21 May 2025

**Llŷr Marine Ornithological Clarification Note 3**
**Collated cumulative / in-combination figures for EIA and HRA**

As requested by NRW (A) on the call held on Friday 2nd May, cumulative / in-combination figures for EIA and HRA have been collated from the Mona deadline 7, REP7-033 report (for EIA) and the Mona deadline 7, REP7-020 (for HRA). These are the figures which include the long-standing Liverpool Bay projects for which there are no available data. For these, Mona has carried out a 'gap-filling exercise' in collaboration with Morecambe.

## 1. EIA cumulative / in-combination assessment

The modelling, methodologies and overall approach adopted here by Mona have been accepted by NRW (A). The figures in **Table 1** and **Table 2** are all taken from **Mona deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9** except for the Llŷr displacement estimates in **Table 1**, which are from the relevant tables (EIA annual estimates) in **Llŷr ES Appendix 22D, Marine Ornithology Displacement Assessment**.

**Table 1 – EIA (regional) displacement mortality estimates agreed by NRW(A)**

| Species for displacement assessment | Estimated mortality (no. of birds) | | % increase in baseline mortality from cumulative impact | Mona ref |
|---|---|---|---|---|
| | Llŷr | Cumulative total | | |
| **Guillemot** | 75.18 (*45.11 – 1,052.45*) | 558 (*335 – 7,814*) | 0.40 (*0.26 – 5.16*) | Table 5-85 |
| **Razorbill** | 13.3 (*7.98 – 186.13*) | 98 (*59 – 1,372*) | 0.12 (*0.08 – 1.34*) | Table 5-93 |
| Puffin | 3.72 (*2.23 – 52.08*) | 46 (*28 – 648*) | 0.02 (*0.01 – 0.25*) | Table 5-99 |
| Gannet | 7.18 (*6.16 – 82.08*) | 60 (*51 – 683*) | 0.05 (*0.04 - 0.54*) | Table 5-104 |
| Manx shearwater | 23.64 (*4.73 – 236.40*) | 178 (*107 – 2,492*) | 0.08 (*0.05 - 1.05*) | Table 5-114 |

**Table 2 – EIA (regional) collision mortality estimates agreed by NRW(A)**

| Species for collision assessment | 'Worst case' avoidance rate from Mona ES | Estimated mortality (no. of birds) | | % increase in baseline mortality from cumulative impact | Mona ref |
|---|---|---|---|---|---|
| | | Llŷr | Cumulative total | | |
| Kittiwake | 99.28 | 24.48 | 641.13 | 0.45 | Table 5-116 |
| **Lesser black-backed gull** | 99.39 | 1.93 | 299.28 | 1.03 | Table 5-123 |
| Gannet | 99.28 | 3.91 | 182.58 | 0.14 | Table 5-127 |
| **Great black-backed gull** | 99.39 | 1.61 | 167.41 | 9.93 | Table 5-117 |

The species **highlighted in bold** are those where Mona undertook PVA to investigate population consequence of the estimated cumulative impacts. The PVA outputs are presented in the following tables included in Section 5.9 of the Mona deadline 7 ES report:

- guillemot - Table 5-87
- razorbill - Table 5-95
- lesser black-backed gull - Table 5-126
- great black-backed gull - Table 5-120

For **gannet** the summed collision and displacement figures (project alone and cumulative) are still below the 1% baseline mortality threshold advised by NRW (A), so that no PVA was required under EIA for this species.

PVA outputs showed no significant population-level consequences for any species, excepting great black-backed gull, and for this only under the most conservative 'worst case' scenario.

**Table 3** provides a summary of NRW (A) advice on the significance of Llŷr project alone and cumulative / in-combination EIA impacts, referencing their response to the Mona deadline 7 ES Cumulative Assessments, as set out in Tables 1 and 2 above.

NRW (A)'s conclusions on **herring gull** are included in **Table 3** for completeness, although Llŷr project alone impacts are zero for this species. No individuals were recorded within the project area during the two-year programme of baseline digital aerial survey work.

