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## Morlais Project

# Onshore Ornithology Response to Comments on Chough

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## **1 Introduction**

This advisory note presents information to address comments raised by Natural Resources Wales (NRW) in relation to chough *Pyrrhonorax pyrrhonorax* following the submission of the Morlais Project Environmental Statement (ES) (hereafter referred to as the ES) (Document Reference PB5034-ES) and the Information to Support Habitats Regulations Assessment (HRA) (hereafter referred to as the HRA) (Document MOR/RHDHV/DOC/0067).

This document should be read in conjunction with the following Figures (figure numbers follow those of the ES Confidential Bird Appendix 19.2; the non-confidential figure is included at the end of this note and confidential figures separately):

- **Figure A19-2-2a, b, and c** (Confidential),
- **Figure A19-2-4a and b** (Confidential),
- **Figure A19-2-6** (Confidential), and
- **Figure A19-2-11**.

Further details on the project assessment works for chough undertaken to date, is provided in Chapter 19 Onshore Ecology of the ES and the Information to Support the Habitats Regulations Assessment. The information contained within this advisory note supplements these with further supporting information and detail in response to the comments received on the application documents.

### **1.1 Project Areas**

The Onshore Development Area was defined and presented in the ES as the area within which landfall, landfall substation, cable routing, onshore substation and all associated activities would be located.

The Project refers to the proposed Morlais Demonstration Zone and associated infrastructure.

## **2 Baseline Environment**

Chough data which was sourced for the assessment of the Onshore Development Area is described in full in ES Volume III Appendix 19.2 Confidential Bird Records. The key data used for the purposes of the chough assessment in the ES onshore ecology chapter and the HRA for the Glannau Ynys Gybyi / Holy Island Coast SPA are:

- The locations of nest sites provided by RSPB and the Cross and Stratford Welsh Chough project. These are shown in **Figure A19-2-6** included with this advisory note, an updated version of the figure produced to accompany the ES and included in confidential Appendix 19.2 (revised to show the boundary of the Glannau Ynys Gybyi / Holy Island Coast SPA). This indicates there are 22 chough nest sites in the vicinity of the Onshore Development Area of which, based on the information provided, 16 appear to be regularly used. The closest nest site to the onshore development area is located within 120m – 130m (this is labelled nest site A26 (based on the data from the Cross and Stratford Welsh Chough project) / B8 (based on RSPB data) – considered to be the same nest location).

- RSPB chough records derived from fortnightly transect surveys of foraging areas within and adjacent to the RSPB South Stack Reserve, for the period January 2013 until May 2017. RSPB records for the breeding season and non-breeding season are shown separately in **Figures A19-2a and b** included with this advisory note, colour coded by land parcel according to the total number of birds recorded over the survey period. This gives an indication of the areas which are used most intensively by chough for foraging.

The Cross and Stratford Welsh Chough Project also provided records of feeding chough from 1 km squares within or partially overlapping the consultation boundary for Onshore Development Area (different to the current boundary) for the period July 2017 until November 2018. These records – shown in **Figures A19-2-4a and b**, for the breeding and non-breeding seasons, were collected on an ad-hoc basis and comprise a mixture of counts made over period of time and snapshot counts. Unlike the RSPB foraging data, they do not constitute a systematic survey of the area. Thus, while the presence of feeding choughs may indicate an area is important for this species, a lack of records for an area does not mean that the area is not used by or important to foraging chough. As they are not derived from systematic surveys, these data are provided for information only and are not referred to further in this advisory note.

## 2.1 Glannau Ynys Gybi / Holy Island Coast SPA

The Glannau Ynys Gybi / Holy Island Coast SPA, encompassing sea cliffs with cliff top grassland, offshore stacks and islets and maritime heath, overlaps with the footprint of the Onshore Development Area.

The SPA supports a resident population of chough, which depends on the diverse mix of habitats and their low intensity agricultural management. The single qualifying species is chough (breeding and non-breeding) with population estimates as follows:

- 1998: 18 pairs representing at least 5.3% of the breeding population and at least 2.6% of the wintering population in Great Britain (Stroud et al. 2001).
- 2000s: 17 breeding pairs (2002) and 19 non-breeding individuals (2000), (Stroud et al. 2016)
- 2001: 22 breeding pairs (6.4% of the British breeding population) and 48 non-breeding individuals (Natura 2000 data form, JNCC 2015, RSPB unpublished<sup>1</sup>)
- 2013-2018: 20 breeding pairs, 16 over-wintering individuals (RSPB unpublished<sup>1</sup>)

As stated in document no. MOR/RHDHV/DOC/0110, RSPB have requested during consultation (Project Meeting Minutes, RSPB South Stack Reserve, 24/01/2018) that the Project avoids impact to the heath habitat entirely due to its importance for breeding / foraging chough. Following the site selection process to define the working footprint of the Project, areas of wet or dry heath have not been recorded during the Extended Phase 1 Habitat Survey (EP1HS) within the Onshore Development Area and therefore it is concluded that these habitat types are absent from, and will not be affected by, the locations where the landfall construction, operation and decommissioning activities will be undertaken.

