: Peaking Plant Facility – Salthome North, Noise Assessment – Impact on Birdlife, RPS, 13.5.20; Memo: Peaking Plant Facility – Salthome South, Noise Assessment – Impact on Birdlife, RPS, 6.5.20). The cumulative impact of the two sites was detailed within these memoranda.

The consultant predicted a cumulative sound pressure level of 53 dBA at a point in the habitats site that was 200 m south of the facility however our check modelling found that the closest point of the habitats site was 130 m away and consequently noise levels would be higher. We found that predicted specific levels at the closest point of the Ramsar site could be up to 5 dBA higher than the consultant reported therefore we conclude there is the potential for a likely significant effect and based on this we have taken the impact of noise on to a stage 2 habitats risk assessment (HRA).

Nutrient Deposition

The process contribution at the North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA and Northumbria Coast Ramsar are all below 1% therefore we conclude that there will be no likely significant effect.

The maximum nitrogen deposition PC is above 1% of the critical level at Teesmouth and Cleveland Coast SSSI. However, the PEC is below the critical level therefore we conclude that the proposal will not damage the special features of the SSSI.

The maximum nitrogen deposition PC exceeds 1% of the critical load range at the Teesmouth and Cleveland Coast SPA/Ramsar site and pSPA. The PECs across parts of these sites exceed the minimum critical load for some interest features and the emissions are considered to be potentially significant therefore we have taken nutrient deposition on to a stage 2 HRA.

Table 2 Predicted Nutrient Deposition

Designation	Site Name	Interest Feature	Min CL (kgN.ha-1.yr-1)	AC (kgN.ha-1.yr-1)	Teesside REP PC (kgN.ha-1.yr-1)*	Tees CCPP PC (kgN.ha-1.yr-1)**	Billingham Reach PC (kgN.ha-1.yr-1)***	Saltholme North + Saltholme South PC (kgN.ha-1.yr-1)			PEC (kgN.ha-1.yr-1)	Salthome N+S PC/min CL (%)	PEC/min CL (%)
								From NO_x	From NH_3	Total			
SPA / Ramsar	Teesmouth & Cleveland Coast	Sterna sandvicensis (Western Europe/Western Africa) - Sandwich tern	8	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**4**	**156**
		Sterna albifrons (Eastern Atlantic - breeding) - Little tern	8	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**4**	**156**
		Tadorna tadorna (North-western Europe) - Common shelduck	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62
		Anas crecca (North-western Europe) -	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62

Designation	Site Name	Interest Feature	Min CL (kgN.ha-1.yr-1)	AC (kgN.ha-1.yr-1)	Teesside REP PC (kgN.ha-1.yr-1)*	Tees CCPP PC (kgN.ha-1.yr-1)**	Billingham Reach PC (kgN.ha-1.yr-1)***	Saltholme North + Saltholme South PC (kgN.ha-1.yr-1)			PEC (kgN.ha-1.yr-1)	Salthome N+S PC/min CL (%)	PEC/min CL (%)
								From NO_x	From NH_3	Total			
		Eurasian teal											
		Anas clypeata (North-western/Central Europe) - Northern shoveler	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62
		Calidris canutus (North-eastern Canada/Greenland/Iceland/North-western Europe) - Red knot	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62
		Calidris alba (Eastern Atlantic/Western & Southern Africa - wintering) - Sanderling	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62
		Tringa totanus (Eastern Atlantic - wintering) - Common redshank	20	11.7	0.14	0.09	0.22	0.04	0.29	0.33	12.48	**2**	62
	Northumbria Coast	Sterna albifrons (Eastern Atlantic - breeding) - Little tern (A195)	8	11.2	0.14	0.09	0.22	<0.005	<0.005	<0.005	11.67	0	**146**
		Arenaria interpres (Western Palearctic - wintering) - Ruddy turnstone (A169)	20	11.2	0.14	0.09	0.22	<0.005	<0.005	<0.005	11.67	0	58

Designation	Site Name	Interest Feature	Min CL (kgN.ha-1.yr-1)	AC (kgN.ha-1.yr-1)	Teesside REP PC (kgN.ha-1.yr-1)*	Tees CCPP PC (kgN.ha-1.yr-1)**	Billingham Reach PC (kgN.ha-1.yr-1)***	Saltholme North + Saltholme South PC (kgN.ha-1.yr-1)			PEC (kgN.ha-1.yr-1)	Salthome N+S PC/min CL (%)	PEC/min CL (%)
								From NO_x	From NH_3	Total			
SPA	North York Moors	Pluvialis apricaria [North-western Europe - breeding] - European golden plover (A140)	5	19.0	0.14	0.09	0.22	<0.005	<0.005	<0.005	19.48	0	**390**
		Falco columbarius - Merlin (A098)	10	19.0	0.14	0.09	0.22	<0.005	<0.005	<0.005	19.48	0	**195**
SSSI	Teesmouth & Cleveland Coast SSSI	Various	20	13.8	0.14	0.09	0.22	0.09	0.69	0.78	15.04	**4**	75
pSPA	Teesmouth & Cleveland Coast	Various	8	11.7	0.14	0.09	0.22	0.09	0.69	0.78	12.94	**10**	**162**
SAC	North York Moors SAC	Blanket bogs (if active bog) (H7130)	5	19.0	0.14	0.09	0.22	<0.005	<0.005	<0.005	19.48	0	**390**
		Northern Atlantic wet heaths with Erica tetralix (H4010)	10	19.0	0.14	0.09	0.22	<0.005	<0.005	<0.005	19.48	0	**195**
		European dry heaths (H4030)	10	19.0	0.14	0.09	0.22	<0.005	<0.005	<0.005	19.48	0	**195**

