

Table of Contents

1.	Introduction	1-1
1.1	The Applicant.....	1-1
1.2	The Proposed project.....	1-1
1.3	Location of the Proposed Project	1-4
1.4	The Need for the Proposed project.....	1-4
1.5	Environmental Impact Assessment (EIA) Process	1-6
1.6	Legislative Context and Development Guidelines	1-7
1.7	Standards and Guidance Documents	1-8
1.7.1	<i>Overview of the EIAR</i>	<i>1-8</i>
1.7.2	<i>Description of Likely Significant Effects.....</i>	<i>1-11</i>
1.8	Contributors to the EIAR.....	1-13
1.9	Scoping and Consultation.....	1-17
1.9.1	<i>Consultation with An Coimisiún Pleanála</i>	<i>1-17</i>
1.9.2	<i>Consultation with Statutory and Non-Statutory Bodies.....</i>	<i>1-18</i>
1.9.3	<i>Consultation with Local Authorities.....</i>	<i>1-34</i>
1.9.4	<i>Consultation with Telecommunications Providers.....</i>	<i>1-34</i>
1.9.5	<i>Community Consultation</i>	<i>1-34</i>
1.10	Assumptions and Limitations of Assessment	1-36
1.11	References.....	1-37
2.	Description of the Proposed Project	2-1
2.1	Introduction and Overview of the Proposed Project	2-1
2.2	Proposed Project.....	2-3
2.3	Community Benefit.....	2-5
2.4	Land Ownership.....	2-6
2.5	On-site Wind Resource	2-6
2.6	Proposed Project Layout and Components	2-6
2.6.1	<i>Wind Turbine Generator (WTG) Specifications.....</i>	<i>2-9</i>
2.6.2	<i>Hardstanding Area.....</i>	<i>2-13</i>
2.6.3	<i>Turbine foundations.....</i>	<i>2-13</i>
2.6.4	<i>Internal Access Roads and Site Entrance.....</i>	<i>2-14</i>
2.6.5	<i>Works Areas on the Proposed Turbine Delivery Route (TDR)</i>	<i>2-15</i>
2.6.6	<i>On-site Substation</i>	<i>2-16</i>
2.6.7	<i>Battery Energy Storage System (BESS).....</i>	<i>2-17</i>
2.6.8	<i>Proposed Grid Connection Route (GCR)</i>	<i>2-19</i>
2.6.9	<i>Local Electricity Supply.....</i>	<i>2-20</i>
2.6.10	<i>Met Mast.....</i>	<i>2-20</i>

2.6.11	<i>Borrow Pits</i>	2-20
2.6.12	<i>Temporary Construction Compounds</i>	2-20
2.6.13	<i>Forestry</i>	2-21
2.7	Construction Methodology	2-21
2.7.1	<i>Turbine Hardstand, Foundations and Erection</i>	2-21
2.7.2	<i>Wind Farm Site Access tracks</i>	2-23
2.7.3	<i>110 kV Substation, BESS and Electrical Works</i>	2-25
2.7.4	<i>Battery Energy Storage System (BESS)</i>	2-26
2.7.5	<i>Proposed Grid Connection Route</i>	2-26
2.7.6	<i>Borrow Pits</i>	2-30
2.7.7	<i>Permanent Meteorological Mast</i>	2-31
2.7.8	<i>Forestry Felling</i>	2-31
2.7.9	<i>Temporary Construction Compounds</i>	2-32
2.8	Construction Management	2-32
2.8.1	<i>Construction Phase Monitoring and Oversight</i>	2-32
2.8.2	<i>Construction Activities and Timing</i>	2-33
2.8.3	<i>Traffic Management</i>	2-34
2.8.4	<i>Soil and Peat Management</i>	2-35
2.9	Surface Water Management and Site Drainage	2-35
2.9.2	<i>Waste Management</i>	2-38
2.9.3	<i>Wastewater Management</i>	2-39
2.10	Operation	2-39
2.10.1	<i>Operation and Maintenance Facilities</i>	2-40
2.10.2	<i>Operational Phase</i>	2-40
2.11	Decommissioning	2-40
2.12	Assumptions and Limitations of Assessment	2-41
2.13	References	2-42
3.	Consideration of Reasonable Alternatives	3-1
3.1	Introduction	3-1
3.1.1	<i>Statement of Authority</i>	3-2
3.2	Methodology	3-2
3.2.1	<i>Standards and Guidance Documents</i>	3-2
3.3	Site Selection and Alternatives Considered	3-2
3.3.1	<i>Do Nothing / 'Future Baseline' Option/Alternative</i>	3-3
3.3.2	<i>Site Selection</i>	3-5
3.3.3	<i>Alternative Layouts / Designs</i>	3-8
3.3.4	<i>Alternative Technology</i>	3-26
3.3.5	<i>Other Alternatives</i>	3-28
3.3.6	<i>Alternative Mitigation Measures</i>	3-30

3.4	Conclusions	3-31
4.	Planning, Policy and Development Context.....	4-1
4.1	Introduction	4-1
4.2	Statement of Authority	4-2
4.3	Planning History Search of the proposed wind farm site	4-2
4.3.1	<i>Projects Considered for Cumulative Impacts Assessments.....</i>	<i>4-3</i>
4.3.2	<i>Wind Farm Developments within 20km from the proposed Wind Farm Site.....</i>	<i>4-10</i>
4.4	Planning and Development Policy.....	4-11
4.4.1	<i>International and European Policy.....</i>	<i>4-11</i>
4.4.2	<i>National Policy Context.....</i>	<i>4-21</i>
4.4.3	<i>Other Relevant Policies.....</i>	<i>4-32</i>
4.4.4	<i>Regional Policy Context.....</i>	<i>4-36</i>
4.4.5	<i>Local Policy Context.....</i>	<i>4-39</i>
4.5	Conclusion	4-47
4.6	References.....	4-50
5.	Population and Human Health.....	5-1
5.1	Introduction	5-1
5.1.1	<i>Statement of Authority.....</i>	<i>5-2</i>
5.1.2	<i>Legislation, Policy and Guidance</i>	<i>5-2</i>
5.2	Methodology.....	5-8
5.2.1	<i>Consultation.....</i>	<i>5-8</i>
5.2.2	<i>Scope of the Assessment.....</i>	<i>5-8</i>
5.2.3	<i>Study Area</i>	<i>5-9</i>
5.2.4	<i>Population.....</i>	<i>5-11</i>
5.2.5	<i>Human Health</i>	<i>5-11</i>
5.3	Existing Environment.....	5-12
5.3.1	<i>Population.....</i>	<i>5-12</i>
5.3.2	<i>Human Health</i>	<i>5-33</i>
5.4	Assessment of Effects.....	5-45
5.4.1	<i>Do-Nothing Scenario / Future Baseline</i>	<i>5-45</i>
5.4.2	<i>Population.....</i>	<i>5-46</i>
5.4.3	<i>Human Health</i>	<i>5-53</i>
5.5	Mitigation Measures	5-62
5.5.1	<i>Embedded Mitigation</i>	<i>5-62</i>
5.5.2	<i>Construction Phase.....</i>	<i>5-62</i>
5.5.3	<i>Operational Phase</i>	<i>5-63</i>
5.5.4	<i>Decommissioning Phase.....</i>	<i>5-63</i>
5.6	Residual Effects.....	5-65

5.6.1	<i>Construction Phase</i>	5-65
5.6.2	<i>Operational Phase</i>	5-65
5.6.3	<i>Decommissioning Phase</i>	5-66
5.7	Cumulative Effects.....	5-66
5.7.1	<i>Population</i>	5-66
5.7.2	<i>Human Health</i>	5-67
5.7.3	<i>Cumulative Effects Summary</i>	5-68
5.8	Conclusion.....	5-69
5.9	References.....	5-70
6.	BIODIVERSITY	6-1
6.1	Introduction.....	6-1
6.1.1	<i>Statement of Authority</i>	6-1
6.1.2	<i>Site Description</i>	6-4
6.1.3	<i>Details of the Proposed Project</i>	6-6
6.2	Methodology.....	6-7
6.2.1	<i>Assessment Approach</i>	6-7
6.2.2	<i>Legislation, Plans, Policies and Guidance</i>	6-8
6.2.3	<i>Consultations</i>	6-9
6.2.4	<i>Zone of Influence and Study Area</i>	6-12
6.2.5	<i>Desk Study</i>	6-18
6.2.6	<i>Field Surveys</i>	6-19
6.2.7	<i>Survey Limitation</i>	6-30
6.3	Baseline Evaluation Criteria.....	6-30
6.4	Existing Environment.....	6-34
6.4.1	<i>Desktop Assessment Results</i>	6-35
6.4.2	<i>Field Survey Results</i>	6-59
6.4.3	<i>Flora</i>	6-77
6.4.4	<i>Fauna</i>	6-82
6.5	Summary of Ecological Evaluation.....	6-95
6.6	Assessment of Effects.....	6-101
6.6.1	<i>Do Nothing - Future Baseline</i>	6-101
6.6.2	<i>Assessment of Impacts on Designated Sites</i>	6-101
6.6.3	<i>Construction Phase Impacts</i>	6-102
6.6.4	<i>Operational Phase Impacts</i>	6-123
6.6.5	<i>Decommissioning Phase Impacts</i>	6-127
6.7	Mitigation Measures.....	6-127
6.7.1	<i>Construction Phase Mitigation Measures</i>	6-127
6.7.2	<i>Operational Phase Mitigation Measures</i>	6-157
6.7.3	<i>Decommissioning Phase Mitigation Measures</i>	6-158

