

## Addendum AD2 to report LSW240750, Issue 6, 6 February 2025 Europa Oil and Gas Limited, Cloughton Appraisal Wellsite

### Response to a Note of request for more information ERP/YP3623/AA001, 15 August 2025

#### Impact on local wildlife sites (point 12)

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##### AD2.1 Introduction

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An air quality impact assessment supporting Europa Oil and Limited's (Europa) application to undertake hydrocarbon appraisal operations on land off the A165 to the south east of Burniston, known as the Cloughton Appraisal Wellsite, was undertaken as described in SOCOTEC UK Limited report LSW240750, Issue 6 dated 6 February 2025.

Following submission for consideration the Environment Agency issued a Note of request for more information, dated 15 August 2025. Part of the request required an assessment of the impact of releases from proposed development operations on local wildlife sites (LWS). The specific requirements were listed in point 12 of the request:

- 12) Provide an assessment of impacts at all local nature sites within 2 km of the modelled sources, including:
- a) Scarborough to Whitby Disused Railway Local Wildlife Site (LWS)
  - b) Goose Dale & Quarry Banks LWS
  - c) Cloughton Beck Marsh LWS

*Reasons:*

*Our checks indicate that the consultant has not assessed impacts at Goose Dale & Quarry Banks LWS or Cloughton Beck Marsh LWS (within 2 km of the source locations) in their AQA report. Assessment of impacts at all local nature sites (including LWS) within 2 km of the source locations is required as per our Air emissions risk assessment for your environmental permit - GOV.UK guidance (see "Screening for protected conservation areas").*

*The consultant's modelled receptor location for Scarborough to Whitby Disused Railway LWS does not fall within the boundary of this LWS.*

The purpose of this addendum is to provide the information requested.

In this addendum, Section and Table references refer to report LSW240750, Issue 6 dated 6 February 2025, unless otherwise noted.

Section AD2.1 of this addendum provides the assessment of impacts at the specified wildlife sites in the same format as in the original assessment. All calculation methodology employed in this addendum is the same as that in the main assessment (LSW240750, Issue 6 dated 6 February 2025) which is described in Sections 3, 4.3 and Appendix F.

## AD2.2 Assessment of impacts at local wildlife sites

For the purposes of the assessment, the three local wildlife sites specified were represented by a single receptor at the edge of the site closest to the proposed wellsite boundary. The locations of these receptors are described in Table AD2.1.

**Table AD2.1 Location of receptors at local wildlife sites**

Receptor	Location	Easting (m)	Northing (m)
Cloughton Beck Marsh LWS	1.6km NW	500804	496758
Goose Dale and Quarry Banks LWS	1.8km NW	500617	493827
Scarborough to Whitby Disused Railway Site LWS	0.5km W	501606	493005

## AD2.1 Critical levels and Critical loads

The critical loads and levels adopted for use in this assessment have been obtained from the APIS and are summarised in Table AD2.2. In the selection of critical loads, a broadleaved, mixed and yew woodland habitat has been selected. The nitrogen critical load is provided as a range and the minimum in that range has been adopted for the assessment. In both cases it is expected that this will provide a conservative assessment of impact.

**Table AD2.2 Site relevant critical loads and levels**

Site	Cloughton Beck Marsh LWS	Goose Dale and Quarry Beck LWS	Scarborough to Whitby disused railway site LWS
Critical levels for nitrogen oxides and sulphur dioxide (see Table 2.2)			
Annual mean NO <sub>x</sub> µgNO <sub>2</sub> /m <sup>3</sup>	30		
Daily mean NO <sub>x</sub> µgNO <sub>2</sub> /m <sup>3</sup>	200		
Annual mean SO <sub>2</sub> µgSO <sub>2</sub> /m <sup>3</sup>	10		
Critical load for nitrogen deposition			
Most sensitive habitat	Broadleaved, mixed and yew woodland	Broadleaved, mixed and yew woodland	Broadleaved, mixed and yew woodland
N deposition CL            kgN/ha/y	10-15	10-15	10-15
Critical loads for acid deposition			
Most sensitive habitat	Broadleaved, mixed and yew woodland	Broadleaved, mixed and yew woodland	Broadleaved, mixed and yew woodland
Minimum CL <sub>min</sub> N            keq	0.357	0.357	0.357
Minimum CL <sub>max</sub> S            keq	1.472	1.472	1.466
Minimum CL <sub>max</sub> N            keq	1.829	1.829	1.823

The site background concentrations, as obtained from APIS, are summarised in Table AD2.3.