Note: As advised by APIS, for sites with high precipitation, the upper bound of the critical load range should be used
*Maximum predicted N deposition rate presented in Air Quality Environmental Impact Assessment Addendum (REC, April 2015)
** Maximum predicted N deposition rate presented in Tees CCPP Project, Volume 1 – Chapter 7 (Sembcorp Utilities UK, May 2018)
*** Maximum predicted N deposition rate presented in Billingham Reach ES Addendum, Chapter 7 (Tees Eco Energy Limited, August 2016)

Toxic Contamination

Long term NOx

The maximum long term NOx PC is below 1% of the critical level at the following sites, North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA, Teesmouth and Cleveland Coast SPA/Ramsar and Northumbria Coast Ramsar therefore we conclude that there will be no likely significant effect.

The maximum long term NO_X PC is above 1% of the critical level at two habitat sites, Teesmouth and Cleveland Coast SSSI and pSPA. However, the PECs are below the critical level therefore we conclude that there will be no likely significant effect on the habitats sites and will not damage the special features of the SSSI.

Table 3 Predicted Long Term NOx

Designation	Site Name	CL ($\mu g.m^{-3}$)	AC ($\mu g.m^{-3}$)	Teesside REP PC ($\mu g.m^{-3}$)*	Tees CCPP PC ($\mu g.m^{-3}$)**	Billingham Reach PC ($\mu g.m^{-3}$)***	Saltholme North + Saltholme South PC ($\mu g.m^{-3}$)	Cumulative PEC ($\mu g.m^{-3}$)	Saltholme North + Saltholme South PC/CL (%)	Cumulative PEC/CL (%)
SPA / Ramsar	Teesmouth & Cleveland Coast	30	26.05	0.76	0.31	0.62	0.38	28.11	1	94
	Northumbria Coast		10.1	0.76	0.31	0.62	0.01	11.80	0	39
SPA	North York Moors		7.49	0.76	0.31	0.62	0.00	9.18	0	31
SSSI	Teesmouth & Cleveland Coast SSSI		19.99	0.76	0.31	0.62	0.89	22.56	**3**	75
pSPA	Teesmouth & Cleveland Coast		26.05	0.76	0.31	0.62	0.89	28.62	**3**	95
SAC	Durham Coast SAC		15.85	0.76	0.31	0.62	0.01	17.55	0	59
	North York Moors SAC		7.49	0.76	0.31	0.62	0.00	9.18	0	31

Note: Data sourced from APIS, NS = Not sensitive, ND = No data
*Maximum predicted annual-mean NO_X concentration presented in Air Quality Environmental Impact Assessment Addendum (REC, April 2015)
** Maximum predicted annual-mean NO_X concentration presented in Tees CCPP Project, Volume 1 – Chapter 7 (Sembcorp Utilities UK, May 2018)
*** Maximum predicted annual-mean NO_X concentration presented in Billingham Reach ES Addendum, Chapter 7 (Tees Eco Energy Limited, August 2016)

Short term NOx

The maximum short term NOx PC is below 10% of the critical level at the following sites, North York Moors SAC, Durham Coast SAC, Northumbria Coast SPA, North York Moors SPA and Northumbria Coast Ramsar therefore we conclude that there will be no likely significant effect.

The maximum short term NOx PC is above 10% of the critical level at Teesmouth & Cleveland Coast SPA/Ramsar site, SSSI and pSPA. The PECs across parts of these sites exceed the critical level of 75 µg/m^3 and the emissions are considered to be potentially significant therefore we have taken short term NOx emissions on to stage 2 HRA.

Table 4 Predicted Maximum Short Term NOx

Designation	Site Name	CL (µg.m^{-3})	AC (µg.m^{-3})	Teesside REP PC (µg.m^{-3})*	Tees CCPP PC (µg.m^{-3})**	Billingham Reach PC (µg.m^{-3})***	Saltholme North + Saltholme South PC (µg.m^{-3})	Cumulative PEC (µg.m^{-3})	Saltholme North + Saltholme South PC/CL (%)	Cumulative PEC/CL (%)
SPA / Ramsar	Teesmouth & Cleveland Coast	75	52.10	6.21	9.19	3.98	14.86	86.34	**20**	**115**
	Northumbria Coast		20.20	6.21	9.19	3.98	0.64	40.23	1	54
SPA	North York Moors		14.98	6.21	9.19	3.98	0.22	34.58	0	46
SSSI	Teesmouth & Cleveland Coast SSSI		39.98	6.21	9.19	3.98	43.39	102.75	**58**	**137**
pSPA	Teesmouth & Cleveland Coast		52.10	6.21	9.19	3.98	43.39	114.87	**58**	**153**
SAC	Durham Coast SAC		31.70	6.21	9.19	3.98	0.65	51.74	1	69
	North York Moors SAC		14.98	6.21	9.19	3.98	0.22	34.58	0	46

Note: APIS provides a single value for the NOX background concentration. The PEC and PEC/CL(%) are provided for a doubled background concentration.
*Maximum predicted daily-mean NOX concentration presented in Air Quality Environmental Impact Assessment Addendum (REC, April 2015)
** Maximum predicted daily-mean NOX concentration presented in Tees CCPP Project, Volume 1 – Chapter 7 (Sembcorp Utilities UK, May 2018)
*** Maximum predicted daily-mean NOX concentration presented in Billingham Reach ES Addendum, Chapter 7 (Tees Eco Energy Limited, August 2016)

Long term ammonia

The maximum long term ammonia PC is above 1% of the critical level at three habitat sites. However, the PECs are below the critical level as such, the emissions are not considered to be significant.