6.8	Residual Effects.....	6-160
6.8.1	<i>Habitats and Flora.....</i>	<i>6-160</i>
6.8.2	<i>Bats.....</i>	<i>6-160</i>
6.8.3	<i>Fauna.....</i>	<i>6-160</i>
6.8.4	<i>Aquatic Ecology.....</i>	<i>6-160</i>
6.9	Cumulative Effects.....	6-166
6.9.1	<i>Projects.....</i>	<i>6-166</i>
6.9.2	<i>Other Smaller Developments.....</i>	<i>6-169</i>
6.9.3	<i>Plans.....</i>	<i>6-169</i>
6.10	Enhancement Measures	6-170
6.11	Conclusion	6-171
6.12	References.....	6-172
7.	Ornithology.....	7-1
7.1	Introduction	7-1
7.1.1	<i>Statement of Authority.....</i>	<i>7-1</i>
7.1.2	<i>Site Location.....</i>	<i>7-3</i>
7.1.3	<i>Overview of the Proposed Project.....</i>	<i>7-5</i>
7.2	Methodology.....	7-7
7.2.1	<i>Assessment Approach.....</i>	<i>7-7</i>
7.2.2	<i>Legislation, Plans, Policies and Guidance.....</i>	<i>7-7</i>
7.2.3	<i>Consultations.....</i>	<i>7-9</i>
7.2.4	<i>Zone of Influence.....</i>	<i>7-10</i>
7.2.5	<i>Identification of Target Species and Key Ornithological Receptors.....</i>	<i>7-15</i>
7.2.6	<i>Desk Study.....</i>	<i>7-15</i>
7.2.7	<i>Field Surveys.....</i>	<i>7-16</i>
7.2.8	<i>Survey Limitation.....</i>	<i>7-21</i>
7.3	Ornithological Likely Significant Effects Assessment	7-28
7.3.1	<i>Baseline Evaluation Criteria.....</i>	<i>7-28</i>
7.3.2	<i>Potential Impact Sources Affecting Bird Receptors.....</i>	<i>7-32</i>
7.3.3	<i>Evaluating Sensitivity.....</i>	<i>7-33</i>
7.3.4	<i>Determining the Magnitude of the Possible Impact.....</i>	<i>7-35</i>
7.3.5	<i>Assessment of the Effect Significance.....</i>	<i>7-35</i>
7.3.6	<i>Interpretation of Significance Levels.....</i>	<i>7-36</i>
7.4	Existing Environment.....	7-37
7.4.1	<i>Desktop Assessment Results.....</i>	<i>7-37</i>
7.4.2	<i>Field Survey Results.....</i>	<i>7-59</i>
7.5	Summary of Ecological Evaluation	7-83
7.6	Impact Assessment.....	7-94
7.6.1	<i>Do Nothing/Future Baseline Effects.....</i>	<i>7-94</i>

7.6.2	<i>Assessment of Impacts on Designated Sites</i>	7-95
7.6.3	<i>Construction Phase Impacts</i>	7-96
7.6.4	<i>Operational Phase Impacts</i>	7-128
7.6.5	<i>Decommissioning Phase Impacts</i>	7-159
7.7	Mitigation Measures	7-159
7.7.1	<i>Construction Phase Mitigation Measures</i>	7-159
7.7.2	<i>Operational Phase Mitigation Measures</i>	7-164
7.7.3	<i>Decommissioning Phase Mitigation Measures</i>	7-164
7.8	Bird Monitoring Programme	7-164
7.8.1	<i>Post-Construction Monitoring: Long-Term Environmental Monitoring</i>	7-165
7.8.2	<i>Reporting and Adaptive Management</i>	7-166
7.9	Enhancement Measures	7-166
7.10	Residual Effects.....	7-166
7.11	Impact Assessment Summary	7-167
7.12	Cumulative Effects.....	7-194
7.12.1	<i>Projects</i>	7-194
7.13	References.....	7-200
8.	LAND, SOILS AND GEOLOGY	8-1
8.1	Introduction.....	8-1
8.1.1	<i>Statement of Authority</i>	8-1
8.2	Methodology	8-2
8.2.1	<i>Impact Assessment Methodology</i>	8-2
8.2.2	<i>Legislative and Guidance</i>	8-3
8.2.3	<i>Desk Review</i>	8-3
8.2.4	<i>Field Surveys</i>	8-4
8.2.5	<i>Overview of Impact Assessment Process</i>	8-5
8.2.6	<i>Consultation</i>	8-8
8.2.7	<i>Assumptions and limitations</i>	8-8
8.3	Receiving Environment	8-9
8.3.1	<i>Desk Study</i>	8-11
8.3.2	<i>Field Surveys</i>	8-27
8.4	Likely Significant Effects.....	8-31
8.4.1	<i>Future Baseline</i>	8-31
8.4.2	<i>Likely Significant Effects – Construction Phase</i>	8-31
8.4.3	<i>Likely Significant Effects – Operational Phase</i>	8-36
8.4.4	<i>Likely Significant Effects – Decommissioning</i>	8-38
8.5	Mitigation Measures.....	8-42

8.5.1	<i>Embedded Mitigation</i>	8-42
8.5.2	<i>Construction Phase</i>	8-43
8.5.3	<i>Operational Phase</i>	8-46
8.5.4	<i>Decommissioning Phase</i>	8-47
8.6	Residual Effects.....	8-47
8.7	Cumulative Effects	8-48
8.8	Conclusion	8-50
9.	HYDROLOGY and HYDROGEOLOGY	9-1
9.1	Introduction	9-1
9.1.1	<i>Statement of Authority</i>	9-1
9.2	Methodology.....	9-1
9.2.1	<i>Legislation and Guidance Review</i>	9-2
9.2.2	<i>Consultation</i>	9-4
9.2.3	<i>Desk Study</i>	9-4
9.2.4	<i>Field Surveys</i>	9-5
9.2.5	<i>Assessment Methodology</i>	9-5
9.3	Receiving Environment	9-12
9.3.1	<i>Site Topography and Geomorphology</i>	9-12
9.3.2	<i>Surface Water / Hydrology</i>	9-13
9.3.3	<i>Groundwater / Hydrogeology</i>	9-25
9.3.4	<i>Designated Sites</i>	9-34
9.3.5	<i>Receptor Sensitivity</i>	9-35
9.4	Assessment of Effects.....	9-37
9.4.1	<i>Introduction</i>	9-37
9.4.2	<i>Embedded Measures</i>	9-37
9.4.3	<i>Do-Nothing / Future Baseline</i>	9-39
9.4.4	<i>Assessment of Effects – Construction</i>	9-39
9.4.5	<i>Assessment of Effects – Operation</i>	9-44
9.4.6	<i>Assessment of Effects – Decommissioning</i>	9-46
9.4.7	<i>Summary of Potential Effects</i>	9-47
9.5	Mitigation Measures	9-49
9.5.1	<i>Mitigation Measures – Construction Phase</i>	9-49
9.5.2	<i>Mitigation Measures – Operational Phase</i>	9-53
9.5.3	<i>Mitigation Measures - Decommissioning</i>	9-54
9.6	Residual Effects.....	9-55
9.7	Cumulative Effects.....	9-56
9.7.1	<i>Existing Projects</i>	9-56
9.7.2	<i>Proposed/Granted Projects</i>	9-57
9.7.3	<i>Cumulative Summary</i>	9-58

