LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 6: Appendix 23E – SLVIA Cumulative Assessment

August 2024

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FLOVENTIS ENERGY

Document Status

Version	Authored by	Reviewed by	Approved by	Date
FINAL	AECOM	AECOM	AECOM	August 2024

Approval for Issue

Prepared by	AECOM
Prepared for	Llŷr Floating Wind Limited
Approved by	Marc Murray

Acronyms and abbreviations

Acronym or abbreviation	Definition	Acronym or abbreviation	Definition
cd	Candela	S.36	Section 36 of the Electricity Act
LCA	Landscape Character Area	SCA	Seascape Character Area
MLT	Marine Licensing Team	SLVIA	Seascape, Landscape and Visual Assessment
NRW	Natural Resources Wales	TJB	Transition Joint Bay
OnECC	Onshore Export Cable Corridor	WTG	Wind Turbine Generator
PCNP	Pembrokeshire Coast National Park	ZTV	Zone of Theoretical Visibility

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Limited
Array	All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s).
Array Area	The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located
Floventis Energy	A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Limited is a wholly owned subsidiary.
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays (TJB).
Llŷr 1	The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases.
Marine Licence	A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team (MLT) on behalf of the Welsh Ministers.
Offshore Development Area	The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor, as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application
Offshore Export Cable	The cable(s) that transmit electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor (OfECC)	The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall.
Onshore Development Area	The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore

Term	Definition
	Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
proposed Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.

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23. APPENDIX 23E: SLVIA CUMULATIVE ASSESSMENT

23.1 Introduction

1. This appendix provides an assessment of potential cumulative seascape, landscape and visual effects resulting operation and maintenance of from the Llŷr 1 Floating Offshore Wind Farm (the proposed Project) in addition to identified cumulative projects. This appendix should be read in conjunction with **Volume 3: Chapter 23 – Seascape, Landscape and Visual** and **Volume 5: Figures 23.1 to 23.18** Reference should also be made to **Section 23.9** of **Volume 6: Appendix 23A – SLVIA Methodology** which provides details of the approach and assessment criteria related to the cumulative assessment.

23.2 Cumulative Baseline

2. In line with good practice (NatureScot, 2021) the cumulative assessment considers several different cumulative scenarios related to the different status of the identified cumulative projects. Although the NatureScot guidance is focused on onshore wind farms, the scenario approach is considered to be applicable to cumulative assessment of offshore wind farms.

3. The consideration of existing operational wind farms is incorporated within the assessment of existing baseline conditions and the resulting effects described within the non-cumulative seascape, landscape and visual assessments. Three further scenarios are considered within the cumulative assessments, as follows:

- Scenario 1: The cumulative effects of the proposed Project introduced into a baseline which includes wind farms which have been consented in addition to existing operational schemes;
- Scenario 2: The cumulative effects of the proposed Project introduced into a baseline which includes wind farms at the application stage, in addition to consented and existing operational schemes; and
- Scenario 3: The cumulative effects of the proposed Project introduced into a baseline which includes select scoping stage schemes in addition to those at application stage, consented or existing and operational.

4. **Table 23E-1**, below provides details of the identified cumulative schemes and indicates which scenario they are considered within.

Table 23E-1. Projects considered in the seascape, landscape and visual cumulative assessment

Project name	Project type	Status	Cumulative scenario		
			1	2	3
Castle Pill Wind Farm	Onshore wind farm	Existing/operational	X	X	X
Dragon Energy Park	Onshore wind farm	Application		X	X
Erebus	Offshore wind farm	Consented	X	X	X
Llŷr 2	Offshore wind farm	Scoping/pre-application			X
Lower Scoveston and Scoveston Park	Onshore wind turbines	Existing/operational	X	X	X
Valorous	Offshore wind farm	Scoping/pre-application			X
Wear Point	Onshore wind farm	Existing/operational	X	X	X
White Cross	Offshore wind farm	Application		X	X

5. It is important to note that Llŷr 2 and Valorous are at an early stage in the development process and as such the details and layouts of the WTGs are likely to change. There is no certainty that Valorous will progress to application stage. Scoping stage projects are often excluded from assessment for this reason. However, Llŷr 2 has been included due to the close proximity to the proposed Project and Valorous has been included at the request of NRW. The cumulative assessment is undertaken based on the most recent information available, as provided within the Llŷr 2 and Valorous Scoping Reports. For the purposes of this assessment, an indicative turbine layout has been created for Llŷr 2 based on the maximum parameters (turbine number and height and array extent) set out in the Llŷr 2 Scoping Report. In relation to Valorous, it is understood that the delays to the Crown Estate round 5 leasing process will add further uncertainty in this project progressing to application stage.

