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# Integrity Matrices

**The Yorkshire and Humber (CCS Cross Country Pipeline) Development Consent Order**

# 1 Appendix 11.9.1 Integrity Matrices

## 1.1 INTRODUCTION

1.1.1 The following mechanisms for effect have been identified

- Installation of the pipeline potentially resulting in an increase or decrease of down drift sediment supply.
- Use of rock armouring potentially interfering with coastal processes resulting in an increase or decrease in down drift sediment supply.
- Disturbance from the physical presence of pipeline and NUI installation vessels.
- Disturbance from underwater noise
- Disturbance from activities associated with the operation of the Offshore Scheme.

1.1.2 Potential impacts upon the European site(s)<sup>1</sup> which are considered within the submitted Habitats Regulations Assessment report (Document 11.8 Supported by Documents 5.4 and 11.9) are provided in Table 1 below. Impacts have been grouped where appropriate for ease of presentation.

### *Impacts considered within the integrity matrices*

<b>Table 1 Effects considered within the Integrity Matrices</b>		
<b>Designation</b>	<b>Effects in submission information</b>	<b>Presented in integrity matrices as</b>
<b>Humber Estuary SAC</b>	<ul style="list-style-type: none"> <li>• Installation of the pipeline potentially resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal Processes</li> </ul>
	<ul style="list-style-type: none"> <li>• Use of rock armouring potentially interfering with coastal process resulting in an increase or decrease of the down drift sediment</li> </ul>	<ul style="list-style-type: none"> <li>• Rock Cover</li> </ul>

<sup>1</sup> As defined in Advice Note 10.

<b>Table 1 Effects considered within the Integrity Matrices</b>		
<b>Designation</b>	<b>Effects in submission information</b>	<b>Presented in integrity matrices as</b>
	supply.	
	<ul style="list-style-type: none"> <li>Disturbance from the physical presence of pipeline and NUI installation vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Temporary disturbance</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance to marine mammals from underwater noise.</li> </ul>	<ul style="list-style-type: none"> <li>Underwater noise</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance from vessels and activities associated with the operation of the Offshore Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Operational activities</li> </ul>
<b>Humber Estuary SPA</b>	<ul style="list-style-type: none"> <li>Installation of the pipeline potentially resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal Processes</li> </ul>
	<ul style="list-style-type: none"> <li>Use of rock armouring potentially interfering with coastal process resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>Rock Cover</li> </ul>
<b>Humber Estuary Ramsar</b>	<ul style="list-style-type: none"> <li>Installation of the pipeline potentially resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal Processes</li> </ul>
	<ul style="list-style-type: none"> <li>Use of rock armouring potentially interfering with coastal process resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>Rock Cover</li> </ul>

<b>Table 1 Effects considered within the Integrity Matrices</b>		
<b>Designation</b>	<b>Effects in submission information</b>	<b>Presented in integrity matrices as</b>
	<ul style="list-style-type: none"> <li>Disturbance from the physical presence of pipeline and NUI installation vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Temporary disturbance</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance to marine mammals from underwater noise.</li> </ul>	<ul style="list-style-type: none"> <li>Underwater noise</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance from vessels and activities associated with the operation of the Offshore Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Operational activities</li> </ul>
<b>Flamborough Head and Bempton Cliffs SPA</b>	<ul style="list-style-type: none"> <li>Disturbance from the physical presence of pipeline and NUI installation vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Temporary disturbance</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance from vessels and activities associated with the operation of the Offshore Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Operational activities</li> </ul>
<b>Flamborough Head and Filey Coast pSPA</b>	<ul style="list-style-type: none"> <li>Disturbance from the physical presence of pipeline and NUI installation vessels.</li> </ul>	<ul style="list-style-type: none"> <li>Temporary disturbance</li> </ul>
	<ul style="list-style-type: none"> <li>Disturbance from vessels and activities associated with the operation of the Offshore Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Operational activities</li> </ul>
<b>Flamborough Head SAC</b>	<ul style="list-style-type: none"> <li>Installation of the pipeline potentially resulting in an increase or decrease of the down drift sediment supply.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal Processes</li> </ul>
	<ul style="list-style-type: none"> <li>Use of rock armouring potentially interfering with</li> </ul>	<ul style="list-style-type: none"> <li>Rock Cover</li> </ul>