9.8	Conclusion	9-58
9.9	References.....	9-59
9.10	Glossary.....	9-61
10.	Air Quality.....	10-1
10.1	Introduction	10-1
10.2	Statement of Authority	10-1
10.3	Methodology.....	10-2
10.3.1	<i>Construction Phase.....</i>	<i>10-2</i>
10.3.2	<i>Operational Phase.....</i>	<i>10-6</i>
10.3.3	<i>Criteria for Rating of Impacts.....</i>	<i>10-7</i>
10.4	Difficulties Encountered.....	10-10
10.5	Existing Environment.....	10-10
10.5.1	<i>Meteorological Data.....</i>	<i>10-10</i>
10.5.2	<i>Sensitivity of the Receiving Environment.....</i>	<i>10-14</i>
10.6	Assessment of Effects.....	10-18
10.6.1	<i>Do Nothing Scenario / Future Baseline.....</i>	<i>10-18</i>
10.6.2	<i>Construction Phase.....</i>	<i>10-18</i>
10.6.3	<i>Operational Phase.....</i>	<i>10-20</i>
10.6.4	<i>Decommissioning Phase.....</i>	<i>10-22</i>
10.7	Mitigation Measures	10-22
10.7.1	<i>Embedded Mitigation.....</i>	<i>10-22</i>
10.7.2	<i>Construction Phase.....</i>	<i>10-22</i>
10.7.3	<i>Operational Phase.....</i>	<i>10-25</i>
10.7.4	<i>Decommissioning Phase.....</i>	<i>10-26</i>
10.8	Residual Effects.....	10-26
10.8.1	<i>Construction Phase.....</i>	<i>10-26</i>
10.8.2	<i>Operational Phase.....</i>	<i>10-27</i>
10.8.3	<i>Decommissioning Phase.....</i>	<i>10-27</i>
10.9	Cumulative Effects.....	10-27
10.10	Conclusion	10-28
10.11	References.....	10-30
11.	NOISE AND VIBRATION.....	11-1
11.1	Introduction	11-1
11.1.1	<i>Statement of Authority.....</i>	<i>11-1</i>
11.1.2	<i>Fundamentals of Acoustics.....</i>	<i>11-2</i>
11.2	Consultation.....	11-3
11.3	Legislation, Policy and Guidance.....	11-3

11.3.1	<i>Environmental Protection Agency (EPA) Description of Effects</i>	11-5
11.3.2	<i>Guidance Documents and Assessment Criteria</i>	11-5
11.4	Assessment methodology	11-24
11.4.1	<i>Study Area</i>	11-24
11.4.2	<i>Background Noise Survey</i>	11-25
11.4.3	<i>Analysis of Survey Data</i>	11-26
11.4.4	<i>Construction Noise Calculations</i>	11-27
11.4.5	<i>Operational Noise Calculations</i>	11-28
11.5	Existing Environment.....	11-31
11.5.1	<i>Summary of Derived Background Noise Levels</i>	11-31
11.5.2	<i>Wind Turbine Noise Limits</i>	11-32
11.6	Assessment of Effects.....	11-35
11.6.1	<i>Do-Nothing Scenario / Future Baseline</i>	11-35
11.6.2	<i>Construction Phase</i>	11-35
11.6.3	<i>Decommissioning Phase</i>	11-47
11.6.4	<i>Operational Phase</i>	11-48
11.7	Mitigation Measures	11-55
11.7.1	<i>Construction Phase Mitigation</i>	11-55
11.7.2	<i>Operational Phase</i>	11-55
11.7.3	<i>Monitoring</i>	11-57
11.8	Residual Effects.....	11-57
11.8.1	<i>Construction Phase</i>	11-57
11.8.2	<i>Operational Phase</i>	11-58
11.9	Cumulative Effects.....	11-59
11.9.1	<i>Wind Turbine Noise</i>	11-59
11.9.2	<i>Noise from Fixed Plant Operation</i>	11-59
11.9.3	<i>Construction and Decommissioning</i>	11-60
11.10	Difficulties Encountered During Preparation Of This Chapter	11-60
11.11	Summary	11-60
11.112	References	11-62
12.	LVIA Introduction	12-1
12.1.1	<i>Background and Objectives</i>	12-1
12.1.2	<i>Assessment Structure</i>	12-2
12.1.3	<i>Statement of Authority</i>	12-2
12.1.4	<i>Description of the Proposed Project</i>	12-2
12.1.5	<i>Definition of Study Area</i>	12-3
12.2	Assessment Methodology and Criteria	12-4
12.2.2	<i>Assessment Criteria for Landscape Effects</i>	12-6
12.2.3	<i>Assessment Criteria for Visual Effect</i>	12-10

12.2.4	<i>Level of Effects</i>	12-14
12.2.5	<i>Assessment Criteria for Cumulative Effects</i>	12-17
12.2.6	<i>Assumption and Limitations</i>	12-19
12.2.7	<i>Visual Material and Photography</i>	12-19
12.3	Existing Environment.....	12-21
12.3.1	<i>Landscape Baseline</i>	12-21
12.3.2	<i>Landscape Policy Context and Designations</i>	12-24
12.3.3	<i>Offaly County Development Plan 2021 - 2027</i>	12-24
12.3.4	<i>Tipperary County Development Plan 2022 - 2028</i>	12-27
12.3.5	<i>Laois County Development Plan</i>	12-30
12.3.6	<i>Galway County Development Plan</i>	12-31
12.3.7	<i>Visual Baseline</i>	12-31
12.3.8	<i>Cumulative Baseline</i>	12-43
12.4	Assessment of Effects.....	12-43
12.4.1	<i>Do nothing Scenario / Future Baseline</i>	12-43
12.4.2	<i>Landscape Effects</i>	12-43
12.4.3	<i>Visual Effects</i>	12-48
12.5	Mitigation Measures	12-54
12.5.1	<i>Construction Phase Mitigation</i>	12-54
12.5.2	<i>Operational Phase Mitigation</i>	12-54
12.6	Residual Effects.....	12-56
12.6.1	<i>Turbine Range Assessment</i>	12-56
12.7	Cumulative Effects.....	12-57
12.8	Statement of Significance.....	12-59
12.9	Summary of Significant Effects.....	12-59
12.10	References.....	12-60
13.0	Archaeology, Archaetectoral and Cultural Heritage	13-1
13.1	Introduction	13-1
13.1.1	<i>Statement of Authority</i>	13-2
13.1.2	<i>Definitions</i>	13-2
13.1.3	<i>Consultation</i>	13-3
13.1.4	<i>Guidance and Legislation</i>	13-3
13.2	Methodology.....	13-4
13.2.1	<i>Study Area Definitions</i>	13-4
13.2.2	<i>Desktop Assessment</i>	13-5
13.2.3	<i>Field Inspection</i>	13-9
13.2.4	<i>Impact Assessment Methodology</i>	13-9
13.2.5	<i>Sensitivity of Receptor</i>	13-10
13.2.6	<i>Magnitude of Impact</i>	13-10
13.2.7	<i>Significance of Effects</i>	13-11

13.2.8	<i>Methodology for Visual Impact Assessment</i>	13-12
13.3	Existing Environment.....	13-12
13.3.1	<i>Archaeological and Historical Background</i>	13-12
13.3.2	<i>Summary of Previous Archaeological Fieldwork</i>	13-23
13.3.3	<i>Unesco Whip Tentative List</i>	13-24
13.3.4	<i>Cartographic Analysis</i>	13-25
13.3.5	<i>County Development Plan</i>	13-26
13.3.6	<i>National Inventory of Architectural Heritage</i>	13-37
13.3.7	<i>Topographical files of the National Museum of Ireland</i>	13-40
13.3.8	<i>Aerial Photographic & LIDAR Analysis</i>	13-41
13.3.9	<i>Cultural Heritage</i>	13-41
13.3.10	<i>Field Inspection</i>	13-46
13.4	Assessment of Effects.....	13-60
13.4.1	<i>Do-nothing scenario / Future Baseline</i>	13-60
13.4.2	<i>Construction Phase</i>	13-60
13.4.3	<i>Operational Phase</i>	13-62
13.4.4	<i>Decommissioning Phase</i>	13-62
13.5	Mitigation Measures	13-63
13.5.1	<i>Construction Phase</i>	13-63
13.5.2	<i>Operational Phase</i>	13-64
13.5.3	<i>Decommissioning Phase</i>	13-64
13.6	Residual Effects.....	13-64
13.7	Cumulative Effects.....	13-64
13.8	Conclusion	13-65
13.9	References.....	13-66
14.	TRAFFIC & TRANSPORTATION	14-1
14.1	Introduction	14-1
14.1.1	<i>Statement of Authority</i>	14-1
14.1.2	<i>Site Location and Use</i>	14-1
14.1.3	<i>Proposed Project</i>	14-4
14.1.4	<i>Relevant Standards</i>	14-4
14.1.5	<i>EIA Scoping</i>	14-5
14.2	Assessment Methodology.....	14-5
14.2.1	<i>Traffic and Transport Assessment Objectives</i>	14-5
14.2.2	<i>Assessment Criteria</i>	14-6
14.2.3	<i>Assessment Junctions</i>	14-6
14.2.4	<i>EPA Description of Effects</i>	14-9
14.2.5	<i>Haul Routes Classification</i>	14-9
14.3	Existing Environment.....	14-9
14.3.2	<i>Existing Road Network</i>	14-9