23.3 Landscape Designations

23.3.1. Sensitivity of Receptor

6. For the purposes of cumulative assessment sensitivity is considered to be the same as that identified within the main assessment, **high** for the Pembrokeshire Coast National Park (PCNP) and Heritage Coasts.

23.3.2. Cumulative Scenario 1

Baseline

7. In this scenario the consented Erebus scheme would be present within the distant seascape to the southwest of the PCNP and Heritage Coasts. This is likely to result in a small influence on some of the perceptual attributes of these designations and their special qualities, and particularly aspects relating to sense of wildness, remoteness, tranquillity and dark skies.

Magnitude of Cumulative Impact

8. The proposed Project would add an additional offshore wind farm within the extensive open seascape to the southwest of the PCNP and Heritage Coasts. It would be seen in the context of and appear similar to, but separate from, the consented Erebus scheme. The proposed Project would not add a new type of development but would slightly increase the impression of offshore development and lights at night within the broad seascape, at considerable distance from the PCNP and Heritage Coasts. Change to perceptual aspects of landscape character and the identified special qualities, including *coastal splendour* and *remoteness, tranquillity and wildness* would be limited and as such the magnitude of cumulative change is assessed as **small**.

Significance of Cumulative Effect

9. The sensitivity of PCNP and related Heritage Coasts is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 1 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.3.3. Cumulative Scenario 2

Baseline

10. In this scenario Dragon Energy Park would add to, and slightly increase, the presence of energy and industrial development around Milford Haven. This would add to the existing context of development outside the designated areas, with little overall influence on perceptual aspects or special qualities. White Cross would be located at considerable distance from the PCNP and

Heritage Coasts and although theoretically visible is likely to have limited influence on the baseline, including at night.

Magnitude of Cumulative Impact

11. Dragon Energy Park and White Cross add very little to the cumulative baseline experienced from the PCNP and Heritage Coasts and as such the addition of the proposed Project to this scenario would largely be the same as described for scenario 1. The proposed Project would add a further offshore development at considerable distance from these designations, resulting in only a slight additional change to a limited number of perceptual qualities. Magnitude of cumulative impact is therefore assessed as **small**.

Significance of Cumulative Effect

12. The sensitivity of PCNP and related Heritage Coasts is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 2 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.3.4. Cumulative Scenario 3

Baseline

13. In this scenario Llŷr 2 and Valorous, which are at scoping stage, would add further offshore wind developments into the broad seascape context of the designations. Llŷr 2 would appear similar to, but separate from, the consented Erebus scheme and in a similar part of the view as White Cross, albeit closer to the PCNP. Valorous would introduce a larger cluster of turbines and would be perceived behind Erebus. These schemes would increase the horizontal extent, depth and density of offshore wind development and associated aviation lighting within the distant seascape, slightly adding to the influence on perceptual attributes related to wildness, tranquillity and dark skies.

Magnitude of Cumulative Impact

14. Addition of the proposed Project to this cumulative scenario would add a further offshore development within the extensive, open seascape at considerable distance from PCNP and Heritage Coasts. The proposed Project would be experienced in the context of Erebus and Valorous which may appear as one larger development from some locations. The separation distances are such that the proposed Project is likely to be appreciated as a separate but related group of wind turbine generators (WTGs) to those of Erebus and Valorous and Llŷr 2 from many locations, slightly adding to the overall impression of distant developments within the expansive seascape. From a small area west of St Govan's Head the proposed Project may appear more closely related and/or as an extension of Llŷr 2 closing the gap to Erebus and Valorous, although the varying distance of the schemes would reduce the impression of a single conjoined project. Overall, the proposed Project would represent a relatively limited additional change to perceptual attributes related to few special qualities. Magnitude of cumulative impact for this scenario is assessed as **small**.

Significance of Cumulative Effect

15. The sensitivity of PCNP and related Heritage Coasts is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 3 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.4 Seascape and Landscape Character

16. The following provides an assessment of cumulative effects on the Seascape Character Areas (SCAs) and Landscape Character Areas (LCAs) included in the detailed assessment. The influence of the identified cumulative projects on the baseline and the nature of cumulative change would be similar for each receptor and therefore they have been grouped for the purposes of this assessment.

23.4.1. Sensitivity of Receptor

17. For the purposes of cumulative assessment sensitivity is considered to be the same as that identified within the main assessment, **high** for each of the included SCAs and LCAs.