Table 5 Predicted Long Term NH_3

Designation	Site Name	CL ($\mu g.m^{-3}$)	AC ($\mu g.m^{-3}$)	Teesside REP PC ($\mu g.m^{-3}$)*	Tees CCPP PC ($\mu g.m^{-3}$)**	Billingham Reach PC ($\mu g.m^{-3}$)***	Saltholme North + Saltholme South PC ($\mu g.m^{-3}$)	Cumulative PEC ($\mu g.m^{-3}$)	Saltholme North + Saltholme South PC/CL (%)	Cumulative PEC/CL (%)
SPA / Ramsar	Teesmouth & Cleveland Coast	3	0.99	0.02	0	0.31	0.06	11.38	**2**	46
	Northumbria Coast		0.70	0.02	0	0.31	0.00	1.03	0	34
SPA	North York Moors		1.13	0.02	0	0.31	0.00	1.46	0	49
SSSI	Teesmouth & Cleveland Coast SSSI		0.99	0.02	0	0.31	0.14	1.46	**5**	49
pSPA	Teesmouth & Cleveland Coast		0.99	0.02	0	0.31	0.14	1.46	**5**	49
SAC	Durham Coast SAC	ND	1.68	0.02	0	0.31	0.00	2.01	ND	ND
	North York Moors SAC	1	2.16	0.02	0	0.31	0.00	2.49	0	249

Note: Data sourced from APIS, NS = Not sensitive, ND = No data
*Maximum predicted annual-mean NH3 concentration presented in Air Quality Environmental Impact Assessment Addendum (REC, April 2015)
**No NH3 emissions predicted from the Tees CCPP Project, Volume 1 – Chapter 7 (Sembcorp Utilities UK, May 2018)
*** Maximum predicted annual-mean NH3 concentration presented in Billingham Reach ES Addendum, Chapter 7 (Tees Eco Energy Limited, August 2016)

9. In combination assessment (further details)

The PPP impacts for short term NOx emissions and nutrient deposition were assessed in combination with the following planned sites;

- Teesside Renewable Energy Plant (REP);
- Billingham Reach Energy from Waste Plant; and
- Tees Combined Cycle Power Plant (CCPP).

Short term NOx (see Table 4 above)

The maximum short term in combination NOx PC is above 10% of the critical level at Teesmouth & Cleveland Coast SPA/Ramsar site, SSSI and pSPA. The PECs across parts of these sites exceed the critical level of 75 µg/m^3 and the emissions are considered to be potentially significant therefore we have taken short term NOx emissions on to a stage 2 HRA.

Nutrient Deposition (see Table 2 above)

The maximum nitrogen deposition PC exceeds 1% of the critical load range at the Teesmouth and Cleveland Coast SPA/Ramsar site and pSPA. The PECs across parts of these sites exceed the minimum critical load for some interest features and the emissions are considered to be potentially significant therefore we have taken nutrient deposition on to an in combination HRA.

10. Information / Advice

This section summarises the information and or advice requested / received during the screening.

Environment Agency internal advice and consultation (if applicable)

We consulted our Air Quality Assessment Unit (AQMAU) to audit the applicant's AQA and Noise Assessment. They agreed with the overall conclusions of the assessments and confirmed that the results could be used for consultation with Natural England.

Natural England information / advice (if applicable)

No prior consultation with Natural England.

Third party advice (if applicable)

No consultation with third parties.

11. References

N/A

12. Decision

The Environment Agency:

Has decided to carry out a Stage 2 HRA appropriate assessment on the impacts of the short term NOx, nutrient N deposition and noise at the Teesmouth and Cleveland Coast SPA (UK9006061),

Teesmouth and Cleveland Coast Ramsar (UK11068), Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and Teesmouth and Cleveland Coast SSSI (short term NOx only).

- significant effects alone could not be screened out
- significant effects in combination could not be screened out

Name of Environment Agency officer:

Job title: Principal Permitting Officer

Date: 10/09/2020

13. Consultation (if applicable)

Date sent to Natural England for consultation: 10/09/2020.

Date response received from Natural England: 21/10/2020

See section 22.

Stage 2 Habitats Regulations Assessment

Environment Agency record of appropriate assessment

This is a record of the appropriate assessment required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended), undertaken by the Environment Agency in respect of the permission, plan or project (PPP) detailed in section 1 of the Stage 1 Habitats Regulations Assessment (see above) for the following relevant sites:

- Teesmouth and Cleveland Coast SPA (UK9006061)
- Teesmouth and Cleveland Coast Ramsar (UK11068)
- Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site
- Teesmouth and Cleveland Coast SSSI.

This record starts at section 14 because it follows on from the Stage 1 Habitats Regulations Assessment, which covers the screening for likely significant effects of this PPP (sections 1-13).