<b>Table 1 Effects considered within the Integrity Matrices</b>		
<b>Designation</b>	<b>Effects in submission information</b>	<b>Presented in integrity matrices as</b>
	coastal process resulting in an increase or decrease of the down drift sediment supply.	
<b>The Wash and North Norfolk Coast SAC</b>	<ul style="list-style-type: none"> <li>• Disturbance from the physical presence of pipeline and NUI installation vessels.</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary disturbance</li> </ul>
	<ul style="list-style-type: none"> <li>• Disturbance to marine mammals from underwater noise.</li> </ul>	<ul style="list-style-type: none"> <li>• Underwater noise</li> </ul>
	<ul style="list-style-type: none"> <li>• Disturbance from vessels and activities associated with the operation of the Offshore Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>• Operational activities</li> </ul>

## 1.2 STAGE 2: EFFECTS ON INTEGRITY

1.2.1 Likely significant effects have been identified for the following sites:

- Humber Estuary SAC
- Humber Estuary SPA
- Humber Estuary Ramsar
- Flamborough Head and Bempton Cliffs SPA
- Flamborough Head and Filey Coast pSPA
- Flamborough Head SAC
- The Wash and North Norfolk Coast SAC

1.2.2 These sites have been subject to further assessment in order to establish if the NSIP could have an adverse effect on their integrity. Evidence for the conclusions reached on integrity is detailed within the footnotes to the matrices below.

### Matrix Key

✓ = Adverse effect on integrity cannot be excluded

✗ = Adverse effect on integrity can be excluded

C = construction

O = operation

D = decommissioning

n/a

1.2.3 Where effects are not applicable to a particular feature the matrix cell is formatted as follows:

Stage 2 Matrix 1: Humber Estuary SAC																		
Humber Estuary Special Area of Conservation																		
Distance to Offshore Scheme: 47 km																		
European site features	Adverse effect on integrity																	
	Coastal Processes			Rock Cover			Temporary Disturbance			Underwater Noise			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Estuaries	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Mudflats and sandflats not covered by seawater at low tide	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Sandbanks which are slightly covered by sea water all the time	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Coastal lagoons * Priority feature	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
<i>Salicornia</i> and other annuals colonising mud and sand	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> )	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Embryonic shifting dunes	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Fixed dunes with herbaceous vegetation ('grey dunes') * Priority feature	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Dunes with <i>Hippophae rhamnoides</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)
Sea lamprey <i>Petromyzon</i>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Stage 2 Matrix 1: Humber Estuary SAC																		
Humber Estuary Special Area of Conservation																		
Distance to Offshore Scheme: 47 km																		
European site features	Adverse effect on integrity																	
	Coastal Processes			Rock Cover			Temporary Disturbance			Underwater Noise			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
<i>marinus</i>																		
River lamprey <i>Lampetra fluviatilis</i>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Grey seal <i>Halichoerus grypus</i>	n/a	n/a	n/a	n/a	n/a	n/a	x(e)	n/a	x(c)	x(f)	n/a	x(c)	n/a	x(g)	x(c)	x(h)	x(h)	x(c)

This Integrity Matrix should be read in conjunction with:

- Table 7.2 of Document 11.9 which identifies the potential for adverse effect on site integrity on the Humber Estuary SAC
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on the Humber Estuary SAC.

**(a)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2 and Table 7.2 of Document 11.9.

**(b)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.7 in Document 11.9.

**(c)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(d)** in light of conservation objectives, rock cover will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.13 and Table 7.2 of Document 11.9.

**(e)** in light of conservation objectives, temporary disturbance during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.3.1 to 7.3.3 and Table 7.2 in Document 11.9.

**(f)** in light of conservation objectives, underwater noise during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.4 and Table 7.2 in Document 11.9.

**(g)** in light of conservation objectives, operational activities will not have an adverse effect on integrity as demonstrated by information set out in Section 7.5 and Table 7.2 in Document 11.9.