14.3.3	<i>Existing Traffic Volumes in Local Road Network</i>	14-12
14.4	Proposed Access Arrangements.....	14-12
14.4.1	<i>Accesses</i>	14-12
14.5	Construction Programme and Haul Routes.....	14-15
14.5.1	<i>Construction Programme</i>	14-15
14.5.2	<i>Construction Hours</i>	14-15
14.5.3	<i>Construction Haul Routes</i>	14-15
14.5.4	<i>Proposed Grid Connection Route</i>	14-18
14.5.5	<i>Abnormal Indivisible Load (AIL) Haul Route</i>	14-19
14.6	Proposed Project Trip Generation.....	14-22
14.6.1	<i>Construction Trip Generation-HV</i>	14-22
14.6.2	<i>Construction Trip Generation-Staff (LV)</i>	14-26
14.6.3	<i>Operational Traffic</i>	14-26
14.6.4	<i>Decommissioning Traffic</i>	14-26
14.7	Traffic Impact Assessment.....	14-26
14.7.1	<i>Assessment Scope</i>	14-26
14.7.2	<i>Assessment Years and Time Periods</i>	14-27
14.7.3	<i>Assessment Scenarios</i>	14-27
14.7.4	<i>Traffic Assessment Criteria</i>	14-27
14.7.5	<i>Committed Development Traffic</i>	14-28
14.7.6	<i>Forecast Background Traffic Flows</i>	14-28
14.7.7	<i>Do-Nothing Traffic Flows</i>	14-28
14.7.8	<i>Summary Peak Construction Trip Generation</i>	14-29
14.7.9	<i>Trip Generation Distribution</i>	14-29
14.7.10	<i>Do-Something Traffic Flows and Traffic Percentage Increase</i>	14-30
14.8	Assessment of Effects.....	14-30
14.8.1	<i>Do Nothing / Future Baseline Scenario</i>	14-30
14.8.2	<i>Likely Significant Effects – Construction Phase</i>	14-30
14.8.3	<i>Likely Significant Effects – Operational Phase</i>	14-37
14.8.4	<i>Likely Significant Effects – Decommissioning Phase</i>	14-38
14.9	Mitigation Measures.....	14-39
14.9.1	<i>Construction Phase</i>	14-40
14.9.2	<i>Operational Phase</i>	14-44
14.9.3	<i>Decommissioning Phase</i>	14-45
14.10	Residual Effects.....	14-45
14.10.1	<i>Construction Phase</i>	14-45
14.10.2	<i>Operational Phase</i>	14-46
14.10.3	<i>Decommissioning Phase</i>	14-46
14.10.4	<i>Description of Effects-Residual</i>	14-46
14.11	Cumulative Effects.....	14-46
14.11.1	<i>Construction Phase - Cumulative Developments</i>	14-46

14.11.2	<i>Operational Phase</i>	14-48
14.11.3	<i>Decommissioning Phase</i>	14-48
14.11.4	<i>Description of Effects-Cumulative Impact</i>	14-48
14.12	Road Safety Audit	14-49
14.13	Conculsion	14-49
14.14	References	14-51
15.	Material Assets, Telecommunications & Aviation	15-1
15.1	Introduction	15-1
15.1.1	<i>Statement of Authority</i>	15-1
15.1.2	<i>Policy and Guidance</i>	15-2
15.2	Methodology	15-2
15.2.1	<i>Consultation</i>	15-2
15.2.2	<i>Scope of the Assessment</i>	15-3
15.2.3	<i>Study Area</i>	15-4
15.3	Existing Environment	15-5
15.3.1	<i>Telecommunications Links</i>	15-5
15.3.2	<i>Aviation</i>	15-7
15.3.3	<i>Other Material Assets</i>	15-8
15.4	Assessment of Effects	15-10
15.4.1	<i>Do Nothing Scenario / Future Baseline</i>	15-10
15.4.2	<i>Construction Phase</i>	15-10
15.4.3	<i>Operational Phase</i>	15-14
15.4.4	<i>Decommissioning Phase</i>	15-16
15.5	Mitigation Measures	15-16
15.5.1	<i>Embedded Mitigation</i>	15-16
15.5.2	<i>Construction Phase</i>	15-17
15.5.3	<i>Operational Phase</i>	15-19
15.5.4	<i>Decommissioning Phase</i>	15-21
15.6	Residual Effects	15-21
15.6.1	<i>Construction Phase</i>	15-21
15.6.2	<i>Operational Phase</i>	15-21
15.6.3	<i>Decommissioning Phase</i>	15-22
15.7	Cumulative Effects	15-22
15.8	Conclusion/Summary	15-23
15.9	References	15-24
16.	Shadow Flicker	16-1
16.1	Introduction	16-1
16.1.1	<i>Proposed Wind Farm</i>	16-1

16.1.2	<i>Statement of Authority</i>	16-1
16.2	Methodology.....	16-2
16.2.1	<i>Conditions Required for Shadow Flicker</i>	16-2
16.2.2	<i>Guidance</i>	16-3
16.2.3	<i>Assessment Study Area</i>	16-6
16.2.4	<i>Shadow Flicker Modelling</i>	16-7
16.2.5	<i>Cumulative Assessment</i>	16-9
16.3	Existing Environment.....	16-9
16.3.1	<i>Identification of Sensitive Receptors</i>	16-9
16.4	Assessment of Effects.....	16-11
16.4.1	<i>Do-Nothing Effect / Future Baseline Scenario</i>	16-11
16.4.2	<i>Construction Phase</i>	16-11
16.4.3	<i>Operational Phase</i>	16-11
16.4.4	<i>Decommissioning Phase</i>	16-23
16.5	Mitigation Measures	16-23
16.5.1	<i>Turbine Shutdown</i>	16-23
16.5.2	<i>Screening Measures</i>	16-24
16.6	Residual Effects.....	16-25
16.7	Cumulative Effect.....	16-25
16.8	Conclusion	16-25
16.9	References.....	16-26
17.	Climate	17-1
17.1	Introduction	17-1
17.2	Statement of Authority	17-1
17.3	Legislation, Policy and Guidance.....	17-2
17.3.1	<i>International Legislation & Policy</i>	17-2
17.3.2	<i>National Legislation</i>	17-4
17.3.3	<i>Policy</i>	17-6
17.4	Methods.....	17-10
17.4.1	<i>Greenhouse Gas Assessment</i>	17-10
17.4.2	<i>Climate Change Risk Assessment</i>	17-14
17.5	Difficulties Encountered.....	17-16
17.6	Existing Environment.....	17-16
17.6.1	<i>Current GHGA Baseline</i>	17-17
17.6.2	<i>Future GHGA Baseline</i>	17-18
17.6.3	<i>Current CCRA Baseline</i>	17-18
17.6.4	<i>Future CCRA Baseline</i>	17-20
17.7	Assessment of Effects.....	17-25

17.7.1	<i>Do Nothing Scenario / Future Baseline</i>	17-25
17.7.2	<i>GHG Assessment</i>	17-25
17.7.3	<i>Climate Change Risk Assessment</i>	17-30
17.8	Mitigation Measures.....	17-34
17.8.1	<i>GHGA</i>	17-34
17.8.2	<i>CCRA</i>	17-35
17.9	Residual Effects.....	17-36
17.10	Cumulative Effects.....	17-37
17.11	Conclusion.....	17-38
17.11.1	<i>Greenhouse Gas Assessment</i>	17-38
17.11.2	<i>Climate Change Risk Assessment</i>	17-39
17.11.3	<i>Compliance with Section 15 of the Climate Action and Low Carbon Development Act 2015</i>	17-39
17.12	References.....	17-41
18.	Major Accidents and Disasters	18-1
18.1	Introduction.....	18-1
18.1.1	<i>Statement of Authority</i>	18-2
18.1.2	<i>Legislation, Policy and Guidance</i>	18-2
18.2	Assessment Methodology.....	18-4
18.2.1	<i>Stage 1: Screening</i>	18-5
18.2.2	<i>Stage 2: Classification</i>	18-5
18.2.3	<i>Stage 3: Assessment</i>	18-7
18.2.4	<i>Study Area</i>	18-8
18.3	Existing Environment.....	18-8
18.3.1	<i>Meteorological</i>	18-8
18.3.2	<i>Hydrology</i>	18-10
18.3.3	<i>Land, Soils and Geology</i>	18-11
18.3.4	<i>COMAH (Seveso) establishments</i>	18-12
18.3.5	<i>Major Infrastructure and Built Services</i>	18-12
18.4	Assessment of Risk.....	18-13
18.4.1	<i>Do-Nothing / Future Baseline</i>	18-13
18.4.2	<i>Stage 1: Screening</i>	18-13
18.4.3	<i>Stage 2: Classification and Assessment</i>	18-18
18.5	Residual Assessment.....	18-22
18.6	Cumulative Assessment.....	18-22
18.7	Conclusion.....	18-24
18.8	References.....	18-25

19.	Interactions	19-1
19.1	Statement of Authority	19-1
19.2	Discussion of Interactions.....	19-3
19.2.1	<i>Population and Human Health</i>	19-3
19.2.2	<i>Biodiversity</i>	19-7
19.2.3	<i>Ornithology</i>	19-10
19.2.4	<i>Land, Soils and Geology</i>	19-11
19.2.5	<i>Hydrology and Hydrogeology</i>	19-12
19.2.6	<i>Shadow Flicker</i>	19-12
19.2.7	<i>Material Assets</i>	19-12
19.2.8	<i>Noise and Vibration</i>	19-13
19.2.9	<i>Landscape and Visual</i>	19-13
19.2.10	<i>Air Quality and Climate</i>	19-14
19.2.11	<i>Archaeology and Cultural Heritage</i>	19-15
19.2.12	<i>Traffic and Transportation</i>	19-15
19.3	Positive Interaction of Elements.....	19-15
19.4	Major Accidents and Natural Disasters.....	19-16
19.5	Conclusion	19-16
20.	Schedule of Mitigation.....	20-1
20.1	Schedule of EIAR Mitigation Measures	20-1