Version: **Draft for consultation.** Draft 1, 10/09/2020.

14. Permission, plan or project (PPP) details

See section 1 of the Stage 1 Habitats Regulations Assessment (above).

15. Summary of Stage 1 (likely significant effect) conclusion

Significant effects alone and in combination could not be screened out at the Stage 1 Habitats Regulations Assessment for nutrient nitrogen, short term NOx impacts (resulting from emissions from the CHP engine) and noise. Further consideration of the effects of these pollutants is presented in section 17.

16. Further information about the proposal

The proposal is described in section 2 of the Stage 1 Habitats Regulations Assessment. There is no additional detail nor new information that is relevant to the appropriate assessment.

17. Appropriate assessment: assessing the effects alone and in combination

Significant effects of nutrient nitrogen deposition, short term NOx emissions and noise could not be screened out at the Stage 1 Habitats Regulations Assessment. Further consideration of the effects are presented in this section.

Disturbance

Cumulative Predicted Sound Levels

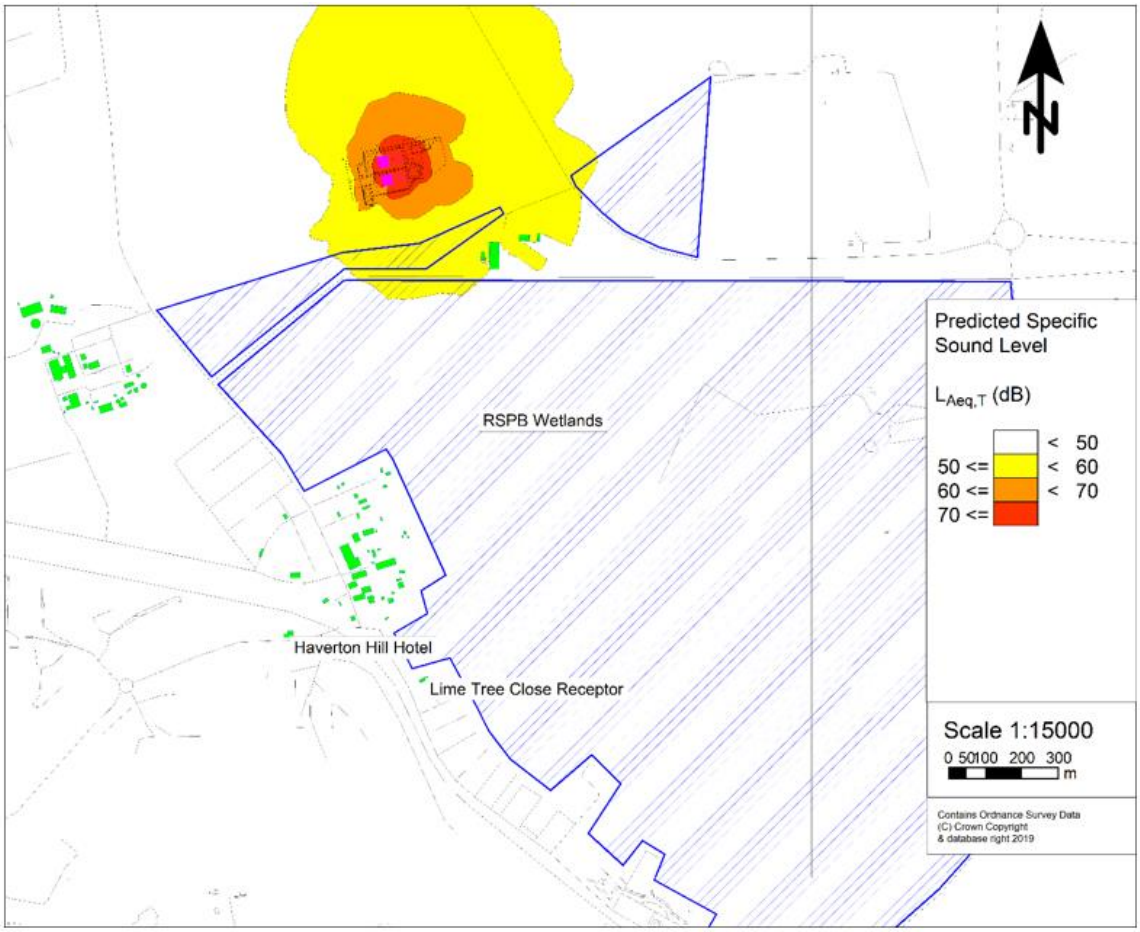
The Saltholme South facility has been assessed in conjunction with the neighbouring proposed gas-fired Saltholme North facility.

The assessment predicted a cumulative sound pressure level of 53 dBA at a point in the habitats site that was 200m south of the facility however our check modelling found that the closest point of the habitats site was 130m away and consequently noise levels would be higher.

The applicant provided a report written by their ecologist to define the potential impact on the habitats site. The ecologist used a University of Hull report (Construction and Waterfowl – Defining Sensitivity Response, Impacts and Guidance, Institute of Estuarine and Coastal Studies, University of Hull, February 2009) for guidance on acceptable levels of continuous noise for birdlife. The lowest value quoted was 50 dBA although levels between 55 and 85 dBA were expected to be acceptable. Furthermore the ecologist contended that birds are not so sensitive to sound below frequencies of around 1 kHz which is where much of the sound emission energy from the engines would lie. As the predicted levels were just 3 dBA above the minimum value for disturbance but well below the higher levels mentioned they concluded that the site would not result in adverse impacts.