23.4.2. Cumulative Scenario 1

Baseline

18. In this scenario, the consented Erebus scheme would be present within the distant seascape to the southwest of the Pembrokeshire coast. It would introduce development into the seascape where currently there is little man-made influence, although would occupy a small part of the extensive seascape context and as such would exert only a small influence on select perceptual attributes of SCAs and LCAs related predominantly to sense of wildness and dark skies.

Magnitude of Cumulative Impact

19. The addition of the proposed Project to this cumulative scenario would result in introduction of a further offshore development within the extensive open seascape at considerable distance from the Pembrokeshire coast. Where visible, the proposed Project would largely be experienced in the context of and appear similar to the consented Erebus scheme, present in the cumulative baseline. Analysis of the cumulative Zone of Theoretical Visibility (ZTV) (**Volume 5: Figure 23.13**) indicates that the proposed Project would result in only a very limited and localised increase in the extent of potential indirect change. While the proposed Project would add slightly to the impression of development within the broad seascape from parts of the identified SCAs and LCAs, potential additional change to perceptual attributes would be limited by the separation distance. The magnitude of cumulative impact on each of the identified SLAs and LCAs is assessed as **small**.

Significance of Cumulative Effect

20. The sensitivity of each of the SCAs and LCAs is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 1 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.4.3. Cumulative Scenario 2

Baseline

21. In this scenario, Dragon Energy Park would add to, and slightly increase, the presence of energy and industrial development around Milford Haven. The turbines would be taller than those of the existing schemes and therefore would be visible from localised additional parts of most of the SLAs and LCAs relative to the existing baseline. There would be no aviation lighting included as part of Dragon Energy Park. White Cross would be located at considerable distance from the Pembrokeshire coast and although theoretically visible is likely to have limited influence on the baseline of this scenario, including at night.

Magnitude of Cumulative Impact

22. While Dragon Energy Park and to a lesser extent White Cross, would locally and marginally add to the impression of wind farms outside of each of the SCAs and LCAs, the principal cumulative relationship within this scenario would be with the Erebus scheme as described above in relation to scenario 1. Cumulative change resulting from the addition of the proposed Project to this scenario would be limited by the distance from the coast the included SCAs and LCAs such that it would represent only a slight additional influence on a few perceptual aspects related to wildness and dark skies, where present. Magnitude of cumulative impact is assessed as **small**.

Significance of Cumulative Effect

23. The sensitivity of each of the SCAs and LCAs is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 2 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.4.4. Cumulative Scenario 3

Baseline

24. In this scenario, Llŷr 2 and Valorous would add further offshore wind development and adding slightly to the localised influence on perceptual attributes of some of the SLAs and LCAs. Llŷr 2 would often appear in a similar direction to White Cross, although would be closer and therefore have a greater influence on the cumulative baseline. Valorous would often appear behind Erebus, and although at a greater distance would add to the extent, depth and density of offshore WTGs within a localised part of the distant seascape.

Magnitude of Cumulative Impact

25. Addition of the proposed Project to this cumulative scenario would add a further offshore development within the extensive, open seascape at considerable distance from each of the SCAs and LCAs. The proposed Project would be located in a broadly similar part of the seascape as Llŷr 2, Erebus and Valorous and as such would be experienced in the context of these three schemes. The separation distances are such that the proposed Project is likely to be appreciated as a separate but related group of WTGs from most locations, adding slightly to the overall impression of distant development within the expansive seascape. Overall, the proposed Project would represent a relatively limited additional change to few perceptual attributes of seascape and landscape character. Magnitude of cumulative impact for this scenario is assessed as **small**.

Significance of Cumulative Effect

26. The sensitivity of each of the SCAs and LCAs is considered to be **high** and the magnitude of the cumulative impact resulting from the addition of the proposed Project to cumulative scenario 3 is assessed as **small**. Therefore, the cumulative effect would be **minor adverse** and **not significant**.

23.5 Visual Amenity - Viewpoints

27. The following provides an assessment of cumulative effects on visual receptors based on the identified representative viewpoint locations. Where the influence of the identified cumulative projects on the baseline and/or the nature of cumulative change would be similar, viewpoints have been grouped for the purposes of this assessment.

28. Viewpoint 14: Caldey Island and Viewpoint 15: Beacon Hill, Lundy Island have not been considered in the cumulative assessment as a result of the separation distance from the proposed Project and therefore no potential for a significant cumulative effect.

23.5.1. Sensitivity of Receptors

29. For the purposes of cumulative assessment sensitivity is considered to be the same as that identified within the main assessment, **high** for each of the viewpoints, with the exception of Viewpoint 04: Marloes Beacon and Viewpoint 09: Freshwater West Beach which are **very high**, and Viewpoint 10: Castlemartin Range Trail which is **medium**.