## 3 Consultation

Following the submission of the ES and HRA documents, NRW have provided comments. Table 3.1 details the comments received in relation to the ES and HRA for chough, and how they have been addressed. There has been correspondence over these comments and meetings have been held with NRW on the 13<sup>th</sup> December 2019 and 28 February 2020. In particular, in response to NRW comments on the ES and HRA, further information provided for the meeting on 28 February 2020 (an earlier version of

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<sup>1</sup> RSPB detailed comments on the Morlais demonstration Zone order, Annex 1 to RSPB response letter data 31/10/2019

the current advisory note) and subsequent correspondence, the mitigation for chough during the breeding season has been revised as described below.

## **4 Supplementary information in response to comments**

### **4.1 Potential loss of chough foraging habitat**

#### **4.1.1 Construction (and decommissioning) phase**

This section updates the assessment provided in ES Chapter 19 on the potential effects of disturbance to chough from construction works at the onshore development area, in response to comments from NRW (detailed in Table 3.1). Construction disturbance is considered here to be a worst-case proxy for the decommissioning phase.

As described in the ES Chapter 19 and the Information to Support the Appropriate Assessment, noise and visual disturbance from the onshore development area, during the construction period, may cause disturbance and displacement of chough. Noise modelling has been undertaken for the works, with the worst case (i.e. noisiest) scenario at the cable landfall identified as the preferred HDD cable installation option (and although the methods for the trenching option have been revised, as stated in document no. MOR/RHDHV/DOC/0110, the assumption that HDD is the noisiest option remains). Based on this, a review of available information about responses of birds to noise and visual disturbance, and the application of expert judgement, it is considered that no chough nest sites would be subject to noise or visual disturbance at levels that might cause disturbance which adversely affects breeding. However, noise and visual disturbance from the onshore development area might displace chough from foraging areas within and close to the Onshore Development Area, resulting in a temporary loss of foraging habitat during the construction period.

#### **Breeding Season**

Chough are most constrained in their foraging behaviour during the breeding season, when breeding adults tend to feed within about 1km of the nest. Studies in northern France (Kerbiriou et al. 2006, 2009) have demonstrated that chough fledging success is negatively related to the distance between foraging habitats and the nest (with one possible mechanism for this being increased predation risk if nests are left unattended for longer). The studies also provided information on average flush distances of chough from areas subject to recreational disturbance by people (see ES Chapter 19, section 19.6.5.11.2). Thus, there is potential for adverse effects on the breeding success of chough pairs nesting close to the Onshore Development Area, if adults attending nests are displaced from important foraging habitat close to nests and need to travel further to forage and provision chicks.