**(h)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9



Stage 2 Matrix 2: Humber Estuary SPA									
Humber Estuary Special Protection Area									
Distance to Offshore Scheme: 47 km									
European site features	Adverse effect on integrity								
	Coastal Processes			Rock Cover			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D
Avocet <i>Recurvirostra avosetta</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Bittern <i>Botaurus stellaris</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Hen harrier <i>Circus cyaneus</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Golden plover <i>Pluvialis apricaria</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Bar-tailed godwit <i>Limosa lapponica</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Ruff <i>Philomachus pugnax</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Bittern <i>Botaurus stellaris</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Marsh harrier <i>Circus aeruginosus</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Avocet <i>Recurvirostra avosetta</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Little tern <i>Sterna albifrons</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Shelduck <i>Tadorna tadorna</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Knot <i>Calidris canutus</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Dunlin <i>Calidris alpina</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Black-tailed godwit <i>Limosa limosa</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Redshank <i>Tringa totanus</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Knot <i>Calidris canutus</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)
Dunlin <i>Calidris alpina</i>	x(a)	x(b)	x(c)	x(d)	x(d)	x(c)	x(e)	x(e)	x(c)

<b>Stage 2 Matrix 2: Humber Estuary SPA</b>									
<b>Humber Estuary Special Protection Area</b>									
<b>Distance to Offshore Scheme: 47 km</b>									
<b>European site features</b>	<b>Adverse effect on integrity</b>								
	<b>Coastal Processes</b>			<b>Rock Cover</b>			<b>In combination effects</b>		
<b>Stage of Development</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>
Black-tailed godwit <i>Limosa limosa</i>	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>x(e)</b>	<b>x(e)</b>	<b>x(c)</b>
Redshank <i>Tringa totanus</i>	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>x(e)</b>	<b>x(e)</b>	<b>x(c)</b>

This Integrity Matrix should be read in conjunction with:

- Table 7.2 of Document 11.9 which identifies the potential for adverse effect on site integrity on the Humber Estuary SAC. Potential for adverse effects on the site integrity of the Humber Estuary SPA relate to changes in habitat availability within the site associated with the potential effect on coastal processes and Rock Cover, this has been assessed against the Humber Estuary SAC.
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on the Humber Estuary SAC (including associated effects on the Humber Estuary SPA).

**(a)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2 and Table 7.2 of Document 11.9.

**(b)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.7 in Document 11.9.

**(c)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(d)** in light of conservation objectives, rock cover will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.13 and Table 7.2 of Document 11.9.

**(e)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9

<b>Stage 2 Matrix 3: Humber Estuary Ramsar</b>																		
<b>Humber Estuary Ramsar</b>																		
<b>Distance to Offshore Scheme: 47km</b>																		
<b>European site features</b>	<b>Adverse effect on integrity</b>																	
	<b>Coastal Processes</b>			<b>Rock Cover</b>			<b>Temporary Disturbance</b>			<b>Underwater Noise</b>			<b>Operational Activities</b>			<b>In combination effects</b>		
<b>Stage of Development</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>
<b>Criterion 1</b> The site contains a representative, rare, or unique example of natural or near-natural wetland types found within the appropriate biogeographic region: The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>x(h)</b>	<b>x(h)</b>	<b>x(c)</b>
<b>Criterion 2</b> The site supports populations of animal species important for maintaining the biological diversity of a particular biogeographic region:	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>x(e)</b>	<b>n/a</b>	<b>x(c)</b>	<b>x(f)</b>	<b>n/a</b>	<b>x(c)</b>	<b>n/a</b>	<b>x(g)</b>	<b>x(c)</b>	<b>x(h)</b>	<b>x(h)</b>	<b>x(c)</b>

<b>Stage 2 Matrix 3: Humber Estuary Ramsar</b>																			
<b>Humber Estuary Ramsar</b>																			
<b>Distance to Offshore Scheme: 47km</b>																			
<b>European site features</b>	<b>Adverse effect on integrity</b>																		
	<b>Coastal Processes</b>			<b>Rock Cover</b>			<b>Temporary Disturbance</b>			<b>Underwater Noise</b>			<b>Operational Activities</b>			<b>In combination effects</b>			
<b>Stage of Development</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	
The Humber Estuary Ramsar site supports a breeding colony of grey seals <i>Halichoerus grypus</i> at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad <i>Bufo calamita</i> .																			
Criterion 5 The site regularly supports 20,000 or more waterbirds: In the non-breeding season, the area regularly supports 153,934 individual waterbirds (5 year peak mean 1996/97 –	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>x(h)</b>	<b>x(h)</b>	<b>x(c)</b>