The ecologist also contended that through a combination of consultation and field survey data detailed in SEC8481, Saltholme Gas-fired Generating Facilities sHRA, Addendum (v3) FINAL, 16 August 2019 it has been shown that the fields associated with and immediately surrounding the development site are of limited value to waterbirds associated with the habitats site. The ecologist stated that the habitats associated with the nearest part of the habitats site to the facility are of limited value to wetland birds and the majority of such species use the pools and grassland habitats associated with the wider RSPB Saltholme Reserve in areas located over 300m from the site. Therefore based on the acoustic data supplied, noise levels generated by the facility at 300m from the main development would probably be well below 50 dBA. Figure 1 below shows the sound levels in the vicinity of the habitats site.

Figure 1



The ecologist stated that based on the predicted specific sound levels at the boundary of the ecological receptors, there is potential for a low impact to birds along the boundary. However, as stated above, birds are more sensitive to the high frequencies, as opposed to the low frequencies which are present here.

The spectral shape of the sound level is shown in table 6 below.

Table 6

Location	Predicted Overall Sound Level, dB(A)	Linear Octave Band Sound Levels, dB						
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
SPA	**51**	64	53	48	47	47	44	35

The ecologist stated that based on the spectral shape of the sound level as shown in table 6, sound emissions from the proposed sites contain more energy

in the lower frequency bands (<1 kHz). The potential impact on birds is therefore likely to be lower than would be suggested by the overall dBA value due to the hearing ranges of birds being mostly limited to the high frequencies. In addition, the sound source is not considered to be impulsive and, as such, it is unlikely that sound from the site would lead to a startle response.

Based on the results of this assessment into the impact of noise from the proposed sites on ecological receptors in the Teesmouth and Cleveland Coast, we conclude that operation of the PPP would not result in adverse impacts.

Short term NOx

The short-term PC for NOx was calculated as being above the 10% critical level threshold for the Teesmouth and Cleveland Coast SPA and Ramsar Site (20%) and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI (58%) and the short-term PC took the overall PEC for the Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI over the Critical Level threshold for NOx.

The applicant assessed the distribution of sensitive qualifying features using an ecologist through a combination of consultation and field survey data. The results indicated that the fields associated with and immediately surrounding the development site are of limited value to water birds associated with the habitats site. The ecologist stated that even the habitats associated with the nearest part of the habitats site to the facility are of limited value to wetland birds and the majority of such species use the pools and grassland habitats associated with the wider RSPB Saltholme Reserve in areas located over 300m from the site.

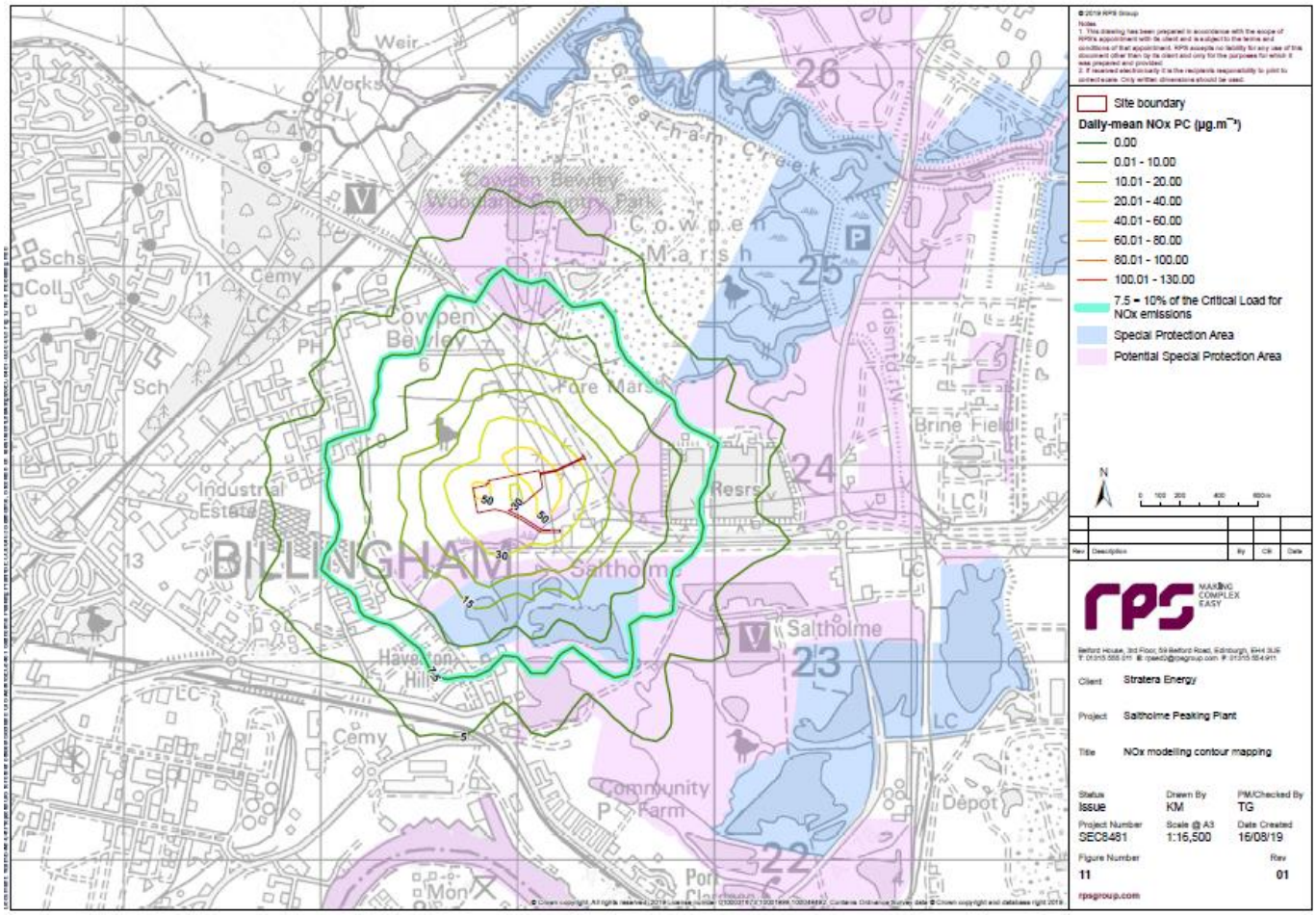
The ecologist concluded that the species which could potentially be adversely affected by NOx emissions above the Critical Level at the Teesmouth and Cleveland Coast SPA and Ramsar Site and SSSI are those which are associated with sand dune habitats namely little tern, Sandwich tern and common tern.