Table 3.1 Summarised details of consultation with NRW

Comment	Related paragraph or section in Morlais ES Volume I, Chapter 19 or Information to Support HRA	Comment	Response
<b>Comments from NRW</b>			
1	ES 241	NRW Advisory is uncertain of what potential effect the reduction in preferred chough foraging habitat will have on overall chough breeding success and the chough Conservation Objectives for the Holy Island Coast SPA. Therefore, it is difficult to accept the findings as stated: "Potential impacts of construction on chough, a species for which the reserve and adjacent areas are managed, are considered in Section 19.6.5.11. Overall, following mitigation, impacts to chough are assessed to be no greater than minor adverse in significance".	This advisory note provides further information to substantiate the conclusions of ES Chapter 19 and the Information to Support the HRA, that with revised mitigation in place (as described in section 4.1) impacts to chough are considered (in EIA terms) to be minor adverse, and (in HRA terms) there would be no adverse effect on the conservation objective for the chough population of the Glannau Ynys Gybi / Holy Island Coast SPA.
2	ES 300-302	Paragraphs 300-302 highlight the loss of breeding foraging area for chough breeding pairs at nest A25. NRW Advisory notes that there are 13 regularly-used chough nest sites within 1km of the Onshore Development Area (established breeding chough foraging range). There is no evidence-based conclusion whether this temporary and/or permanent loss of breeding foraging habitat will result in a negative impact on the breeding success of the breeding pairs associated with those nest sites and associated breeding pairs (we note one breeding pair of chough equates to 6% of the Holy Island Coast SPA Conservation Objective). We also note, from Figure A19.2-2 (Confidential Appendix 19.2, ES Volume III) a relatively high chough dependency on fields juxtaposed with the landfall substation at Ty-Mawr, particularly those to the east, though from the presented data we cannot determine the relative importance of these fields for non-breeding and breeding chough and how their usage may be disturbed by development activities within and outwith the Onshore Development Area.	Further information is presented in this advisory note on predicted temporary loss of foraging habitat for individual chough nest sites in Table 4.1, Table 4.2 and Table 4.3, and Figures A19-2-2 a, b and c.
3	ES 303	Paragraph 303 states "There is potentially also overlap between foraging areas for pairs for chough breeding at nests A23, A13 and A12 and nests B1-13 (Figure A19.2-6 in Confidential Appendix 19.2, Volume III) using these nests and the Onshore Development Area. Assuming maximum 1km foraging ranges and exclusion from the onshore cable construction area only, the potential temporary loss of foraging area as a proportion of the	Further information is presented in this advisory note on predicted temporary loss of foraging habitat for individual chough nest sites in Table 4.1, Table 4.2 and Table 4.3 and the relative importance of areas from which chough may be displaced temporarily

Comment	Related paragraph or section in Morlais ES Volume I, Chapter 19 or Information to Support HRA	Comment	Response
		foraging range would be 8% combined for all nest sites (609,141 m <sup>2</sup> ). There is no evidence-based conclusion whether this temporary and/or permanent loss of breeding foraging habitat will result in a negative impact on the breeding success of an individual chough breeding pair and/or those pairs associated with the nests referred to above. NRW Advisory notes a minimum of four breeding pairs of chough equates to 22% of the SPA Conservation Objective for the Holy Island Coast SPA. Furthermore, there is no analysis of regularly-occupied fields and whether the proportion of foraging area (i.e. 8%) represents relatively higher quality preferred habitats.	
4	ES 231	Paragraph 311: NRW Advisory welcomes the statement "To avoid adverse effects of construction activities at the landfall and the onshore cable route on breeding chough, no construction works (including any potential works in the intertidal area) will take place within 500m of an active chough nest during the breeding season". However, clarity is required as to the loss of chough breeding foraging area if a 500m buffer is adopted, particularly pairs associated with nests B6, B7, B8, A25, B9, B10, A23, B11, B14, B15, B16, A13 and A12.	Further information is presented in this advisory note on predicted temporary loss of foraging habitat for individual chough nest sites in Table 4.1, Table 4.2 and Table 4.3, and revised mitigation is identified based on discussions and correspondence with NRW.
5	ES 311	Paragraph 311 states: "For the purposes of this project, the breeding season is defined as the period from the beginning of April until the end of July (to cover the period immediately before egg laying and the four stages of breeding identified for Choughs in Wales by Whitehead et al. (2005): incubation (mid-April to early May), early chick rearing (early May to mid-May), late chick rearing (mid-May to early June), and post-fledging (early June to end of July)". NRW Advisory considers that this needs to be revised to include the period when adults are courting and nest prospecting, i.e. from late March.	Accepted. To include the period of courting and nest prospecting the breeding season has been extended to cover the period from 20 March to 31 July
6	Holy Island Coast SPA (HRA 8.4.2)	NRW Advisory considers there is functional linkage between the onshore development area and the Holy Island Coast SPA and is concerned that the application fails to consider the importance of functional linkage. We therefore advocate that the applicant presents a workable definition of functional linkage. Once established, we recommend evidence is presented that addresses the following three tests to determine functional linkage of breeding and non-breeding chough between Holy Island Coast SPA and the MDZ:	The concept of functional linkage was not explicitly referred to in the HRA. This concept and the three tests mentioned below have been addressed in this advisory note.
7	As above	Test 1) Is there evidence to suggest that breeding adult choughs from the Holy Island Coast SPA regularly forage within habitats of the onshore development area? Nest site and roost site data are presented in ES Volume III, Confidential Appendix 19.2, Fig. A19.2-6. However, the supporting chough foraging records in Fig's A19.2-2 and A19.2-4 do not	As above. Separate Figures have been produced showing records of foraging chough in the breeding and non-breeding seasons