Stage 2 Matrix 3: Humber Estuary Ramsar																		
Humber Estuary Ramsar																		
Distance to Offshore Scheme: 47km																		
European site features	Adverse effect on integrity																	
	Coastal Processes			Rock Cover			Temporary Disturbance			Underwater Noise			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
2000/01).																		
<b>Criterion 6</b>  The site regularly supports 1% of the individuals in a population of one species or subspecies of waterbird in any season: Shelduck Tadorna tadorna – wintering Golden plover Pluvialis apricaria - wintering Knot Calidris canutus – wintering Dunlin Calidris alpina – wintering Black-tailed godwit Limosa limosa – wintering Bar-tailed godwit Limosa lapponica – wintering Redshank Tringa totanus – wintering Golden plover Pluvialis apricaria - passage Knot Calidris canutus – passage Dunlin Calidris alpina – passage Black-tailed godwit	x(a)	x(b)	x(c)	x(a)	x(b)	x(c)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x(h)	x(h)	x(c)

Stage 2 Matrix 3: Humber Estuary Ramsar																		
Humber Estuary Ramsar																		
Distance to Offshore Scheme: 47km																		
European site features	Adverse effect on integrity																	
	Coastal Processes			Rock Cover			Temporary Disturbance			Underwater Noise			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Limosa limosa – passage Redshank Tringa totanus - passage																		

This Integrity Matrix should be read in conjunction with:

- Table 7.2 of Document 11.9 which identifies the potential for adverse effect on site integrity on the Humber Estuary SAC. Potential for adverse effects on the site integrity of the Humber Estuary Ramsar relate to the following which have been assessed against the Humber Estuary SAC.
  - Criterion 1 in relation to changes in coastal processes
  - Criterion 5 and 6 in relation to habitat availability within the site associated with the potential effect on coastal processes and Rock Cover and
  - Criterion 2 in relation to grey seals
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on the Humber Estuary SAC (including associated effects on the Humber Estuary SPA).

**(a)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2 and Table 7.2 of Document 11.9.

**(b)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.7 in Document 11.9.

**(c)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(d)** in light of conservation objectives, rock cover will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.13 and Table 7.2 of Document 11.9.

**(e)** in light of conservation objectives, temporary disturbance during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.3.1 to 7.3.3 and Table 7.2 in Document 11.9.

**(f)** in light of conservation objectives, underwater noise during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.4 and Table 7.2 in Document 11.9.

**(g)** in light of conservation objectives, operational activities will not have an adverse effect on integrity as demonstrated by information set out in Section 7.5 and Table 7.2 in Document 11.9.

**(h)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9

Stage 2 Matrix 4: Flamborough Head and Bempton Cliffs SPA									
Flamborough Head and Bempton Cliffs Special Protection Area									
Distance to Offshore Scheme: 7 km									
European site features	Adverse effect on integrity								
	Temporary Disturbance			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D
Kittiwake <i>Rissa tridactyla</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Puffin <i>Fratercula arctica</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Razorbill <i>Alca torda</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Guillemot <i>Uria aalge</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Herring Gull <i>Larus argentatus</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Gannet <i>Morus bassanus</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)

This Integrity Matrix should be read in conjunction with:

- Table 7.4 of Document 11.9 which identifies the potential for adverse effect on site integrity on Flamborough Head and Bempton Cliffs SPA.
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on Flamborough Head and Bempton Cliffs SPA.

**(a)** in light of conservation objectives, temporary disturbance will not have an adverse effect on integrity as demonstrated by information set out in Sections 7.3.4 to 7.3.8 and Table 7.4 in Document 11.9.

**(b)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(c)** in light of conservation objectives, operational activities will not have an adverse effect on integrity as demonstrated by information set out in Sections 7.5.16 to 7.5.18 and Table 7.4 in Document 11.9.

**(d)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9

Stage 2 Matrix 5: Flamborough Head and Filey Coast pSPA									
Flamborough Head and Filey Coast proposed Special Protection Area									
Distance to Offshore Scheme: 4 km									
European site features	Adverse effect on integrity								
	Temporary Disturbance			Operational Activity			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D
Black-legged kittiwake <i>Rissa tridactyla</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Northern gannet <i>Morus bassanus</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Common guillemot <i>Uria aalge</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Razorbill <i>Alca torda</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)
Northern fulmar <i>Fulmarus glacialis</i>	x(a)	n/a	x(b)	n/a	x(c)	x(b)	x(d)	x(d)	x(b)

This Integrity Matrix should be read in conjunction with:

- Table 7.5 of Document 11.9 which identifies the potential for adverse effect on site integrity on Flamborough Head and Filey Coast p SPA.
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on Flamborough Head and Filey Coast p SPA.