**Table 3 – NRW advice on marine ornithological EIA conclusions**

| Species and impact pathway | NRW advice on marine ornithological EIA conclusions | |
|---|---|---|
| | Llŷr project alone[1] | Cumulative impacts from all plans & projects incl. Llŷr [2] |
| Gannet, collision | No significant adverse impact | No significant adverse impact |
| Gannet, displacement | No significant adverse impact | No significant adverse impact |
| Gannet, collision + displacement | No significant adverse impact | No significant adverse impact |
| Kittiwake, collision | No significant adverse impact | No significant adverse impact |
| Lesser black-backed gull, collision | No significant adverse impact | No significant adverse impact |
| *Herring gull, collision* | *No significant adverse impact* | *No significant adverse impact* |
| Great black-backed gull, collision | No significant adverse impact | Unable to rule out significant adverse impact |
| Guillemot, displacement | No significant adverse impact | No significant adverse impact |
| Razorbill, displacement | No significant adverse impact | No significant adverse impact |
| Puffin, displacement | No significant adverse impact | No significant adverse impact |
| Manx shearwater, displacement | No significant adverse impact | No significant adverse impact |

[1] Summarised from the NRW (A) advisory response on Llŷr, as sent to the Marine Licensing Team on 29 January 2025

[2] Summarised from NRW's deadline 7 submission and closing statement on Mona, dated 14 January 2025 - with the cumulative impact estimates including correct Llŷr figures, as previously checked and presented in clarification note 1

## 2. HRA cumulative / in-combination assessment

The modelling, methodologies and overall approach adopted here by Mona have been accepted by NRW (A). The figures presented in **Table 4** are taken from **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

**Table 4 – HRA mortality estimates agreed by NRW(A)**

| Species and Impact type<br>C = collision<br>D = displacement<br>C&D = sum of these impact types | Estimated mortality (no. of birds) | | % increase in baseline mortality from cumulative impact | Mona ref |
|---|---|---|---|---|
| | Llŷr | Cumulative total | | |
| **Grassholm SPA** | | | | |
| **Gannet (C&D)** | 4.93 – 30.05 | 75 (*73 – 231*) | 1.29 (*1.25 – 3.96*) | Tables 1.96, 1.97, 1.98 |
| **Gannet (C&D) accounting for macro-avoidance** | 2.59 – 27.70 | 70.71 (*68.58– 226.47*) | 0.61 (*1.21 – 3.88*) | Tables 1.160 1.161, 1.162 1.163, 1.164 1.165 |
| **Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA** | | | | |
| **Guillemot (D)** | 16.84 – 92.51 | 54 (*32 – 754*) | 1.99 (*1.19 – 27.83*) | Tables 1.81, 1.82, 1.83 |
| **Razorbill (D)** | 0.18 – 4.21 | 3 (*2 – 35*) | 0.20 (*0.12 – 2.81*) | Tables 1.120, 1.121, 1.122 |
| **Manx shearwater (D)** | 11.85 – 276.40 | 110 (*66 – 1,547*) | 0.09 (*0.06 – 1.31*) | Tables 1.90, 1.91, 1.92 |
| **Kittiwake (C&D)** | 0.71 – 3.83 | 11.3 (*10.89 – 19.08*) | 2.42 (*2.37 – 4.16*) | Tables 1.42, 1.43, 1.44 |

Mona undertook PVA to investigate population consequence of these estimated cumulative impacts, against each relevant SPA breeding seabird colony population. These PVA outputs are presented as follows in **REP7-020**:

- guillemot - Table 1.143
- razorbill - Table 1.158
- Manx shearwater - Table 1.151
- kittiwake – Table 1.132
- gannet – Table 1.147

PVA outputs showed no significant population-level consequences for any species from these cumulative impacts. **Table 5** records NRW's conclusions on whether there would be adverse effect on site integrity (AEoSI) for any of the SPA populations of seabirds assessed for Llŷr project alone and in combination with other plans and projects.

**Table 5 – NRW advice on marine ornithological HRA conclusions**

| Species | NRW advice on marine ornithological HRA conclusions | |
|---|---|---|
| | Llŷr project alone[1] | Cumulative impacts from all plans & projects incl. Llŷr [2] |
| Gannet, collision | No AEoSI | No AEoSI |
| Gannet, displacement | No AEoSI | No AEoSI |
| Gannet, collision + displacement | No AEoSI | No AEoSI |
| Kittiwake, collision | No AEoSI | No AEoSI |
| **Lesser black-backed gull**, collision | No AEoSI | No AEoSI |
| *Herring gull, collision* | *No AEoSI* | *No AEoSI* |
| *Great black-backed gull, collision* | *No AEoSI* | *No AEoSI* |
| Guillemot, displacement | No AEoSI | No AEoSI |
| Razorbill, displacement | No AEoSI | No AEoSI |
| **Puffin**, displacement | No AEoSI | No AEoSI |
| Manx shearwater, displacement | No AEoSI | No AEoSI |