Comment	Related paragraph or section in Morlais ES Volume I, Chapter 19 or Information to Support HRA	Comment	Response
		separate breeding foraging records from non-breeding flock foraging records. Therefore, it is difficult to determine the extent and level of functionality between the Onshore Development Area and the Holy Island Coast SPA. To address Test 1 NRW Advisory recommends breeding chough foraging records are presented separately from autumn and winter chough foraging records.	
8	As above	Test 2) Is the maintenance of conservation objectives for the Holy Island Coast SPA dependent on chough recruitment from within the Onshore Development Area? If so, would this loss of immigration represent a significant adverse impact to the favourable condition of breeding chough at Holy Island Coast SPA? Though the answer to this question will be no, as there are no breeding choughs within the Onshore Development Area, the applicant needs to rule it out with an evidence-based conclusion.	As above
9	As above	Test 3) Do the habitats within and adjacent to the Onshore Development Area represent a significant contribution to the requirements of breeding and wintering chough from Holy Island Coast SPA?	As above
10.	NRW response to Terrestrial Advisory Note (document no. MOR/RHDHV/DOC/0110)	Para. 5.2.1, top of page 14: this refers to excavation of the trench with an excavator with "breaker" taking c. 1 month. The noise of this should be included in the chough SPA assessments together with the noise of drilling all the anchor pins for the J-tubes. We are concerned that this has been overlooked so far.	As stated in ES Chapter 19, Onshore Ecology), (with reference to Chapter 21, Noise and Vibration) the worst-case scenario in terms of noise emissions would be HDD, and the impacts of the alternate open cut trenching are expected to be no greater at the nearest sensitive receptors than the HDD option. This is understood still to apply to the more detailed description of the open-cut trenching method as described in Terrestrial Advisory Note (document no. MOR/RHDHV/DOC/0110). In addition, as described in this note, it has now been agreed that, with the exception of the landfall substation and construction compound, no works will take place at the cable landfall during the chough breeding season (works area exclusion zone Area 1 as shown in Figure A19-2-2c). Thus, there would be no excavation works or drilling of anchor pins during this time.



In the ES, mitigation was identified to avoid adverse effects of construction activities at the onshore development area (ES Chapter 19, Section 19.6.5.11.3). This was that no construction works would take place within 500m of an active chough nest during the breeding season. The distance of 500m was selected to include the core foraging ranges of chough, based on the foraging distances from empirical studies (as described in section 19.6.5.11.2). As previously noted, based on discussions and correspondence with NRW, revised mitigation has been identified which is described below.

Based on a comment from NRW (Table 3.1), the active breeding season as defined for the purposes of this mitigation (ES Chapter 19, Section 19.6.5.11.3) is extended to cover the period 20 March until 31 July in a given year. This now includes the period of courting and nest prospecting and immediately before egg laying as well as the four stages of breeding identified for choughs in Wales by Whitehead et al. (2005): incubation (mid-April to early May), early chick rearing (early May to mid-May), late chick rearing (mid-May to early June), and post-fledging (early June to end of July).

Also in response to NRW comments, further information is provided on the potential loss of chough foraging habitat from nests where foraging ranges may overlap with the onshore development area. For a subset of chough nest sites, closest to the Onshore Development Area (i.e. within 1km), Table 4.1 shows the total land area within a 1km radius of the nest location, and the overlap between land areas within 500m and within 1km of the nest and the Onshore Development Area. Based on the information from empirical studies, the area within a 1km radius of the nest has been identified as the potential foraging range of adults attending the nest during the breeding season, and that within a radius of 500m to represent the core foraging range.

*Table 4.1 Predicted percentage habitat loss from displacement for chough nest sites within 1km on the Onshore Development Area,*

Nest site	Distance from Onshore Development Area (km)	Land area within 1km radius of nest site (km <sup>2</sup> )	Overlap between 500m foraging range and Onshore Development Area (km <sup>2</sup> )	Overlap between 1km foraging range and Onshore Development Area (km <sup>2</sup> )	% loss of habitat within 1km foraging range
B2	0.85	2.67	0	0.028	1.0
B6	0.57	1.33	0	0.173	13.0
B7	0.38	1.30	0.018	0.236	19.5
B8 / A25 <sup>1</sup>	0.12	2.10	0.139	0.324	22.0
B9	0.58	1.34	0	0.105	7.8
B10 / A23 <sup>1</sup>	0.57	1.36	0	0.094	6.9
B11	0.87	0.98	0	0.022	2.2
B13	0.83	1.56	0	0.033	2.1
B14	0.94	1.52	0	0.016	1.0
B15	1.0	1.39	0	<0.001	0
B16	0.33	2.00	0.035	0.128	8.2
A12	0.52	1.55	0	0.075	4.8
A13	0.25	1.81	0.04	0.110	8.3

\*Areas re-measured for this advisory note, so there are small changes for some sites from the areas given in Table 2-2 of ES Confidentiality Appendix 19.2.