Contour mapping in the air quality assessment addendum reports (RPS, 2019a and 2019b) and represented in Figure 2 below, shows that NOx concentrations fall below 10% of the Critical Level between approximately 925m and 1.25km of the proposed development. Therefore, NOx concentrations will be negligible and insignificant for the coastal habitats used by little tern and Sandwich tern, whose core habitats are located 13.8 and 2.8km from the proposed development respectively. Therefore, adverse effects on the habitats used by these species, and hence the species themselves can be ruled out.

The freshwater and/or brackish pools at RSPB’s Saltholme Reserve and the wider North Tees Marshes, at which most of the pSPAs avocet and common terns breed, are predominantly over 900m from the proposed development. Consequently, the vast majority of areas used by these species are predicted to be below 10% of the Critical Load threshold and hence not significant. In

addition, the APIS database identifies that the coastal, freshwater and terrestrial habitats which these birds are most likely to use are subject to much greater N inputs from terrestrial sources than airborne contributions. The ecologists report also stated that in relation to nutrient N-deposition, inputs from the guano deposited within the densely populated common tern nesting colonies during the breeding season are also expected to outweigh airborne contributions. Consequently, adverse effects on the habitats used by avocet and common tern within the habitats sites, and hence the species itself can also be ruled out.

Figure 2



Based on the results of this assessment into the impact of short term NOx from the proposed sites on ecological receptors in the Teesmouth and Cleveland Coast, we conclude that operation of the PPP would not result in adverse impacts.

In addition, the main risk of NO_x to the environment would be likely to be through its contribution to total nitrogen deposition (acidification and nutrient enrichment) to the habitats and vegetation rather than from aerial concentrations directly. Any impacts on the designated birds will be indirect through influences on plant and

animal food sources, vegetation composition and cover, associated mainly with nutrient enrichment.

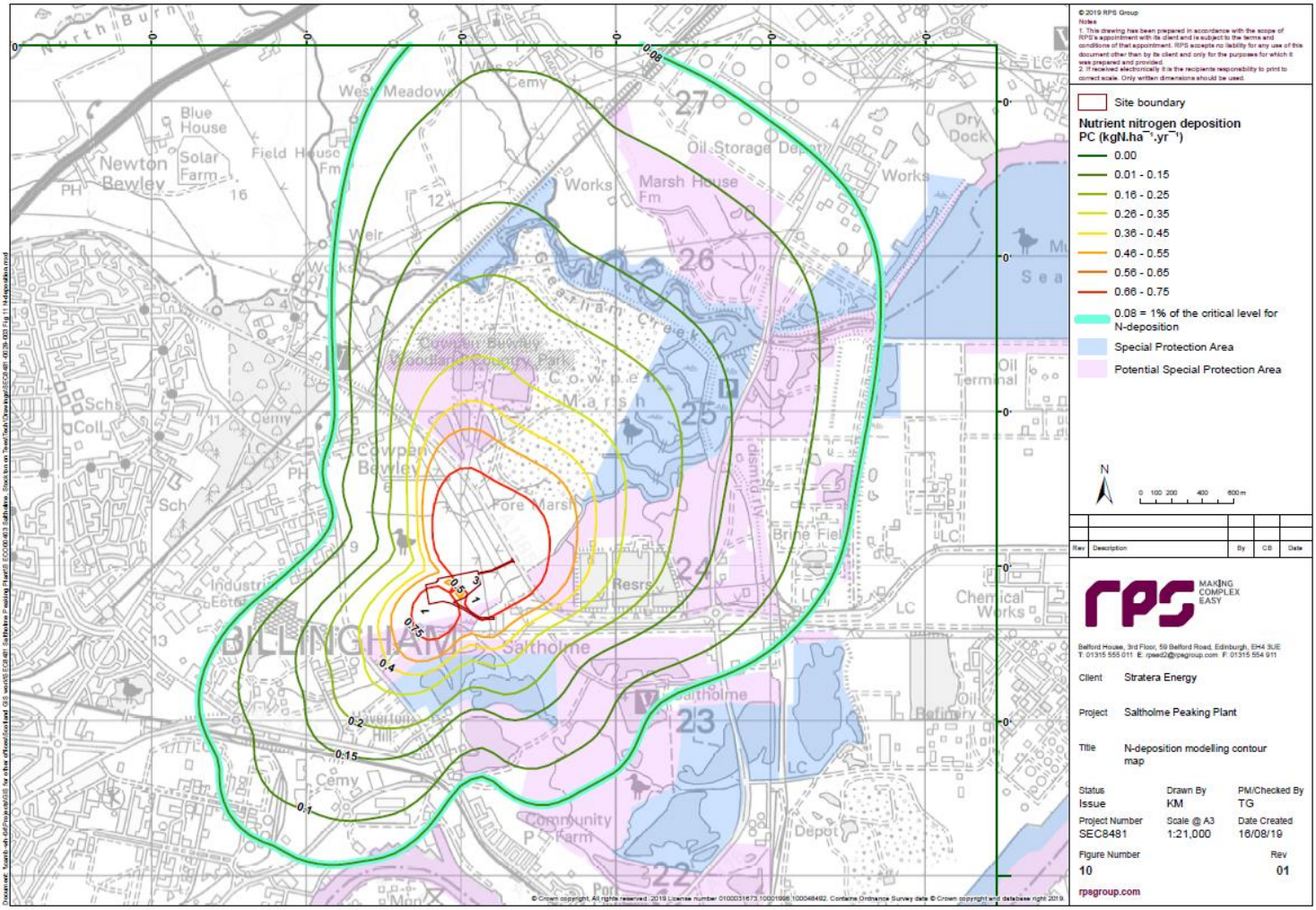
This view is supported by information in the Air Pollution Information System and the 2001 report – Transboundary Air Pollution: Acidification, Eutrophication and Ground Level Ozone in the UK.