List of Tables

Table 1-1 Description of Effects (extract from EPA Guidelines (May 2022))	1-12
Table 1-2 List of Contributors to the EIAR.....	1-13
Table 1-3 List of Competent Experts Contributing to the EIAR.....	1-15
Table 1-4 Consultees and Response Record.....	1-19
Table 2-1 Proposed Project WTG Locations (ITM Co-ordinates)	2-4
Table 2-2 Proposed WTG Design Flexibility Parameters	2-9
Table 2-3 Proposed GCR watercourse crossing details	2-19
Table 2-4 Site Compounds.....	2-21
Table 2-5 Proposed GCR HDD crossing details – Railway bridge and Cattle underpass	2-30
Table 2-6 Surface water mitigation matrix	2-37
Table 3-1 Residual Effects of the proposed project in a Future Baseline scenario	3-4
Table 3-2 Environmental Considerations.....	3-9
Table 3-3 Layout Design Changes.....	3-14
Table 3-4 Table of environmental effects relative to proposed design layout of 11 no. turbines	3-14
Table 3-5 Comparison of environmental effects relative to proposed TDR options	3-16
Table 3-6 Table of environmental effects relative to proposed site entrance	3-20
Table 3-7 Table of environmental effects relative to proposed grid connection option	3-22
Table 3-8 Table of environmental effects of alternative technology relative to proposed wind farm technology.....	3-27
Table 4-1 List of Select Granted/Undecided Applications within 10 km from the proposed wind farm site between January 2015 and February 2026.....	4-4
Table 4-2: Pending and Determined Wind Farm Planning Applications 20km from the Site.....	4-10
Table 4-3 CAP25 Measures to Accelerate Renewable Electricity Generation.....	4-28
Table 5-1 Land Cover of the Proposed wind farm site as per CORINE 2018 (EPA Maps, 2023)	5-13
Table 5-2 Population Trends 2011 – 2022 (Proposed Project Study Area).....	5-15
Table 5-3 Population density of Electoral Divisions (EDs) within the study area (CSO Census 2022).....	5-16
Table 5-4 Summary of Receptors Within 2 km of Proposed Wind Farm Site Boundary	5-17
Table 5-5 Labour Force Survey (Q1, 2025).....	5-25
Table 5-6 Live Register Figures (June 2024 – June 2025).....	5-25

Table 5-7 Ireland, Ireland's Hidden Heartlands and Ireland's Ancient East Key Tourism Statistics 2023.....	5-27
Table 6-1: Summary of Key Responses from Consultees.....	6-10
Table 6-2: Zone of Influence Informing the Ecological Assessment.....	6-14
Table 6-3: Overview of Ecological Field Surveys Undertaken at the Proposed wind farm site .	6-19
Table 6-4: Aquatic Ecological Survey Site Locations on Watercourses Within the Study Area of the Proposed Project	6-29
Table 6-5: Ecological Valuation Criteria for Features / Receptors (NRA 2009)	6-31
Table 6-6: Description of Effects	6-33
Table 6-7: Designated Conservation Sites Potentially Connected with the Proposed Project .	6-37
Table 6-8: Records of Protected Fauna and Flora Species Under the Habitats Directive (HD) and Wildlife Acts (WA)	6-53
Table 6-9: Invasive Alien Species listed on Third Schedule (Regulation S.I. 477 of 2011) as amended.....	6-55
Table 6-10: Results of the Bat Landscape Suitability	6-57
Table 6-11: Alpine Newt eDNA Results	6-88
Table 6-12 Biological Water Quality and Interpretations at Study Sites on Watercourses Draining the Proposed Project	6-90
Table 6-13 Results of Fish Species and Quantity Recorded at Each Site During Electrofishing Surveys.....	6-91
Table 6-14: Evaluation of Key Ecological Receptors for Protected Sites.....	6-95
Table 6-15: Evaluation of Key Ecological Receptors for Habitats	6-96
Table 6-16: Evaluation of Key Ecological Receptors for Fauna	6-98
Table 6-17: Description of Direct Effects of Habitat Loss as a Result of the Construction Phase	6-103
Table 6-18: Approximate Loss of Habitat Area Arising From the Proposed Project	6-106
Table 6-19: Approximate Loss of Habitat Length Arising from the Proposed Project	6-107
Table 6-20: Description of Indirect Effects of Dust Deposition on Habitats as a Result of the Construction Phase	6-109
Table 6-21: Summary of Predicted Effects on Aquatic Ecology	6-122
Table 6-22: Proposed Mitigation Measures for Habitats and Flora.....	6-133
Table 6-23: Proposed Mitigation Measures for Lepidoptera Species	6-149
Table 6-24: Proposed Mitigation Measures for Aquatic Species	6-155

Table 6-25: Summary of Residual Effects of KER Following the Implementation of Mitigation Measures.....	6-161
Table 7-1: Summary of Key Responses From Consultees.....	7-9
Table 7-2: Zone of Influence Informing the Ecological Assessment.....	7-13
Table 7-3: Overview of Ornithological and Ecological Field Surveys Undertaken at the Proposed Project Site.....	7-16
Table 7-4: Examples of Ecological Valuation Criteria	7-28
Table 7-5: Description of Effects	7-30
Table 7-6: Determination of Sensitivity	7-34
Table 7-7: Determination of Magnitude of Impact	7-35
Table 7-8: Significance Matrix: Combining Magnitude and Sensitivity to Assess Significance ..	7-36
Table 7-9: Internationally Designated Conservation Sites Potentially Connected with the Proposed project in relation to ornithology.	7-38
Table 7-10: Nationally Designated Conservation Sites Potentially Connected with the Proposed project in relation to ornithology	7-43
Table 7-11: Previous Records of Ornithological Species recorded within the 10 km Grid Squares (S09, N00)	7-55
Table 7-12: Full target species list of birds recorded within the Ballincor study area during the breeding and wintering surveys between 2020 and 2026.	7-59
Table 7-13: Full list of non-target birds recorded within the Ballincor study area during the breeding and wintering surveys between 2020 and 2024.	7-64
Table 7-14: Evaluation of Key Ornithological Receptors.....	7-84
Table 7-15: Assessing the Potential Effects of Habitat Loss During the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project.....	7-97
Table 7-16: Assessing the Potential Effects of Habitat Degradation, due to surface water quality, air quality and the spread or introduction of invasive alien species during the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project.	7-107
Table 7-17: Assessing the Potential Effects of Disturbance/Displacement During the Construction Phase on Key Ornithological Receptors as a Result of the Proposed project.	7-117
Table 7-18: Assessing the Potential Effects of Disturbance/Displacement and Barrier Effects During the Operational Phase on Key Ornithological Receptors as a Result of the Proposed project.	7-129
Table 7-19: Predicted collision risk results for KORs (Appendix 7-2).....	7-146
Table 7-20: Potential increase in annual mortality rates of KORs due to the predicted collision risk from the Ballincor Wind Farm. The uncertainty factors indicate the degree by which the	

predicted collision risk should be increased or decreased to indicate the range of uncertainty around the estimate.	7-148
Table 7-21: Assessing the Potential Effects of Collision Risk Effects During the Operational Phase on Key Ornithological Receptors as a Result of the Proposed project.....	7-150
Table 7-22: Summary of potential impacts and residual effects.....	7-168
Table 7-23: List of Select Granted/Undecided Applications within 20 km from the proposed wind farm site.	7-194
Table 8-1 : Criteria to Determine the Magnitude of Impact and Examples.....	8-5
Table 8-2 : Criteria to Determine the Magnitude of Impact and Examples.....	8-6
Table 8-3 Impact assessment matrix for determination of significance of effect	8-7
Table 8-4 Turbine Locations-Soil and subsoil descriptions	8-29
Table 8-5: Volume Summary	8-34
Table 8-6: Summary of likely effects of proposed project during the construction phase.....	8-40
Table 8-7: Summary of likely effects of proposed project during the operational phase	8-40
Table 8-8: Summary of likely effects of proposed project during the decommissioning phase.	8-41
Table 8-9: Summary of post-mitigation effects on the receiving environment during the construction phase	8-47
Table 8-10: Summary of post-mitigation effects on the receiving environment during the operational phase.....	8-48
Table 8-11: Summary of post-mitigation effects on the receiving environment during the decommissioning phase	8-48
Table 9-1 Sensitivity of Hydrological Receptor	9-8
Table 9-2 Sensitivity of Hydrogeology Receptor	9-9
Table 9-3 Definitions of Magnitude.....	9-10
Table 9-4: Significance of Environmental Effect (Adapted from EPA Guidelines 2022 and IGI Guidelines 2013)	9-12
Table 9-5: Water bodies within the wind farm study area.....	9-15
Table 9-6 Waterbodies that cross the proposed GCR	9-18
Table 9-7 Biotic Index of Water Quality	9-21
Table 9-8 Q-Values at relevant EPA monitoring locations.....	9-21
Table 9-9 Surface Water Sampling Results (23/06/2024)	9-22
Table 9-10 Surface Water Sampling Results (11/11/2024).....	9-23
Table 9-11 Estimated Discharges (Q = m ³ /s) using EPA Hydrotool	9-23
Table 9-12: Bedrock Aquifer Classification and Characteristics.....	9-26