1. Records provided separately by RSPB and the Cross and Stratford Welsh Chough Project, considered to represent the same nest site due to very close proximity

There are several simplistic assumptions made with respect to these calculations:

- that foraging ranges of choughs at each nest can be defined by a 1km radius from the nest site,
- that construction activity would be ongoing throughout all areas of the Onshore Development area throughout the construction period, and
- that chough are only excluded from areas within the Onshore Development Area and not also from a buffer area around the Onshore Development Area.

In reality, foraging ranges of chough at individual nests are very unlikely to be circular, but to vary depending on the habitats and food resources available close to each nest. Figure 19-2-6 indicates extensive overlap of areas within 500m and 1km radii of nests. Thus, it seems likely that there is considerable overlap between foraging ranges of breeding chough in this area. The total number of breeding season foraging records in different land parcels based on RSPB transect data (Figure A19-2-2a) suggest that preferred foraging areas during the breeding season include the extensive areas of coastal heathland to the north and of the Onshore Development Area, and fields to the south east (and to some extent some within) the cable landfall and substation area at Ty Mawr. It seems likely that choughs breeding at several nest sites travel to forage within these areas of apparently more intensive use.

Construction activity would not be ongoing simultaneously throughout the Onshore Development Area throughout the construction period, so applying this assumption overestimates the extent of potential displacement of chough. The longest duration of construction works in areas which overlap with foraging ranges for breeding chough would likely be at the cable landfall and substation area, with shorter duration of works within the onshore cable route from the landfall substation to the grid connection point.

It is possible that chough may avoid foraging in areas outside but close to active works within the landfall area, perhaps avoiding areas within distances of 75-150m of construction activity (based on flush distances of chough from approaching people, as recorded in northern France - Kerbitiou et al. 2009).

Table 4.2 Areas of land used<sup>1</sup> by foraging chough within 500m and 1km of nest sites closest to the Onshore Development Area

Nest site	Total area of land (ha) used <sup>1</sup> by foraging breeding chough within 500m of the nest	Total area of land (ha) used by foraging breeding chough between 500m to 1km	Percentage of all land used by foraging breeding chough >500m from the nest location	Total area of land (ha) used by foraging breeding chough within 500m of the nest where field occupancy is >5.1 birds between 2013-2017 <sup>2</sup>	Total area of land (ha) used by foraging breeding chough between 500m to 1km where field occupancy is >5.1 birds between 2013-2017 <sup>2</sup>	Percentage of land used by foraging breeding chough within 1km of nest where field occupancy is >5.1 birds between 2013-2017 <sup>2</sup>
B7	23.53	93.16	80%	6.72	61.95	59%
A25/B8	37.61	135.34	78%	22.68	66.60	52%
B16	21.71	55.66	72%	2.70	28.73	41%
A13	Data deficient	Data deficient	Data deficient	Data deficient	Data deficient	Data deficient
A12	Data deficient	Data deficient	Data deficient	Data deficient	Data deficient	Data deficient

1. The definition of land 'used' by chough is based on overlap between land within a given buffer of a nest and areas for which RSPB has provided chough transect data. These data relate to land parcels and fields within the RSPB South Stack Reserve and off-reserve feeding areas, areas shaded yellow to dark brown in Figure A19-2-2a). It is assumed that the RSPB transect surveys cover the key areas of importance to foraging chough in the vicinity of the South Stack reserve, but it is not necessarily the case that because an area is not covered by the transect surveys, it is not used by chough. The transect survey areas are distant from nests A13 and A12 so the core foraging areas of breeding adults attending these nests are assumed to be outside the RSPB transect surveys (hence the data deficient labels). It is also very likely that the RSPB transect surveys only partially cover foraging areas by birds breeding at nest B16, so that the data on areas used by chough is likely to be an underestimate of the actual areas used.

2. The relative use of land parcels is assessed based on the number of breeding season records over the survey period, divided into categories based on a GIS function to identify 'natural breaks' in the data. These categories are shown in Figure A19-2-2a. The total area within 500m and 1km of the nest where there were more than 5.1 birds recorded (field occupancy >5.1) during the breeding season over the survey period is shown for each nest site.