Nutrient N deposition

The maximum PC for N deposition levels for the Teesmouth and Cleveland Coast SPA and Ramsar Site, and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site from the proposed project on its own are calculated as being up to 4% and 10% of the lower range Critical Loads respectively, and are therefore, considered to be significant for both sites. The Predicted PECs for N deposition are 50% and 56% above the lower range of the Critical Load threshold for the two sites respectively (8 kgN.ha-1.yr-1) and assessing this in combination with the other three sites the PECs are 156% and 162% respectively, therefore significant in the context of N deposition levels for the local receiving environment. The ambient/baseline nutrient-N deposition level for the area (11.7 kgN.ha-1.yr-1) is already recognized to exceed the lower range of the Critical Load threshold for both habitats sites by 46%.

Since the applicant was unable to screen out nutrient nitrogen deposition impacts, they have determined the scale of impact to the designated habitats through a spatial analysis, see isopleth map below (figure 3).

Figure 3



The ecologists report concluded that the species which could potentially be adversely affected by N deposition are those which are associated with sand dune habitats (little tern, Sandwich tern and common tern) and breeding avocet associated with saltmarsh.

Most, if not all other species associated with the SPA/pSPA are unlikely to be significantly affected by N deposition, either because the habitats upon which they depend on are not expected to be affected, despite being potentially susceptible to N inputs, or because the species themselves are not susceptible to causative habitat changes.

Contour mapping depicting the depreciation of N-deposition concentrations with increased distance from the proposed development presented in Figure 3, shows that concentrations fall below 1% of the Critical Load between approximately 900m and 3.75km of the proposed development. Consequently, for little tern, whose core habitats are located 13.8km from the proposed development, concentrations of N-deposition in the coastal habitats which they use will be

negligible and insignificant. Therefore, adverse effects on the habitats used by this species, and hence the species itself can be ruled out.

The ecologists report stated that common tern and avocet breed on saltmarsh and sparsely vegetated or short-growing margins (as well as artificial rafts in the case of common terns) predominantly associated with freshwater and/or brackish pools at RSPB's Saltholme Reserve and the wider North Tees Marshes. These areas are within 2km from the proposed project and the N deposition contour mapping detailed in Figure 3 shows that deposition levels across much of RSPB's Saltholme Reserve and the North Tees Marshes, including areas where avocet and common tern are known to breed, are predicted to be over the 1% Critical Load threshold. Consequently, there is potential for the habitats in these areas to be adversely affected by N deposition. However, for saltmarsh areas, which are typically subject to daily, periodic flooding with saline water, airborne N deposition is of low importance as the inputs will be significantly below the large nutrient loadings from river and tidal inputs (APIS database). Furthermore, the effects of N deposition are more likely to be associated with taller vegetation of upper marsh communities where interspecific competition and the influence of nutrient enriched runoff is greatest (APIS database). As such, the low and mid-saltmarsh habitats most likely to be used by avocet are not expected to be significantly affected by airborne N deposition compared to other sources. Furthermore, for common terns in particular, the N deposition contribution from airborne emissions is expected to be negligible compared to the inputs from ammonia resulting from the guano deposited within their densely populated nesting colonies during the breeding season. The predicted N deposition contribution from the proposed development will also be infinitesimal compared to the nutrient levels in the freshwater and coastal habitats in which they typically forage. Therefore, it is considered that adverse effects on the SPA/pSPA habitats used by avocet and common tern, and hence the species themselves can be ruled out.