[1] Summarised from the NRW (A) advisory response on Llŷr, as sent to the Marine Licensing Team on 29 January 2025

[2] Summarised from NRW's deadline 7 submission and closing statement on Mona, dated 14 January 2025 - with the cumulative impact estimates including correct Llŷr figures, as previously checked and presented in clarification note 1

Herring gull and great black-backed gull are included in Table 5 for completeness, although neither species required assessment at Llŷr under HRA. **Lesser black-backed gull** and **puffin** did not require any cumulative PVA for the Mona application, as the apportioned estimates to Skomer, Skokholm and Seas off Pembrokeshire (SSSP) SPA populations were < 0.05% of baseline mortality:

- 0.00 – 0.01 Mona LBBG mortalities = 0.00 – 0.01% change in baseline mortality
- 0.00 – 0.7 Mona puffin mortalities = 0.00 – 0.01% change in baseline mortality

Table 1.16 (LBBG) and Table 1.7 (puffin) of **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

NRW (A) have requested that Llŷr also further consider the potential cumulative impacts arising from Mona and other more distant projects, against the populations of these two species at SSSP.

Our consideration is supported by two maps. **Figure 1** presents the developments considered in the cumulative HRA assessment, as submitted, and **Figure 2** provides a plot of the 'at sea' distance calculation between SSSP and Mona. Mona is located on the western edge of the Liverpool Bay cluster of projects, so that the apportioning weightings calculated by Mona in respect of SSSP SPA, can be considered broadly representative of the Liverpool Bay cluster as a whole.

- **Lesser black-backed gull (LBBG)**

Under EIA, the estimate of LBBG collision mortality is **1.93 for Llŷr project-alone** and **1.92 for Mona project alone.** Review of the SPA apportioning weightings (breeding season) for Mona* indicates that only ~1.95% of project impacts from the Liverpool Bay cluster are to be apportioned against SSSP, with the majority, 76.71%, split between the Ribble and Alt Estuaries SPA (26.78%), Morecambe Bay and Duddon Estuary SPA (12.72%), and Bowland Fells SPA (37.21%).

*As presented in Table 1.16 of **Mona deadline 7**, **Offshore Ornithology Information to Support an Appropriate Assessment, Annex E1.3.1, REP7-020, Section 1.4.3**.

The mean max foraging range for LBBG = 127.0km, and mean max + 1SD = 236.0km, whereas Mona is located ~237 km from the SPA (**Figure 2** providing the plot of this 'at sea' distance measurement). None of this indicates any great risk, nor requirement for PVA, from cumulative offshore wind impacts against the LBBG population of SSSP SPA.

As **Table 5** sets out, NRW have already concluded **no adverse effect on site integrity** from cumulative offshore wind development, including Llŷr as well as Mona, against the LBBG population of SSSP SPA.

- **Puffin**

For puffin, the project-alone mortality estimate for puffin at SSSP SPA is between 0.50 – 11.36 birds based on displacement matrix outputs: Table 22-9 of **Llŷr ES Appendix 22E, Marine Ornithology Project Alone and Cumulative Impact Scenarios**.

Under PVA, Llŷr modelled a 'worst-case' annual cumulative impact of 111.63 puffin mortalities against the SSSP SPA population. This worst case is based on total annual puffin mortalities from Llŷr and Erebus together, using a displacement rate of 70% and an unrealistic mortality rate of 10%.

Checking Mona, this figure of 111 puffin is equivalent to that for total annual mortalities of this species from all offshore wind projects in the BDMPS; based on matrix outputs with a displacement rate of 60% and a more realistic mortality rate of 2% – Table 5-99 of **Mona deadline 7 ES Cumulative Assessments, REP7-033, Section 5.9**.

Therefore, the 'worst-case' cumulative impact scenario already modelled by Llŷr for puffin at SSSP SPA can be considered as sufficiently precautionary. As **Table 5** sets out, NRW have already concluded **no adverse effect on site integrity** from cumulative offshore wind development, including Llŷr and Mona, against the puffin population of SSSP SPA.