For the chough nest sites closest to the onshore development area, a more detailed breakdown of chough usage of habitats within the 500m and 1km buffers is provided in Table 4.2. As explained in the table, for this purpose, land 'used' by chough is based on overlap between land within a given buffer of a nest and areas for which RSPB has provided chough transect data. These data relate to land parcels and fields within the RSPB South Stack Reserve and off-reserve feeding areas, areas shaded yellow to dark brown in Figure A19-2-2a, b and c). It is assumed that the RSPB transect surveys cover the key areas of importance to foraging chough in the vicinity of the South Stack reserve, but it is not necessarily the case that because an area is not covered by the transect surveys, it is not used by chough. The transect survey areas are distant from nests A13 and A12 so the core foraging areas of breeding adults attending these nests are assumed to be outside the RSPB transect surveys (hence the data deficient labels in Table 4.2). It is also very likely that the RSPB transect surveys only partially cover foraging areas used by birds breeding at nest B16, so for this site the data on areas used by chough is likely to be an underestimate of the actual areas used. The relative use of land parcels is assessed based on the number of breeding season records over the survey period, divided into categories based on a GIS function to identify 'natural breaks' in the data. These categories are shown by shading in Figures A19-2-2a and c. The total area within 500m and 1km of the nest where there were more than 5.1 birds recorded during the breeding season over the survey period is shown for each nest site. This includes all but the lowest category of 'field occupancy' as recorded in the transect surveys.

To minimise potential habitat loss for chough at nests closest to the Onshore Development Area, the following revised mitigation has been identified in discussions and correspondence with NRW. Two works exclusions zones for the chough breeding season have been identified, Areas 1 and 2 as shown on **Figure A19-2-2c**. These exclusion zones cover core foraging areas of the chough nest sites closest to the Onshore Development Area. Area 1 encompasses most of the cable landfall works area (except the cable landfall substation and the field to the southwest of the landfall substation which will form the construction compound area) and a section of the onshore cable route immediately to the south of the cable landfall area. Thus, apart from the cable landfall substation and construction compound, no works (including HDD or open-cut trenching to bring the export cables to land) would take place in this area between 20 March and 31 July in a given year.

Area 2 encompasses an area of about 2km of the onshore cable route to the southeast of the cable landfall.

With respect to Area 1, it is considered that works at the cable landfall station and the construction compound may displace chough up to 150m from the combined boundary of these areas, as indicated on Figure A19-2-2a. Thus, works in this area may result in effective habitat loss for chough in adjacent fields. The cable landfall substation and construction compound, and the 150m buffer, does not overlap with areas within 500m of any chough nests; it does however overlap with areas within the 1km buffer of nests B7 and A25/B8. The extent of overlap is shown in Table 4.3. The total area of land within the 150m buffer which overlaps with areas used by foraging chough during the breeding season is 17.12ha, of which 10.61 ha (62%) overlaps with fields with >5.1 chough records during the breeding season between 2013 and 2017.

For nest B16, there would be no effective loss of chough foraging habitat within 1km due to potential displacement of chough from areas within 150m of the landfall substation and construction compound. For nest B7, 8% of the area used by chough for foraging within 1km of the nest, and 8% of the area of higher chough use (>5.1 birds during the breeding season over the period 2013-2017) within 1km would be lost if choughs are displaced 150m from the landfall substation and construction compound. For nest A25/B8 the equivalent percentages are 9% and 12%.

Table 4.3 Overlap between areas of land used<sup>1</sup> by foraging chough within 1km of nest sites closest to the Onshore Development Area and the 150 buffer of the Landfall substation and construction compound

Nest site	B7	A25/B8	B16
Total area of land (ha) used <sup>1</sup> by foraging breeding chough within 1km of the nest	116.9	172.96	77.37
Total area of land (ha) used by foraging breeding chough within 1km of nest where field occupancy <sup>2</sup> is >5.1 birds 2013-2017	68.67	89.28	31.43
Total area of land (ha) used by foraging breeding chough between 500m to 1km where field occupancy is >5.1 birds 2013-2017	61.95	66.6	28.73
Area (ha) of land used by chough within the 150m buffer of the landfall substation / construction compound and 500m nest buffer	0	0	0
Area of land used by chough within the 150m buffer of the landfall substation/ construction compound and 500m-1km nest buffer	9.22	16.18	0
Area of land used by >5.1 chough 2013-2017 within 150m buffer of the landfall substation/ construction compound and 500m-1km nest buffer	5.64	10.34	0
Percentage of land used by chough within 1km of nest that is within 150m of cable substation and construction compound	8	9	0
Percentage of >5.1 chough occupancy area 2013-2017 within 1km of nest and 150m of cable substation/ construction compound	8	12	0
Percentage of >5.1 chough use area 2013-2017 within 500m-1km of nest and 150m of cable substation/ construction compound	9	16	0
Chough use <sup>1</sup> and field occupancy <sup>2</sup> as described in Table 4.2.			