23.5.2. Viewpoints 01 to 06 and 08: Skomer, Skokholm and the Marloes, Dale and Angle Peninsulas

Cumulative Scenario 1

30. The consented Erebus scheme would be visible within the broad seascape to the southwest, adding a new distant feature, occupying up to approximately 12° of the view and resulting in a slight alteration to the baseline.

31. The proposed Project would add a second distant offshore development in views southwest from these locations and would appear broadly similar in nature to, but clearly separate from, the Erebus scheme. Although the proposed WTGs would be slightly taller than those at Erebus they would be at a greater distance and as such the difference in height would not be appreciated. The proposed Project would occupy a similar, although slightly smaller, horizontal extent of the view, and slightly extend the influence of wind farms to an additional part of the extensive open seascape which forms the distant backdrop to views from each of these viewpoints.

32. The addition of the proposed Project into this cumulative scenario would result in a slight increase in the influence of offshore development, tempered somewhat by the considerable intervening distance.

33. On balance the magnitude of cumulative impact would be **small** and when combined with the high (or very high) sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 2

34. Dragon Energy Park would be distant and/or screened from these viewpoint locations. Where visible (Viewpoints 01, 04 and 06) it would occupying a very small part of the view, adding slightly to the concentration of existing wind turbines and other onshore energy and industrial development already visible in that part of the view. White Cross would be located in excess of 58 – 65 km to the south of these viewpoints and although theoretically visible would be largely imperceptible in most conditions. Both schemes would contribute very little to the impression of a cumulative impact.

35. It is therefore considered that cumulative effects would be the same as for scenario 1; **minor adverse** and **not significant**.

Cumulative Scenario 3

36. If Llŷr 2 and Valorous were to be constructed based on the scoping layouts they would add further offshore wind farm into the seascape to the southwest. Llŷr 2 would appear similar to, but separate from, the consented Erebus scheme and would occupy up to approximately 16° of the view with the very distant White Cross beyond. Valorous would be located within a similar part of the view as Erebus, occupying a wider horizontal extent (up to approximately

17°) and adding to the depth and density of WTGs and as such combining to form a slightly more notable, but distant development.

37. The proposed Project would appear as a separate, but related development, occupying a smaller horizontal extent (approximately 10 – 11°) than the Erebus, Llŷr 2 and Valorous projects. The proposed WTGs would be located between the clusters formed by Llŷr 2 to the east and Erebus and Valorous to the west creating a series of distant wind farms within a relatively limited part of the expansive panoramic views available from each of the viewpoints. The varying distances of the schemes from these viewpoints would reinforce the separation and avoid appearing as one combined development. Overall, although the proposed Project would add slightly to the influence of offshore wind farms in the view, it would not result in offshore wind farms becoming a prominent feature.

38. On balance, considering the nature of the cumulative baseline and the separation distance to the proposed Project, the magnitude of cumulative impact is assessed as **small**, and when combined with the high (or very high) sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

23.5.3. Viewpoint 07: Lindsway Bay

Cumulative Scenario 1 and 2

39. There would be very little or no visibility of the cumulative projects in these two scenarios, and as such there is no potential for a significant cumulative effect.

Cumulative Scenario 3

40. Llŷr 2 would be visible within the broad seascape in the far background of the view, adding a new distant feature, occupying approximately 15° of the view and resulting in a slight alteration to the baseline. Valorous would be predominantly screened and very distant from this location, such that it would not contribute to a cumulative effect.

41. The proposed Project would add a second distant offshore development in views southwest from this location and would appear broadly similar in nature to, but separate from, Llŷr 2. Although the proposed WTGs would be slightly taller than those at Llŷr 2 the distance from the viewpoint is such that the difference in height would not be appreciated. The proposed Project would occupy a smaller horizontal extent of the view, and slightly extend the influence of wind farms to an additional part of the distant open seascape framed between the Angle and Dale peninsulas.

42. The addition of the proposed Project into this cumulative scenario would result in a slight increase in the influence of offshore development, tempered somewhat by the considerable intervening distance and context of other closer range development.

43. On balance the magnitude of cumulative impact would be **small** and when combined with the high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

23.5.4. Viewpoint 09: Freshwater West Beach

Cumulative Scenario 1

44. The consented Erebus scheme would be visible within the broad seascape to the southwest, adding a new distant feature, occupying approximately 11° of the view and resulting in a slight alteration to the baseline. The lower parts of the turbines would be screened by the distant seascape horizon from this low elevation location.