**Table AD2.3 Site relevant background concentrations**

Site	Cloughton Beck Marsh LWS	Goose Dale and Quarry Beck LWS	Scarborough to Whitby disused railway site LWS
Nitrogen oxides annual mean      µgNO <sub>2</sub> /m <sup>3</sup>	5.33	5.33	5.74
Sulphur dioxide annual mean      µgSO <sub>2</sub> /m <sup>3</sup>	0.82	0.82	0.82
Nitrogen deposition      kgN/ha/y	24.36	24.36	24.05
Acid deposition      keq/ha y	1.82	1.82	1.81

## AD2.2 Compliance with critical levels and critical loads

The maximum process contributions to concentrations of nitrogen oxides and sulphur dioxide at the local wildlife sites are detailed in Table AD2.4.

**Table AD2.4 Maximum process contributions of nitrogen oxides and sulphur dioxide at local wildlife sites**

Site		Cloughton Beck Marsh LWS	Goose Dale and Quarry Beck LWS	Scarborough to Whitby disused railway site LWS
<b>Nitrogen oxides</b>				
Maximum annual mean PC	$\mu\text{gNO}_2/\text{m}^3$	0.289	0.233	1.534
	% CL	0.96	0.78	5.11
Background concentration	$\mu\text{gNO}_2/\text{m}^3$	5.33	5.33	5.74
Maximum annual mean PEC	$\mu\text{gNO}_2/\text{m}^3$	5.53	5.49	6.81
	% CL	18	18	23
Maximum daily mean PC	$\mu\text{gNO}_2/\text{m}^3$	11.31	9.95	48.00
	% CL	5.7	5.0	24.0
Background concentration	$\mu\text{gNO}_2/\text{m}^3$	10.66	10.66	11.48
Maximum daily mean PEC	$\mu\text{gNO}_2/\text{m}^3$	21.97	20.60	59.48
	% CL	11	10	30
<b>Sulphur dioxide</b>				
Maximum annual mean PC	$\mu\text{gSO}_2/\text{m}^3$	0.0033	0.0029	0.0116
	% CL	0.03	0.03	0.12
Background concentration	$\mu\text{gSO}_2/\text{m}^3$	0.82	0.82	0.82
Maximum annual mean PEC	$\mu\text{gSO}_2/\text{m}^3$	0.82	0.82	0.83
	% CL	8	8	8

The determination of nitrogen deposition at the local wildlife sites is summarised in Table AD2.5.

**Table AD2.5 Nitrogen deposition at local wildlife sites**

Site		Cloughton Beck Marsh LWS	Goose Dale and Quarry Beck LWS	Scarborough to Whitby disused railway site LWS
Maximum process N deposition	$\mu\text{gNO}_2/\text{m}^2/\text{s}$	0.00061	0.00049	0.00322
	$\text{kgN}/\text{ha}/\text{y}$	0.0582	0.0469	0.3090
	% CL	0.6	0.5	3.1
Background concentration	$\text{kN}/\text{ha}/\text{y}$	24.36	24.36	24.05
Maximum annual mean PEC	$\text{kN}/\text{ha}/\text{y}$	24.42	24.41	24.36
	% CL	244	244	244

The determination of the process contribution to acid deposition at the local wildlife sites is summarised in Table AD2.6.

**Table AD2.6 Acid deposition at local wildlife sites**

Site		Cloughton Beck Marsh LWS	Goose Dale and Quarry Beck LWS	Scarborough to Whitby disused railway site LWS
Nitrogen acid deposition	$\mu\text{gNO}_2/\text{m}^2/\text{s}$	0.00061	0.00049	0.00322
	$\text{kgN}/\text{ha}/\text{y}$	0.058	0.047	0.309
	$\text{keq}/\text{ha y}$	0.0041	0.0033	0.0220
Sulphur acid deposition	$\mu\text{gSO}_2/\text{m}^2/\text{s}$	0.000080	0.000069	0.000278
	$\text{keq}/\text{ha y}$	0.00079	0.00068	0.00273
Total process acid deposition	$\text{keq}/\text{ha}/\text{y}$	0.0049	0.0040	0.0248
	% CL	0.3	0.2	1.4
Total background acid deposition	$\text{keq}/\text{ha}/\text{y}$	1.92	1.92	1.93
Maximum annual mean PEC	$\text{keq}/\text{ha y}$	1.92	1.92	1.93
	% CL	105	105	106

The maximum long term and short term process contributions of nitrogen oxides and sulphur dioxide are equivalent to less than 100% of the applicable critical levels for all local wildlife sites considered and as such process contributions are considered insignificant.

The maximum process contributions to nitrogen and acid deposition are equivalent to less than 100% of the applicable critical loads at the local wildlife sites and as such are not considered significant.

For all local wildlife site considered, process contributions from the proposed development are insignificant with respect to applicable critical levels and critical loads.

N Ford  
21 August 2025

**END**