With the available data and information, it is not possible to make a quantitative prediction of the likely effects of such losses of foraging habitat on the breeding success of chough at individual nests. This habitat loss would not take place within the core foraging area, identified as 500m, from any nest, but the outer extent of the foraging range. Whitehead et al. (2005) found that breeding chough forage further from the nest later in the breeding season, suggesting that as the breeding season progresses the use of compartments further from the nest increases, possibly in response to prey depletion close to the nest. An alternative explanation might be that older chicks do not need such frequent feeding so there is less energetic constraint, or that older chicks can more safely be left for longer periods at the nest. Nevertheless, the habitat loss due to disturbance and displacement would be a temporary effect, with construction works due to occur for a period of less than 12 months across the Onshore Development Area. Thus, depending on the start and finish dates, works would affect only a single breeding season, or overlap partially with two breeding seasons.

On this basis it is considered that with the revised mitigation measures in place, that no works would take place within exclusion areas 1 and 2 as marked on Figure A19-2-2c, during the breeding season (20 March until 31 July), the conclusion of the Chapter 19 of the ES (Section 19.6.5.11.4) is upheld. No adverse effects on nest productivity would be predicted. The impact of construction disturbance from the Onshore Development Area on breeding chough (a receptor of high importance) would be negligible and would be considered as a short-term temporary impact of minor adverse magnitude, and not ecologically significant.

### Non-breeding season

During the non-breeding season chough are not constrained in their foraging ranges by requirements to attend nests, incubate eggs and feed dependent young. As noted in the ES, studies in Wales have demonstrated that non-breeding chough can forage up to 25 km from roost sites, but that 95 % of all

observations of flocks of chough which contained colour-ringed individuals were within 6km of the roost (Cross and Stratford 2015). RSPB transect data indicate that the relative use made by chough of different land parcels in the vicinity of the Onshore Development Area during the non-breeding season is similar to that during the breeding season (compare **Figures A19-2-2a** and **A19-2-2b**), with an indication of reduced intensity of use of fields within the cable landfall and landfall substation area. Outside the breeding season birds which may be temporarily displaced from foraging areas overlapping with or close to onshore construction works would be able to find alternative habitats elsewhere. No adverse effects on the survival or condition of individuals would be predicted. As for the breeding season, construction disturbance from the Onshore Development Area is assessed as a minor adverse effect on non-breeding chough, and not ecologically significant.

#### **4.1.2 Operational Phase**

Due to the very low presence of vehicles and staff anticipated for operation and maintenance of the onshore infrastructure, negligible disturbance impacts are predicted for most ecological receptors including chough (ES Chapter 19, Section 19.6.6).

Based on the additional information that has become available for the secondary option for construction of the cable landfall, by pinning cables to the cliffs and trenching them across fields (see document no. MOR/RHDHV/DOC/0110), there is now a requirement for maintenance of cable where it runs over the cliff face through suspending a cradle from a crane for inspection works approximately once every 5 years and after severe storm events. Given the close proximity of the cable landfall to a chough nest site (nest B8 /A26, Figure A19-2-6, as described in the first bullet point of section 2 above), it is proposed that mitigation is put in place such that routine maintenance inspections take place outside the chough breeding season (as defined previously, the period 20 March to 31 July in a given year).

With mitigation in place, the conclusion of ES Chapter 19 that there would be negligible disturbance impacts on chough during the operation phase of the Onshore Development Area is upheld.

## **4.2 Appropriate Assessment for Glannau Ynys Gybi / Holy Island Coast SPA**

### **4.2.1 Functional linkage**

There is a small amount of overlap between the Onshore Development Area and the Glannau Ynys Gybi / Holy Island Coast SPA, at the cable landfall (**Figure 19-2-6**), but otherwise the majority of the Onshore Development Area is outside the SPA boundary. The Onshore Development Area does however overlap with areas outside the SPA used by the qualifying bird species, chough, for foraging. Specifically, fields within the footprint of the cable landfall and landfall substation area at Ty-Mawr, and within the footprint of the onshore cable corridor running south and east from the landfall area, as shown in Figures A19-2-2a, b and c (areas for which RSPB has provided transect data on foraging chough). Thus, the SPA qualifying species chough may depend on foraging areas which are outside the SPA boundary, and these foraging areas are therefore considered to be functionally linked<sup>2</sup> to the Glannau Ynys Gybi / Holy Island Coast SPA.