45. The proposed Project would add a second distant offshore development in the distance to the southwest. The lower parts of the WTGs would be screened by the distant horizon and would appear similar in nature to, but clearly separate from, the Erebus scheme. The proposed Development would slightly extend the influence of wind farms to an additional part of the extensive open seascape which forms the distant backdrop to views. Although the turbines would be marginally closer and slightly taller than those at Erebus, the distance from the viewpoint (approximately 39 km) is such that they would not become a notable or prominent feature.

46. The addition of the proposed Project into this cumulative scenario would result in a slight increase in the influence of offshore development, tempered somewhat by the considerable intervening distance.

47. On balance the magnitude of cumulative impact would be **small** and when combined with the very high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 2

48. Dragon Energy Park would not be visible from this location and White Cross would be very distant and largely beyond the distant horizon such that it would be largely imperceptible. The cumulative baseline and therefore significance of cumulative effects for this scenario would be the same as those for Scenario 1; **minor adverse** and **not significant**.

Cumulative Scenario 3

49. Llŷr 2 would be visible in the distance to the south west, appearing similar to, but separate from and slightly closer than the consented Erebus scheme. Llŷr 2 would slightly extend the influence of offshore development within the cumulative baseline, occupying an additional 17° of the expansive view. Valorous would be largely screened beyond the distant horizon, such that it would have little influence on the cumulative baseline.

50. The proposed Project would add a further offshore development in the distance to the southwest, appearing between Erebus and Llŷr 2. The lower parts of the WTGs would be screened by the distant horizon and would appear similar in nature to Erebus and more compact and slightly more distant than Llŷr 2. Overall, the addition of the proposed Project into this cumulative scenario would result in a slight increase in the influence of offshore development, tempered somewhat by the considerable intervening distance and partial screening by the distant horizon.

51. On balance the magnitude of cumulative impact would be **small** and when combined with the high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

23.5.5. Viewpoints 10 to 12: Castlemartin, Elegug Stacks and St Govan's Head

Cumulative Scenario 1

52. The consented Erebus scheme would be visible within the broad seascape to the southwest, adding a new distant feature, occupying approximately 11° of the view and resulting in a slight alteration to the baseline.

53. The proposed Project would add a second distant offshore development in views southwest and would appear broadly similar in nature to, but clearly separate from, the Erebus scheme. The proposed Project would be slightly closer than Erebus and the WTGs proposed are slightly taller, although at a distance of over 38 km this difference would generally be difficult to distinguish. The proposed Project would occupy a similar horizontal extent of the view

(approximately 12°), and slightly extend the influence of wind farms to an additional part of the extensive open seascape which forms the distant backdrop to views from each of these viewpoints.

54. The addition of the proposed Project into this cumulative scenario would result in a slight increase in the influence of offshore development, tempered somewhat by the considerable intervening distance.

55. On balance the magnitude of cumulative impact would be **small** and when combined with the medium or high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 2

56. The tops of the turbines at Dragon Energy Park would be partially visible in the distance in a broadly similar part of the views as the stacks of the Pembroke Oil Refinery, adding marginally to the context of onshore development in view inland. At over 55 km from the nearest point, White Cross would be a very distant feature which is only likely to be visible in excellent visibility. In such conditions it would add a further offshore development into the view but would contribute very little to the impression of a cumulative change.

57. It is therefore considered that cumulative change and significance of effect would be the same as that described for scenario 1; **minor adverse** and **not significant**.

Cumulative Scenario 3

58. Llŷr 2 would add an additional offshore wind farm into the view, appearing closer and occupying a slightly greater extent (approximately 18°) than the consented Erebus scheme. It would partially be within the same part of the view as the very distant White Cross but appear separate to Erebus, slightly increasing the impression of distant offshore development within the expansive views from these locations. Valorous would add a further offshore wind farm into the seascape to the southwest. It would be located within a slightly different part of the view to Erebus, occupying a similar horizontal extent (approximately 12°). However, given the distance of over 52 km from the nearest point Valorous would have a limited influence on the view.

59. The proposed Project would be seen to the west of Llŷr 2 and east of Valorous, appearing to marginally overlap with both schemes. It would occupy a slightly wider extent and be slightly closer than Erebus and as such would add to the overall impression of offshore wind farms in the view. However, this would be tempered by the considerable distance (over 38 km) from the nearest of these viewpoints. Although the cumulative wirelines (e.g. **Volume 5: Figure VP 10.2**) indicate that Erebus, Valorous, Llŷr 2 and the proposed Project would combine to form a line of turbines along the horizon, in reality the difference in distances to each of the projects from the viewpoint would somewhat lessen this impression, with Valorous often likely to be largely imperceptible.