Table 9-13 Summary of Natura sites.....	9-35
Table 9-14: Proposed watercourse crossing on proposed wind farm	9-40
Table 9-15 Summary of GCR stream crossings	9-41
Table 9-16: Significance of Hydrological Effects - Construction Phase (Pre mitigation).....	9-47
Table 9-17: Significance of Hydrological Criteria - Operational Phase (Pre mitigation)	9-48
Table 9-18: Significance of Hydrological Criteria - Decommissioning Phase (Pre mitigation) ...	9-48
Table 10.1: IAQM Criteria to Determine Dust Emissions Magnitude.....	10-3
Table 10.2: IAQM Criteria to Determine Risk of Dust Impacts	10-5
Table 10.3: Ambient Air Quality Limit Values.....	10-8
Table 10.4: WHO Air Quality Guidelines.....	10-9
Table 10.5: National Air Emission Targets (Ireland's Air Pollutant Emissions 2020 to 2030) .	10-10
Table 10.6: Baseline Zone D Air Quality – PM ₁₀	10-13
Table 10.7: Criteria for Determining the Sensitivity of the Area to Construction Dust	10-15
Table 10.8: Risk of Construction Dust Impacts Used to Define Site-Specific Mitigation	10-20
Table 10.9: Predicted Impact of proposed project on Ireland's National Emissions Ceiling Obligations	10-22
Table 10.10: Standard Construction Dust Management and Mitigation Measures	10-23
Table 10.11: Summary of Air Quality Effects Post Mitigation	10-26
Table 10.12: Summary of Planned and Permitted Developments with Potential for Cumulative Effects.....	10-28
Table 11-1: Example Threshold of Potential Significant Effect at Dwellings.....	11-6
Table 11-2: Likely Impacts Associated with Change in Traffic Noise Level (Source: DMRB). 11-7	
Table 11-3: Description of the magnitude of impacts. Adapted from DMRB Table 3.16	11-8
Table 11-4: Allowable Vibration at Sensitive Properties (TII 2004)	11-9
Table 11-5: NG4 Approach for Determining Appropriate Noise Criteria	11-20
Table 11-6: Noise Measurement Coordinates.....	11-25
Table 11-7: Details of turbine parameters and envelope considered in the assessment	11-28
Table 11-8: LWA Levels for various hub heights (HH)	11-29
Table 11-9: Turbine Directivity Attenuation with Consideration of Wind Direction.....	11-31
Table 11-10: Derived Background Noise Levels of L _{A90,10-min} for Various Wind Speeds	11-32
Table 11-11: Proposed Noise Criteria Curves.....	11-34
Table 11-12: Expected Wind Farm Turbine Construction Noise Emission Levels	11-36

Table 11-13: Predicted Noise Levels from Construction Plant at Various Distances from the New Internal Site Roads	11-38
Table 11-14: Proposed Borrow Pit Locations	11-40
Table 11-15: Plant Noise Emissions	11-40
Table 11-16: Prediction Noise Levels from Borrow Pit Activity at Nearest NSLs	11-40
Table 11-17: Predicted Noise Levels for Expected Construction Plant at Various Distances from the Grid Connection Works.....	11-43
Table 11-18: Proposed HDD Locations	11-45
Table 11-19: Predicted Noise Levels for Expected HDD Activities at Various Distances ...	11-45
Table 11-20: Estimated Changes in Traffic Noise Levels	11-47
Table 11-21: Review of Potential Exceedance in Omni-directional Noise Prediction for N163	11-48
Table 11-22: Review of Predicted Turbine Noise Levels (omni-directional) against Relevant Criteria.....	11-49
Table 11-23: Review of Predicted Turbine Noise Exceedances Considering Wind Direction	11-50
Table 11-24: Battery Storage Unit Sound Power Levels Used in Noise Assessment.....	11-54
Table 11-25: Residual effects of the construction phase.....	11-57
Table 11-26: Residual effects from fixed plant – operational phase.....	11-59
Table 12.1 Landscape Value and Sensitivity	12-8
Table 12.2 Magnitude of Landscape Effects	12-9
Table 12.3 Magnitude of Visual Effect.....	12-14
Table 12.4 Effect Significance Matrix	12-15
Table 12.5 Magnitude of Cumulative Effect	12-18
Table 12-6 Selected Viewshed Reference Points (VRPs).....	12-41
Table 12-7 Visual Impact Assessment Summary	12-49
Table 13-1: Study Area Definitions.....	13-4
Table 13-2: Criteria for determination of receptor sensitivity	13-10
Table 13-3: Criteria for determination of Magnitude of Impact	13-11
Table 13-4: Impact assessment matrix for determination of significance of effect	13-12
Table 13-5: Previous Archaeological Investigations	13-24
Table 13-6: Recorded Archaeological Sites within the Study Areas	13-26
Table 13-7: Recorded Architectural Heritage Sites within the Study Areas.....	13-32

Table 13-8: Designed landscapes within the study areas	13-38
Table 13-9: Stray finds recorded by the National Museum of Ireland	13-40
Table 13-10: Cultural Heritage Sites within the Study Areas	13-41
Table 13-11: Townlands within the proposed wind farm site, GCR and TDR accommodation areas.....	13-45
Table 14-1 Traffic Survey Results Approach Flows.....	14-12
Table 14-2 Quarries and Access Routes.....	14-16
Table 14-3: Traffic Generation during the Construction Phase – AIL.....	14-22
Table 14-4: Construction Programme 1-way HV Construction Volumes per Day (Excluding Turbine Foundation Concrete Pours)	14-24
Table 14-5: Construction TII Growth Factors (Extract from PE-PAG-02017, October 2021) 14-28	
Table 14-6: Do-Nothing Traffic Flows	14-28
Table 14-7: Summary Peak Construction Daily Trip Generation	14-29
Table 14-8: Do-Something Traffic Flows.....	14-30
Table 14-9: Construction Haul Route– Potential Impact	14-31
Table 14-10: Construction Haul Route – EPA Criteria Effect	14-32
Table 14-11: Swept Path Analysis –Drawings and Actions (<i>*P: Pinch Point as per TDR Report</i>)	14-33
Table 14-12: AIL Haul Route – EPA Criteria Effect.....	14-36
Table 14-13: Grid Connection Route – EPA Criteria Effect.....	14-37
Table 14-14: Operational Phase – EPA Criteria Effect.....	14-38
Table 14-15:Decommissioning Traffic – EPA Criteria Effect	14-39
Table 14-16: Residual Effect - EPA Criteria Effect.....	14-46
Table 14-17: Cumulative Effect - EPA Criteria Effect.....	14-48
Table 15-1 Waste Licence Facilities in County Offaly, County Tipperary and surrounding counties	15-9
Table 16-1 Predicted Daily and Annual Shadow Flicker Effects (Scenario 1).....	16-13
Table 17.1: 5-Year Carbon Budgets 2021 – 2035	17-5
Table 17.2: 2030 Sectoral Emissions Ceilings.....	17-5
Table 17.3: Greenhouse Gas Assessment (GHGA) Significance Criteria	17-13
Table 17.4: Climate Change Vulnerability Matrix	17-16
Table 17.5: Trends in Total National GHG Emissions 2022 - 2024	17-17
Table 17.6: Construction Phase GHG Emissions	17-26

Table 17.7: Estimated Construction Phase GHG Emissions Relative to Sectoral Budgets and GHG Baseline	17-28
Table 17.8: Estimated Operational Phase Project GHG Savings.....	17-28
Table 17.9 Climate Hazard Screening.....	17-31
Table 17.10 Climate Change Vulnerability Assessment	17-32
Table 17.11: Summary of Effects Post Mitigation	17-37
Table 18-1 Key Considerations as Described in EIA Directive	18-3
Table 18-2 Classification of Likelihood (adapted from DoEHLG 2010 guidance).....	18-6
Table 18-3 Classification of Consequence (adapted from DoEHLG (2010) guidance).....	18-6
Table 18-4 Impact Assessment Matrix (adapted from DoEHLG (2010) guidance)	18-7
Table 18-5 Major Accidents and Natural Disasters – Stage 1 Risk Register.....	18-15
Table 18-6 Major Accidents and Disasters – Risk Classification Considering Mitigation....	18-19
Table 18-7 Risk Assessment Evaluation	18-22
Table 19-1: Interaction between Environmental Factors.....	19-2
Table 20-1: Table of EIAR Mitigation Measures	20-2