**Figure 1 – Cumulative offshore wind development considerd in the Llŷr RIAA, as submitted**

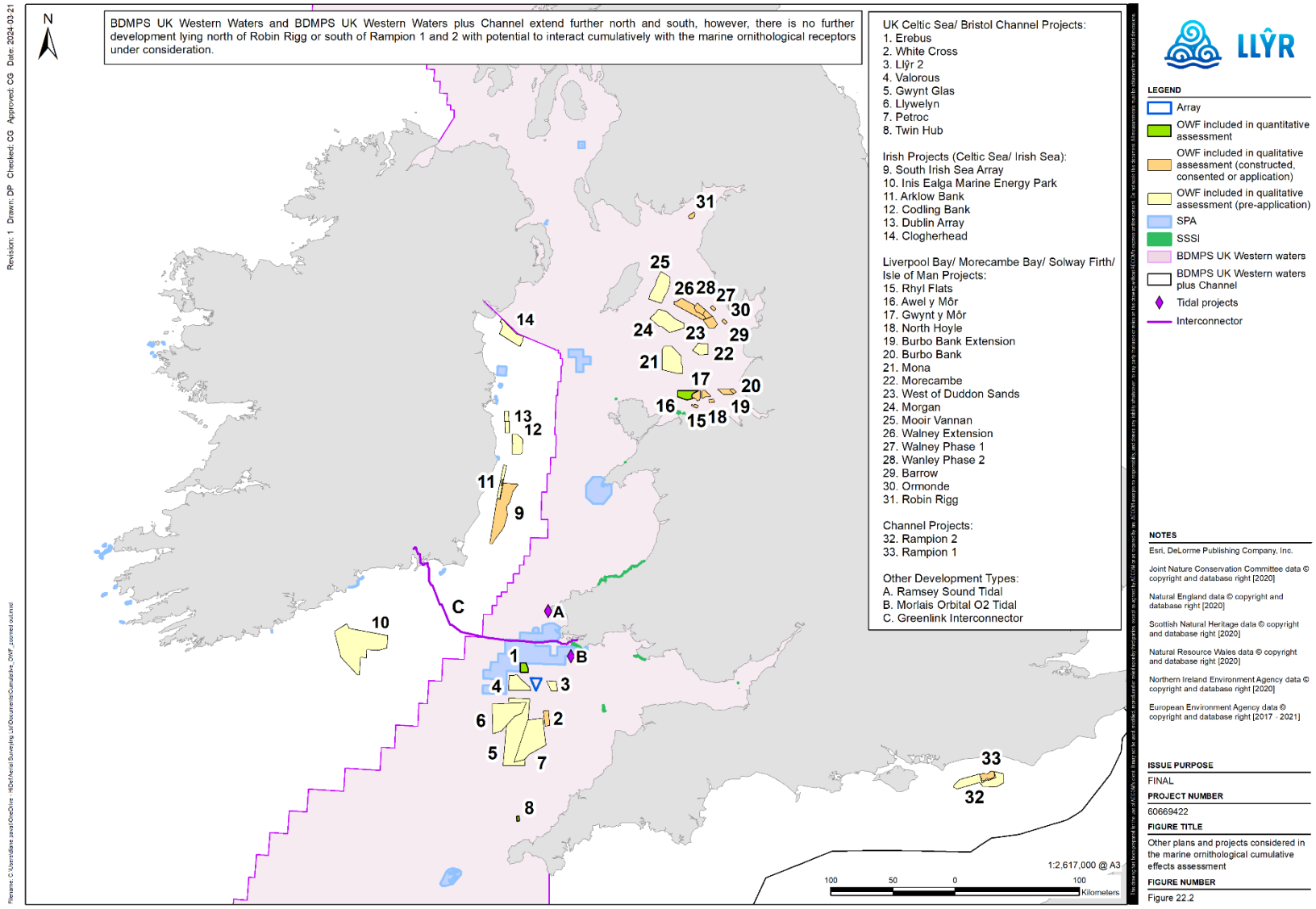

**Figure 2 – Plot of the 'at sea' distance measurement, closest edge to closest edge, between SSSP SPA and the Mona offshore wind project located in Liverpool Bay, a distance of ~237km**