60. On balance, although the proposed Project would slightly increase the influence of offshore wind farms in the view, the separation distance and overall small additional part of the view affected indicates a **small** magnitude of cumulative impact. Considering the medium or high sensitivity and the small magnitude of impact, the cumulative effect is assessed as **minor adverse** and **not significant**.

23.5.6. Viewpoint 13: Manorbier Beach

Cumulative Scenario 1 and 2

61. There would be very little or no visibility of the cumulative projects in these two scenarios, and as such there is no potential for a significant cumulative effect.

Cumulative Scenario 3

62. Llŷr 2 would be visible within the broad seascape in the far background of the view, adding a new very distant feature, occupying approximately 15° of the view and resulting in a slight alteration to the baseline. Valorous would be screened from this location and as such would not contribute to a cumulative effect.

63. The proposed Project would add a second distant offshore development in views southwest, appearing as a small extension to Llŷr 2, albeit slightly more distant and partially screened by landform and the distant horizon. The proposed Project would occupy a smaller horizontal extent of the view, and slightly extend the influence of wind farms to an additional part of the distant open seascape.

64. The addition of the proposed Project into this cumulative scenario would result in a very slight increase in the influence of offshore development, tempered by the considerable intervening distance.

65. On balance the magnitude of cumulative impact would be **negligible** and when combined with the high sensitivity is considered to result in a **negligible adverse** and **not significant** cumulative effect.

23.6 Visual Amenity - Pembrokeshire Coast Path

23.6.1. Sensitivity of Receptor

66. For the purposes of cumulative assessment sensitivity is considered to be the same as that identified within the main assessment, **high** for users of the Pembrokeshire Coast Path.

23.6.2. Cumulative Scenario 1

Baseline

67. In this scenario, the consented Erebus scheme would be visible from multiple sections of the Pembrokeshire coast path, particularly between Martin's Haven and St Ann's Head, a localised part on the north side of Milford Haven and from the south side of the Angle peninsula east towards St Govan's Head. Although it would introduce a new offshore element where existing man-made influence is limited, it would be at considerable distance from the Pembrokeshire Coast Path and occupy only a small part (up to approximately 12°) of the expansive views available, representing a slight change relative to the existing baseline.

Magnitude of Cumulative Impact

68. The proposed Project would add a further offshore wind development into views from sections of the Pembroke Coast Path. Analysis of the cumulative ZTV (**Volume 5: Figure 23.13**) indicates that visibility of the proposed Project would predominantly be restricted to the same sections of the Pembroke Coast Path which would gain visibility of Erebus. Therefore, where visible the proposed Project would generally be seen in the context of an existing offshore wind farm. It would also be located within a similar part of the view, although would appear separate from Erebus. The proposed Project would therefore extend the influence of wind farms to a slightly greater horizontal extent (approximately 10 - 12°), although this would still a small part of the expansive views available.

69. Overall, while the proposed Project would introduce an additional offshore feature into views from parts of this route, the intervening distance and relatively small increase in the extent of the view affected contribute to a reduced impression of cumulative change. Magnitude of cumulative impact is therefore considered to be **small**.

Significance of Cumulative Effect

70. The sensitivity of users of the Pembrokeshire Coast path is considered to be **high** and the magnitude of the cumulative impact is assessed as **small**, resulting in a **minor adverse** and **not significant** effect for cumulative scenario 1.

23.6.3. Cumulative Scenario 2

Baseline

71. In this scenario, Dragon Energy Park would be located close to a number of existing onshore wind farms to the north of Milford Haven, slightly adding to the prominence of such development from localised areas, but not extending visibility to new sections of the route. White Cross would be located at considerable distance from the Pembrokeshire coast and although theoretically visible from elevated sections of this route would be largely imperceptible in most conditions. Both schemes would contribute very little to the impression of a cumulative impact.

Magnitude of Cumulative Impact

72. Cumulative change resulting from the addition of the proposed Project to this scenario would be largely the same as that for scenario 1, with the main cumulative relationship being with the Erebus scheme. Magnitude of impact is assessed as **small**.

Significance of Cumulative Effect

73. The sensitivity of users of the Pembrokeshire Coast path is considered to be **high** and the magnitude of the cumulative impact is assessed as **small**, resulting in a **minor adverse** and **not significant** effect for cumulative scenario 2.

23.6.4. Cumulative Scenario 3

Baseline

74. In cumulative Scenario 3, Llŷr 2 would be visible from parts of the route, appearing as an additional distant offshore development, similar to but separate from Erebus. Llŷr 2 would introduce visibility of offshore development to additional localised sections of the route west of Milford Haven and marginally increase the influence of offshore development. Valorous would theoretically be visible as a distant feature beyond the consented Erebus scheme. The addition of Valorous would not introduce visibility of offshore development to new sections of the route. However, it would combine with Erebus to slightly increase the horizontal extent (to cover up to approximately 20°), depth and density of offshore development in views from parts of the route.