**(a)** in light of conservation objectives, temporary disturbance will not have an adverse effect on integrity as demonstrated by information set out in Sections 7.3.4 to 7.3.8 and Table 7.5 in Document 11.9.

**(b)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(c)** in light of conservation objectives, operational activities will not have an adverse effect on integrity as demonstrated by information set out in Sections 7.5.16 to 7.5.18 and Table 7.5 in Document 11.9.

**(d)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9



<b>Stage 2 Matrix 6: Flamborough Head SAC</b>									
<b>Flamborough Head Special Area of Conservation</b>									
<b>Distance to Offshore Scheme: 3km</b>									
<b>European site features</b>	<b>Adverse effect on integrity</b>								
	<b>Coastal Processes</b>			<b>Rock Cover</b>			<b>In combination effects</b>		
<b>Stage of Development</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>	<b>C</b>	<b>O</b>	<b>D</b>
Reefs	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>x(e)</b>	<b>x(e)</b>	<b>x(c)</b>
Vegetated sea cliffs of the Atlantic and Baltic Coasts	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>x(e)</b>	<b>x(e)</b>	<b>x(c)</b>
Submerged or partially submerged sea caves	<b>x(a)</b>	<b>x(b)</b>	<b>x(c)</b>	<b>x(d)</b>	<b>x(d)</b>	<b>x(c)</b>	<b>x(e)</b>	<b>x(e)</b>	<b>x(c)</b>

This Integrity Matrix should be read in conjunction with:

- Table 7.3 of Document 11.9 which identifies the potential for adverse effect on site integrity on Flamborough Head SAC.
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on Flamborough Head SAC.

**(a)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2 and Table 7.3 of Document 11.9.

**(b)** in light of conservation objectives, coastal processes will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.7 in Document 11.9.

**(c)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(d)** in light of conservation objectives, rock cover will not have an adverse effect on integrity as demonstrated by information set out in Section 7.2.13 and Table 7.3 of Document 11.9.

**(e)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9

Stage 2 Matrix 7: The Wash and North Norfolk Coast SAC												
The Wash and North Norfolk Coast Special Area of Conservation												
Distance to Offshore Scheme: 1.7 km												
European site features	Adverse effect on integrity											
	Temporary Disturbance			Underwater Noise			Operational Activities			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Sandbanks which are slightly covered by sea water all the time	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Coastal lagoons	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Large shallow inlets and bays	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Reefs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> )	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> ); Mediterranean saltmarsh scrub	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Otter <i>Lutra Lutra</i>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Harbour seal ( <i>Phoca vitulina</i> )	x(a)	n/a	x(b)	x(c)	n/a	x(b)	n/a	x(d)	x(b)	x(e)	x(e)	x(b)

This Integrity Matrix should be read in conjunction with:

- Table 7.6 of Document 11.9 which identifies the potential for adverse effect on site integrity on the Wash and North Norfolk Coast SAC.
- Table 8.1 of Document 11.9 which identified the potential for adverse effect in-combination on the Wash and North Norfolk Coast SAC.

**(a)** in light of conservation objectives, temporary disturbance during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.3.1 to 7.3.3 and Table 7.6 in Document 11.9.

**(b)** in light of conservation objectives, the Offshore Scheme will not have an adverse effect on integrity as demonstrated by information set out in Section 3.7 in Document 11.9.

**(c)** in light of conservation objectives, underwater noise during installation will not have an adverse effect on integrity as demonstrated by information set out in Section 7.4 and Table 7.6 in Document 11.9.

**(d)** in light of conservation objectives, operational activities will not have an adverse effect on integrity as demonstrated by information set out in Section 7.5 and Table 7.6 in Document 11.9.

**(e)** in light of conservation objectives, an adverse effect on integrity in-combination will not result as demonstrated by information set out in Section 8 and Table 8.1 in Document 11.9

### 1.3 REFERENCES

National Grid 2015. *Shadow Appropriate Assessment Report for the Offshore Scheme*. Document Reference 11.9