List of Figures

Figure 1-1 Extent of the Proposed Project	1-3
Figure 2-1 Proposed Wind Farm Site – view looking south from location of T5	2-4
Figure 2-2 Proposed Wind Farm Site Layout	2-8
Figure 2-3 Turbine nacelle and hub components.....	2-12
Figure 2-4 Proposed GCR	2-18
Figure 2-5 Examples of Proprietary Silt Control measures.....	2-38
Figure 3-1 Site Layout Map.....	3-6
Figure 3-2 Turbine location revisions	3-12
Figure 3-3 Entrance Options.....	3-19
Figure 3-4 Grid Network Options	3-21
Figure 3-5 Grid route alternatives	3-24
Figure 4-1 Elements of the Green Deal	4-15
Figure 4-2 Regional Renewable Energy Capacity Allocations	4-24
Figure 4-3 CAP24 Key Metrics to Deliver Abatement in Electricity	4-27
Figure 4-4 Wind Energy Strategy Designations Map extracted from Offaly CDP (Map No. 10) Including Proposed Site Location	4-40
Figure 4-5 Wind Energy Policy Areas extracted from the RES (Map No. 11)	4-45
Figure 5-1 Population and Human Health Study Area.....	5-10
Figure 5-2 Receptors Within 2 km of Proposed Wind Farm Site Boundary.....	5-19
Figure 6-1: Site Location of Proposed Ballincor Wind Farm.....	6-5
Figure 6-2: Watercourses and Survey Sites Within the Study Area of the Proposed Project ...	28
Figure 6-3: Designated European and National Sites Within the Vicinity of the Proposed Project.....	6-51
Figure 6-4: Habitats Recorded Within the Proposed Wind Farm Site.....	6-79
Figure 6-5: Location of Invasive Alien Species.....	6-81
Figure 6-6: Observations of Fauna Recorded Within the Proposed Wind Farm Site (Excluding Birds, Bats and Aquatic Species).....	6-93
Figure 7-1: Site Location for Proposed Ballincor Wind Farm.....	7-4
Figure 7-2: Location of Vantage Points and Transects used over the ornithology survey period March 2020 to September 2024	7-23
Figure 7-3: Overview of Vantage Point Viewshed Analysis for Ecology Ireland	7-24
Figure 7-4. Location of Vantage Points, Transects and Hen Harrier Roost Vantage Points used over the ornithology survey period October 2025 to March 2026 by TOBIN.....	7-25

Figure 7-5. Overview of Vantage Point Viewshed Analysis for TOBIN.....	7-26
Figure 7-6. Locations of Wetland Bird Surveys (I-WeBS) during October to March 2026 by TOBIN	7-27
Figure 7-7. Important International and National Sites within the vicinity of the proposed project.....	7-54
Figure 8-1 Site location and study area.....	8-10
Figure 8-2 Soils Map -proposed windfarm, TDR and GCR	8-15
Figure 8-3 Soils Map - GCR.....	8-16
Figure 8-4 Subsoils Map.....	8-17
Figure 8-5 Bedrock Geology	8-19
Figure 8-6 Peat Depths at the proposed wind farm site.....	8-23
Figure 8-7 Landslide Susceptibility map	8-24
Figure 8-8 Geological Heritage Sites.....	8-26
Figure 8-9 Site investigation locations	8-28
Figure 9-1 Site location and study area.....	9-7
Figure 9-2 Example of source-pathway-receptor (SPR) model	9-10
Figure 9-3 Regional Catchment Delineation Overview	9-14
Figure 9-4 Surface water monitoring locations (EPA and TOBIN)	9-20
Figure 9-5 Bedrock Aquifer Map.....	9-28
Figure 9-6 Groundwater Recharge.....	9-31
Figure 9-7 Groundwater Vulnerability.....	9-33
Figure 10.1: Wind Roses for Oak Park.....	10-12
Figure 10.2: Construction Dust Assessment - Sensitive Receptors within 250m of Wind Farm Site Boundary, Proposed GCR and TDR (Permanent Works Area).....	10-17
Figure 11-1 : dB(A) Scale & Indicative Noise Levels	11-3
Figure 11-2: Map of Noise Monitoring Locations (NML)	11-26
Figure 11-3: Sound Power Level of each of the 3 turbine types under consideration.....	11-29
Figure 12.1 Study Area Map.....	12-4
Figure 12.2 Site Context Map.....	12-22
Figure 12.3 Excerpt from Offaly County Development Plan - Landscape Sensitivity Map .	12-25
Figure 12.4 Excerpt from Offaly County Wind Energy Strategy.....	12-27
Figure 12.5 Excerpt from Tipperary County Landscape Character Assessment	12-28
Figure 12.6 Excerpt from Tipperary Wind Energy Strategy	12-30

Figure 12.7 Bare-ground ZTV Map based on 180m tip height (See Appendix 12.2 for larger scale map).....	12-32
Figure 12.8 Designated Views and Prospects – Offaly County Development Plan	12-36
Figure 12.9 Designated Scenic Routes and View – Tipperary CDP 2022-2028.....	12-37
Figure 12.10 Viewpoint location map	12-42
Figure 12.11 Turbine ‘scale in relation to distance’ relationship.....	12-55
Figure 12.12 Cumulative ZTV Map.....	12-58
Figure 13-1: Location of Proposed Project	13-13
Figure 13-2a: Heritage receptors located in the northern environs of the Proposed Project.	13-14
Figure 13.2b: Heritage receptors located in the eastern environs of the Proposed Project	15
Figure 13.2c: Heritage receptors located to in the southern environs of the proposed project	16
Figure 13.2d: Heritage receptors located to in the western environs of the proposed project	17
Figure 13-3: UNESCO (tentative), National Monuments and Preservation Orders within 10km of the proposed wind farm	13-18
Figure 14-1 <i>Site Location</i> at Regional Level.....	14-2
Figure 14-2 Site Location at Local Level	14-3
Figure 14-3 Assessment Junctions	14-8
Figure 14-4 Site Entrances.....	14-14
<i>Figure 14-5 Construction Haul Routes</i>	14-17
Figure 14-6: AIL Delivery Routes / Turbine Delivery Route (TDR)	14-21
Figure 14-7: Graphical representation of the Construction Traffic over Construction Programme, representing 1-way movement per Day - Excluding Concrete Pour HV	14-25
Figure 16-1 Shadow Flicker Minutes Per Day Scenario 1 (Worst Case)	16-20
Figure 16-2 Shadow Flicker Minutes Per Day Scenario 2 (Worst Case)	16-21
Figure 16-3 Shadow Flicker Minutes Per Day Scenario 3 (Worst Case)	16-22
Figure 17-1 – 1900-2024 Temperature (°C) Temperature Anomalies (differences from 1961-1990).....	17-19
Figure 17-2: Representative Concentration Pathways associated emission levels from TRANSLATE project storymap (Met Éireann, 2024a).....	17-21
Figure 17-3: Change of climate variables for Ireland for different Global warming thresholds (Met Éireann, 2024c).....	17-22
Figure 17-4: Assessment of Future Climate Hazards and in Tipperary County. (TCC, 2023) .	17-24

Figure 17-5: Assessment of Future Climate Hazards and in Offaly County (OCC, 2024) .. 17-25

Figure 17-6: Construction Phase Greenhouse Gas Emissions by Activity..... 17-26

Environmental Impact Assessment Report (EIAR) Abbreviations List

Acronym	Term
AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
AAP	Areas of Archaeological Potential
AASR	Appropriate Assessment Screening Report
ABP	An Bord Pleanála
ACA	Architectural Conservation Areas
AD	Anaerobic Digestion
AFA	Areas for Further Assessment
AH	Archaeological Heritage
AIA	Archaeological Impact Assessment
AIL	Abnormal Indivisible Loads
AirNav Ireland	The Irish air navigation service
AIS	Air Insulated Switchgear
AMOC	Atlantic Meridional Overturning Circulation
AOD	Above Ordnance Datum
APIS	Air Pollution Information System
AQMA	Air Quality Management Area
ATC	Automatic Traffic Count
ATC	Air Traffic Control
BAP	Biodiversity Action Plan
BasEsk	Eskers comprised of gravels of basic reaction
BCI	Bat Conservation Ireland
BEMP	Biodiversity Enhancement Management Plan

BESS	Battery Energy Storage System
BH	Built Heritage
BLP	Building Land Use Plan
BSBI	Botanical Society of Britain and Ireland
BTHK	Bat Tree Habitat Key
C&D	Construction and Demolition
CA	Competent Authority
CAEP	Committee on Aviation Environmental Protection
CAP	Climate Action Plan
CARO	Climate Action Regional Offices
CBF	Community Benefit Fund
CBGM	Cement Bound Granular Mixture
CBR	California Bearing Ratio
CC	County Council
CCPI	Climate Change Performance Index
CCRA	Climate Change Risk Assessment
CDP	County Development Plan
CEMP	Construction and Environmental Management Plan
CEN 2003	Comité Européen de Normalisation (European Committee for Standardisation)
CERIS	Centre for Economic Research on Inclusivity and Sustainable
CFRAM	Catchment Flood Risk Assessment and Management
CH	Cultural Heritage
CHN	Community Health Network
CIÉ	Córas Iompair Éireann

CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	The Construction Industry Research and Information Association
CLO	Community Liaison Officer
CMIP	Coupled Model Intercomparison Project
Co.	County
CO ₂	Carbon Dioxide
COF	Confirmation of Feasibility
COMAH	Control of Major Accident Hazards Involving Dangerous Substances
COP	Conference of the Parties
CORDEX	Coordinate Regional Climate Downscaling Experiment
CPUE	Catch Per Unit Effort
CRU	Commission for Regulation of Utilities
CSAR	Conservation Status Assessment Report
CSM	Conceptual Site Model
CSO	Central Statistics Office
CTMP	Construction Traffic Management Plan
Cut	Cutover Raised Peat
DAERA	Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food and the Marine
DAU	Development Applications Unit
DBW	Daylight Bat Walk
DCCAE	Department of Communications, Climate Action and Environment
DECC	Department of the Environment, Climate and Communications
DECLG	Department of Environment, Community and Local Government
DL	Designed Landscapes

DoAHG	Department of Housing, Local Government and Heritage
DoEHLG	Department of the Environment, Heritage and Local Government
DoHELG	Department of Environment, Heritage and Local Government
DWEDG	Draft Revised Wind Energy Development Guidelines
EC	Export Capacity
ECoW	Ecological Clerk of Works
ECP	Enduring Connection Policy
ED	Electoral Division
eDNA	Environmental DNA
EEC	European Economic Community
EF	Electrofishing
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EM	Environmental Manager
EMF	Electromagnetic Field
EMRA	The Eastern and Midland Regional Assembly
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESB	Electricity Supply Board
ESBN	Electricity Supply Board Network
ETS	Emission Trading Scheme
EU	European Union
EUR	Euro
EX	Excavations

FAQs	Frequency Asked Questions
FPO	Flora Protection Order
FRA	Flood Risk Assessment
FWPM	Freshwater Pearl Mussel
GCR	Grid Connection Route
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gases
GHGA	Greenhouse Gas Emissions Assessment
GHS	Geological Heritage Sites
GI	Ground Investigation
GIS	Geographical Information System
GLs	Gravels derived from Limestones
GLTA	Ground Level Tree Assessment
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GNI	Gas Networks Ireland
GPG	The Good Practice Guide
GPS	Global Positioning System
GRA	Global Renewables Alliance
GSI	Geological Survey Ireland
GSM-R	Mobile Network for Railways
GW	Gigawatt
GWB	Groundwater Bodies
GWh	Gigawatt Hour
HA	Habitat Assessment
ha	Hectare

HD	Habitats Directive
HDA	Habitats Directive Assessment
HDD	Horizontal Directional Drilling
HDPE	High Density Polyethylene
HGV	Heavy Goods Vehicle
HSA	Health & Safety Authority
HSE	Health Service Executive
HSI	Herpetological Society of Ireland
HV	High Voltage
HV	Heavy Vehicle
HVO	Hydrotreated Vegetable Oil
IAA	Irish Aviation Authority
IAM	Impact Assessment Matrix
IAQM	Institute of Air Quality Management
IAS	Invasive Alien Species
IBC	Intermediate Bulk Container
ICHEC	Irish Centre for High End Computing
ICT	Information Communications and Technology
IDA	Industrial Development Authority
IEA	International Energy Agency
IEMA	Institute of Environmental Management and Assessment
IFI	Inland Fisheries Ireland
IFP	Instrument Flight Procedures
IGI	Institute of Geologists of Ireland
IHA	Integrated Healthcare Area

IHPA	Irish Hang Gliding and Paragliding Association
ILP	Institution of Lighting Professionals
ILS	Instrument Landing System
IOA	Institute of Acoustics
IPC	Integrated Pollution Control
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
ISEP	Institute of Sustainability & Environmental Professionals
ISMP	Invasive Species Management Plan
ISO	International Organization for Standardization
ITM	Irish Transverse Mercator
IWEA	Irish Wind Energy Association
IWT	Irish Wildlife Trust
JTC	Junction Turning Count
KER	Key Ecological Receptor
km	Kilometres
KOR	Key Ornithological Receptors
KS	Kick Sampling
kt	Kilo tons
kV	KiloVolts
LACAP	Local Authority Climate Action Plan
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LCU	Landscape Character Units

LI	Locally Important
LIA	Landscape Impact Assessment
LULUCF	Land Use, Land-use Change and Forestry
LV	Light Vehicle
LVIA	Landscape and Visual Impact Assessment
m AOD	Metres above Ordnance Datum
m ²	Metres squared
mBGL	Metres Below Ground Level
MCIWM	Member of the Chartered Institution of Wastes Management
MEC	Maximum Export Capacity
Met	Meteorological
mg/l	Milligrams per litre
mg/m ²	Milligrams per square meter
MIAQM	Member of Institute of Air Quality Management
MMaRC	Motorway Maintenance and Renewal Contractor
MRFS	Mid-Range Future Scenario
MT	Mega Tonn
MW	Megawatt
MWh	Megawatt hour
NAF	National Adaptation Framework
NBDC	National Biodiversity Data Centre
NCCRA	National Climate Change Risk Assessment
NDCs	Nationally Determined Contributions
NDP	National Development Plan
NECP	National Energy and Climate Plan

NFGWS	National Federation of Group Water Schemes
NGO	Non-Governmental Organisations
NH ₃	Ammonia
NHA	Natural Heritage Area
NI	Northern Ireland
NIAH	National Inventory of Architectural Heritage
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPF	National Planning Framework
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
NREAP/NEEAP	National Energy Efficiency and Renewable Energy Action Plans
NSL	Noise Sensitive Location
NTA	National Transport Authority
NUTS	Nomenclature of Territorial Units for Statistics
O&M	Operation and Maintenance
OCC	Offaly County Council
OCDP	Offaly County Development Plan
OD	Ordnance Datum
OHL	Overhead Line
OLS	Obstacle Limitation Surfaces
OPR	Office of Planning Regulation
OPW	Office of Public Works

OSI	Ordnance Survey Ireland
OUV	Outstanding Universal Value
PFRA	Preliminary Flood Risk Assessment
PM	Particulate Matter
pNHA	Proposed Natural Heritage Area
PPAP	Priority Pathway Action Plans
PPS	Planning Policy Statement
PRA	Preliminary Roost Assessment
PRF	Potential Roost Feature
pSAC	proposed Special Area of Conservation
PSCS	Project Supervisor for the Construction Stage
PSDP	Project Supervisor for the Design Process
pSPA	Proposed Special Protection Area
PSRA	Peat Slide Risk Assessment
PV	Photovoltaic
PWS	Private Water Supplies
PWS	Public Water Supplies
QI	Qualifying Interest
RBD	River Basin District
RBMP	River Basin Management Plan
RC	Reinforced Concrete
RCP	Representative Concentration Pathway
RDP	Rural Development Programme
RE	Renewable Energy
RES	Renewable Energy Strategy

RESS	Renewable Electricity Support Scheme
RMP	Record of Monuments and Places
RPO	Regional Policy Objectives
RPS	Record of Protected Structures
RRES	Regional Renewable Energy Strategy
RRNL	Relative Rated Noise Limits
RSES	Regional Spatial and Economic Strategy
RWB	River Water Body
RWE	RWE Renewables Ireland Limited
SAC	Special Areas of Conservation
SAPS	Small Area Population Statistics
SCI	Statement of Community Interest also Site of Community Importance
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SI	Statutory Instrument
SID	Strategic Infrastructural Development
SMR	Sites and Monuments Record
SO	System Operator
SO ₂	Sulphur Dioxide
SONI	System Operator Northern Ireland
SO _x	Sulphur Oxides
SPA	Special Protection Areas
SPMP	Spoil and Peat Management Plan
SPR	Source-Pathway-Receptor

SRA	Southern Regional Assembly
SST	Sea Surface Temperatures
STE	Serrations Trailing Edge
SuDS	Sustainable Drainage Systems
SVF	Shannon Vermicomposting Facility
SW	Surface Water
SWL	Safe Work Load
SWMP	Surface Water Management Plan
TB	Townland Boundary
TCC	Tipperary County Council
TCDP	Tipperary County Development Plan
TDR	Turbine Delivery Route
TGN	Technical Guidance Note
TII	Traffic Infrastructure Ireland
TLs	Till derived from Limestones
TMP	Traffic Management Plan
TP	Trial Pit
TTA	Traffic and Transport Assessment
UGC	Underground Grid Connection
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VIA	Visual Impact Assessment
VP	Viewpoint

VRP	Viewshed Reference Points
WA	Wildlife Act
WEDG	Wind Energy Development Guidelines
WFD	Water Framework Directive
WHO	World Health Organisation
WSZ	Water Supply Zone
WTG	Wind Turbine Generators
Zol	Zone of Influence
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence
AEP	Annual Exceedance Probability
SAAR	Standard Annual Average Rainfall
UAIA	Underwater Archaeological Impact Assessment