Magnitude of Cumulative Impact

75. The proposed Project would add a further offshore development into views to the southwest from sections of this route. As with scenario 1, the proposed Project would be seen in the context of other offshore wind farms and would not add visibility of WTGs to new parts of the route. The proposed Project would extend the influence of wind farms to a slightly different part of the view. However, the increase (approximately 10 – 11°) would be limited in the context of the expansive panoramic views available from elevated sections of the route. Overall, although the proposed Project would add slightly to the influence of offshore wind

farms in the view, considering the distance offshore, it would not result in wind farms becoming a prominent feature from the Pembroke Coast Path. Magnitude of cumulative impact for this scenario is assessed as **small**.

Significance of Cumulative Effect

76. The sensitivity of users of the Pembrokeshire Coast path is considered to be **high** and the magnitude of the cumulative impact is assessed as **small**, resulting in a **minor adverse** and **not significant** effect for cumulative scenario 3.

23.7 Visual Amenity - Night-time viewpoints

77. The following provides an assessment of cumulative night-time effects on visual receptors based on the identified night-time viewpoint locations.

78. Of the cumulative project listed in **Table 23E-1**, the following four would have aviation lighting and are therefore considered within the assessment of cumulative night-time effects:

- Erebus (consented, included within scenarios 1 - 3);
- White Cross (application, included within scenarios 2 and 3);
- Llŷr 2 (scoping, included in scenario 3); and
- Valorous (scoping, included in scenario 3).

79. The remaining cumulative project (Dragon Energy Park) is scoped out of this part of the assessment as it does not include aviation lighting.

23.7.1. Sensitivity of receptors

80. For the purposes of cumulative assessment sensitivity at night is considered to be the same as that identified within the main night-time assessment, **very high** for Viewpoint N1: Martin's Haven car park and Viewpoint N2: Kete car park, and **high** for Viewpoint N3: Freshwater West Beach.

23.7.2. Viewpoint N1: Martin's Haven car park

Cumulative Scenario 1

81. The aviation lights on the majority of the consented Erebus WTGs would be visible, occupying approximately 9° to the southwest, appearing immediately to the right of the dark outline of Skokholm Island in the view. Erebus would add to existing light sources within the view and result in a slight alteration to the night-time baseline, limited by the intervening distance and low position close to the horizon.

82. The proposed Project would add further light sources into the view south from this location, appearing within a similar part of the view to Erebus, although separated by Skokholm Island with Erebus appearing on the left and the proposed Project on the right. The proposed Project would therefore result in a slight increase in the extent of the view affected, occupying approximately 8° of the view. The impression of potential cumulative change would be somewhat moderated by the separation distance of the WTGs from the viewpoint (approximately 41 km), the low position towards the horizon, small additional extent of the view and the overall small part of the night sky affected.

83. On balance the magnitude of cumulative impact would be **small** and when combined with the very high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

84. When viewed from this location, it is likely that aviation lighting would be operating in the low intensity mode (200 candela (cd)), further reducing the impression of change.

Cumulative Scenario 2

85. White Cross would be screened from this location by intervening topography and therefore potential change for this scenario would be the same as described for scenario 1, above, resulting in **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 3

86. Llŷr 2 would be predominantly screened from this location, with no potential for visibility of the aviation lights. The lights on nine of the proposed Valorous WTGs would potentially be visible from this location, occupying approximately 7° of the view, adding further light sources on the distant horizon in the same part of the views as Erebus. Lights on the remaining WTGs would be screened by Skokholm island. In exceptionally clear conditions Valorous would result in a slight increase in the density of very distant light sources in the view, representing only a marginal change in addition to Erebus.

87. As with scenario 1, the proposed Project would add nine additional lights towards the distant horizon to the right of Skokholm Island in the view, slightly increasing the extent of the view affected. Overall, although the proposed Project would introduce additional light sources into views from this location, the intervening distance, location low on the horizon and very small part of the night sky and view affected would limit the sense of cumulative change. The majority of the night sky would be unaffected such that this would remain a predominantly dark location.

88. On balance the magnitude of cumulative change would be **small** and when combined with the very high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

23.7.3. Viewpoint N2: Kete car park

Cumulative Scenario 1

89. The aviation lights on each of the Erebus WTGs would be visible, occupying approximately 12° to the southwest, and adding to the range of existing light sources within the view. The addition of Erebus would represent a slight alteration to the night-time baseline, limited by the intervening distance and low position close to the horizon.