In addition to the information provided in the Information to Support the Habitats Regulation Assessment, NRW has requested that evidence is presented to addresses three tests to determine functional linkage of

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<sup>2</sup> Definition of functional linkage based upon Chapman and Tyldesley (2016).

breeding and non-breeding chough between Holy Island Coast SPA and the Onshore Development Area. This evidence is presented below.

**Test 1) Is there evidence to suggest that breeding adult choughs from the Holy Island Coast SPA regularly forage within habitats of the onshore development area?**

Data provided by RSPB on the distribution of foraging chough indicate that during the breeding and the non-breeding seasons, chough make use of fields which overlap with the footprint of the Onshore Development Area, as well as areas of coastal heathland within the SPA boundary.

**Test 2) Is the maintenance of conservation objectives for the Holy Island Coast SPA dependent on chough recruitment from within the Onshore Development Area?**

There are no chough nest sites within the Onshore Development Area (Figure A-19-2-5) therefore the chough population of the Holy Island SPA is not dependent on recruitment of chough from nests within this area.

**Test 3) Do the habitats within and adjacent to the Onshore Development Area represent a significant contribution to the requirements of breeding and wintering chough from Holy Island Coast SPA?**

Based on available information on the foraging behaviour of chough, and transect data showing the relative use of land compartments within and adjacent to the Onshore Development Area, it is clear that habitats within and adjacent to the Onshore Development Area are used by chough and fall within the breeding season foraging range of nests closest to the Onshore Development Area. The potential loss of chough foraging habitat during the breeding season as a result of construction works within the onshore development area is considered in detail in section 4.1 above. With the revised mitigation measures in place, such that no works would take place within Exclusion Areas 1 and 2 (Figure A19-2-2c) during the breeding season (20 March until 31 July), no adverse effects on nest productivity would be predicted.

During the non-breeding season chough are not constrained in their foraging ranges by requirements to attend nests, incubate eggs and feed dependent young. As explained in section 4.1, outside the breeding season birds which may be temporarily displaced from foraging areas overlapping with or close to onshore construction works would be able to find alternative habitats elsewhere. No adverse effects on the survival or body condition of individuals would be predicted,

It is therefore considered that with mitigation in place in the form of works exclusion zones during the breeding season, habitats within and adjacent to the Onshore Development Area do not represent a significant contribution to the requirements of chough from the Holy Island SPA during the breeding or non-breeding season.

## **4.2.2 Review of Appropriate Assessment Conclusion**

For the purposes of the appropriate assessment it is necessary to demonstrate that there would be no adverse effect resulting from the construction, operation (and decommissioning – considering construction as a worst-case proxy for the latter) of the Onshore Development Area on the conservation objectives for chough within the Glannau Ynys Gybi / Holy Island Coast SPA due to effects on functionally linked habitats.



During construction (and decommissioning) as described above, with mitigation in place in the form of works exclusion in Areas 1 and 2 (Figure A19-2-2c) during the breeding season (20 March until 31 July), the impact of temporary construction disturbance (< 12 months duration) from the onshore development area on chough access to foraging areas during the breeding season is considered to be negligible. No adverse effects on productivity or the survival of breeding adults are considered likely. Outside the breeding season (1 August until 19 March) there would be no works exclusion zone in place. Although chough may be temporarily displaced from foraging areas overlapping with or close to onshore construction works, would be able to find alternative habitats elsewhere. No adverse effects on the survival or condition of individuals are considered likely.

Thus, considering the three tests in relation to functional linkage, there is no change to the conclusion from the Information to Support the Habitats Regulation Assessment, that the construction works for the Onshore Development Area would not have an adverse effect on the conservation objectives for the Glannau Ynys Gybi / Holy Island Coast SPA, either alone or in combination.

During operation, with mitigation in place such that no routine maintenance of the cable where it runs over the cliff face takes place during the chough breeding season (see section 4.1.2 above), it is also concluded that there would be no adverse effect on the conservation objectives for the Glannau Ynys Gybi / Holy Island Coast SPA, either alone or in combination.

## 5 References

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