The ecologists report stated that Sandwich terns are known to use coastal habitats approximately 2.8km from the proposed development and hence includes areas where N deposition levels are also predicted to be over the 1% Critical Load threshold.

However, this species is only designated during the post-breeding, passage period when birds are either foraging over open coastal waters or roosting on coastal habitats such as sandy and rocky foreshores or exposed sandbars and outcrops. These, typically unvegetated roosting habitats will not therefore not be affected by N deposition, while the nutrient levels in the coastal waters in which they feed are predicted to be significantly greater than that contributed by the proposed development, as detailed above. Therefore, it is considered that adverse effects on the SPA/pSPA habitats used by Sandwich tern, and hence the species itself can also be ruled out.

Based on the results of this assessment into the impact of nutrient N deposition from the proposed sites on ecological receptors in the Teesmouth and Cleveland Coast, we conclude that operation of the PPP would not result in adverse impacts.

Summary of the appropriate assessment's conclusions

Through a spatial analysis the impacts have been assessed against critical loads/levels specific to the interest features presence within the habitats sites. This has resulted in the impacts reducing to a level in which it can be concluded that impacts are not significant.

Considering the results of the appropriate assessment, as well as the conservative nature of the applicant's air quality and noise assessments (see section 8 of the Stage 1 Habitats Regulations Assessment), we agree with the applicant's conclusions.

It is therefore possible to ascertain no adverse effect on the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar Site and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI**.**

This conclusion is not dependent on mitigation measures or conditions, the engines have SCR fitted which is regarded as BAT for this type of equipment.

18. Appropriate assessment: assessing the effects in combination

See section 17.

19. Information / Advice

Environment Agency internal consultation

We consulted our Air Quality Assessment Unit (AQMAU) to audit the applicant's appropriate assessment. They agreed with the conclusions of the assessment and confirmed that the results could be used for consultation with Natural England.

Natural England comments

No prior consultation with Natural England.

Third party comments

No consultation with third parties.

20. References

Cutts, N, Hemingway, K. and Spencer, J. 2013. Waterbird Disturbance Mitigation Toolkit. Information Estuarine Planning and Coastal Projects, produced by Institute of Estuarine and Coastal Studies, (IECS), University of Hull.

21. Draft conclusion

The Environment Agency has completed the appropriate assessment and the draft conclusion is:

The PPP can be ascertained to have no adverse effect on the integrity of the following sites, either alone or in combination with other plans and projects:

Teesmouth and Cleveland Coast SPA and Ramsar Site, and for Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site and SSSI.

This conclusion is not dependent on mitigation measures or conditions, the engines have SCR fitted which is regarded as BAT for this type of equipment.

The Environment Agency is minded to grant the permission.

Name of Environment Agency officer:

Job title: Principal Permitting Officer – Installations

Date: 10/09/2020

22. Formal consultation

Natural England consultation

Date sent to Natural England for formal consultation: 10/09/2020

Date response received from Natural England: Initial response on 6/10/2020. Case discussed with permitting officer over the next two weeks. Final response 21/10/2020

Two main concerns were discussed:

1. The Teesmouth and Cleveland Coast SSSI row on Table 2 includes the critical load for saltmarsh (20 kg N/ha/year), but sand dune is also a feature of the SSSI and is more sensitive to nutrient deposition (lower critical load 8 kg N/ha/year). However, nutrient deposition is considered further in the assessment (due to SPA features having the 8 kg N/ha/year

critical load). This analysis shows that nutrient deposition declines significantly with distance from the site and is <1% of the process contribution before any sand dune habitat.

2. The assessment considers impacts of short-term NOx on sand dunes, but not saltmarsh vegetation. The critical load for saltmarsh vegetation is also 75 μgm^3, but it occurs much closer to the site than sand dune vegetation.

   Figure 2 shows the rapid decline of NOx levels with distance from the site. NOx levels will be well below the 75 $\mu g.m^{-3}$ critical load (also considering the in combination contributions from Table 4) at the saltmarsh by Greatham Creek.

Natural England advises:

that the permission can be granted / the plan or project can go ahead

Lead Adviser, Northumbria Area Team

Date: 21 October 2020

23. Final appropriate assessment record

This is a record of the appropriate assessment required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended), undertaken by the Environment Agency.

The screening (Stage 1) concluded that the PPP would be likely to have a significant effect on the following site(s):

Teesmouth and Cleveland Coast SPA Ramsar Site

Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site

Teesmouth and Cleveland Coast SSSI

An appropriate assessment has been undertaken of the implications of the proposal in view of the site's conservation objectives.

It can be ascertained that the PPP would not have an adverse effect on the integrity of the following sites, either alone or in combination with other plans and projects:

Teesmouth and Cleveland Coast SPA Ramsar Site

Teesmouth and Cleveland Coast pSPA and proposed Ramsar Site

and the proposed permission is not likely to damage any of the flora, fauna or geological or physiological features which are of special interest at the following site.

Teesmouth and Cleveland Coast SSSI

Natural England formal consultation

Natural England was consulted on the appropriate assessment, and the Environment Agency's conclusions, on 10/09/2020 and its representations, to which the Environment Agency has had regard, are detailed in Section 22. The conclusions of this appropriate assessment are in accordance with the advice and recommendations of Natural England.