90. The proposed Project would add further light sources towards the distant horizon to the southwest from this location. The lights would appear in a similar, but slightly separate part of the view to those seen on Erebus, which would be slightly closer to the viewpoint. The proposed Project would therefore result in a slight increase in the extent of the view affected, occupying approximately 10°, a very small part of the 360° views available from this location. The impression of potential cumulative change would be somewhat moderated by the separation distance (approximately 38 km), the low position towards the horizon, small additional extent of the view and the overall very small part of the night sky affected.

91. On balance the magnitude of cumulative impact would be **small** and when combined with the very high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

92. When viewed from this location, it is likely that aviation lighting would be operating in the low intensity mode (200 cd), further reducing the impression of change.

Cumulative Scenario 2

93. There is potential for aviation lighting on up to four of the White Cross turbines to be visible from this viewpoint. However, at a distance of over 60 km they are likely to be a very minor or barely perceptible feature and as such would contribute very little to the impression of a cumulative impact. The addition of the proposed Project into this scenario would be as described for scenario 1, above, resulting in **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 3

94. The lights on each of the up to 8 WTGs of Llŷr 2 and 20 proposed WTGs of Valorous would potentially be visible from this location, occupying approximately 15° and 17° of the view, respectively. These schemes would add further light sources on the distant horizon, with Llŷr 2 in a similar direction to White Cross and Valorous in a similar part of the views as Erebus. At distances of over 36 km (Llŷr 2) and 48 km (Valorous) the lighting is only likely to be perceived in exceptionally clear conditions and would result in an increase in the density and spread of very distant light sources in the view, representing a slight change in addition to Erebus.

95. The proposed Project would add further lights towards the distant horizon to the southwest, occupying approximately 10° of the view and slightly increasing the horizontal extent of the view affected. This would represent a very small part of the view, with the majority of the night sky unaffected. Potential cumulative change would also be moderated by the intervening distance (over 38 km) and the location of the lights low on the horizon.

96. On balance the magnitude of cumulative change would be **small** and when combined with the very high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

23.7.4. Viewpoint N3: Freshwater West Beach

Cumulative Scenario 1

97. The aviation lights on each of the Erebus WTGs would be visible, occupying approximately 11° of the view to the southwest, adding to the range of existing light sources. The addition of Erebus would represent a slight alteration to the night-time baseline, limited by the intervening distance and low position close to the horizon.

98. The proposed Project would add further light sources into the view to the southwest, appearing within a similar although slightly separate part of the view to Erebus. The proposed Project would therefore result in a slight increase in the extent of the view affected, occupying approximately 11°. The proposed Project would also be slightly closer to the viewpoint, although at a distance of over 39 km the lights would be distant features and would be low on the distant horizon. The majority of the night sky would be unaffected and as such the addition of the proposed Project would represent only a slight change.

99. On balance the magnitude of cumulative impact would be **small** and when combined with the high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

100. When viewed from this location, it is likely that aviation lighting would be operating in the low intensity mode (200 cd), further reducing the impression of change.

Cumulative Scenario 2

101. The aviation lighting on White Cross would be screened from this location by the distant horizon and therefore potential cumulative change for this scenario would be the same as

described for scenario 1, above, resulting in **minor adverse** and **not significant** cumulative effect.

Cumulative Scenario 3

102. Lights on each of the up to 8 WTGs of Llŷr 2 would theoretically be visible in the distance to the southwest, adding to the lights on Erebus and from other offshore elements. The lights on Llŷr 2 would occupy up to an additional 17° of the expansive view, appearing broadly similar to although slightly closer than Erebus and slightly increasing the influence of lighting on the night-time view. The majority of aviation lighting on Valorous would be screened from this location by the distant horizon, with only one light potentially visible.

103. The proposed Project would add further light sources into a similar, although slightly separate, part of the view to Erebus and Llŷr 2. The proposed Project would occupy an approximate 11° horizontal extent of the expansive view and would be slightly more distant from the viewpoint than Llŷr 2 and slightly closer than Erebus. At a distance of over 39 km the lights would be distant features and would be low on the distant horizon. The majority of the night sky would be unaffected and as such the addition of the proposed Project would represent only a slight change.

104. On balance the magnitude of cumulative impact would be **small** and when combined with the high sensitivity is considered to result in a **minor adverse** and **not significant** cumulative effect.

105. When viewed from this location, it is likely that aviation lighting would be operating in the low intensity mode (200 cd), further reducing the impression of change.

23.8 References

Scottish Natural Heritage (NatureScot), 2021. Assessing the Cumulative Impact of Onshore Wind Energy Developments