

# **Volume 1 – Non-Technical Summary and Environmental Impact Assessment Report**

Umma More Renewable  
Energy Development

Volume 1b: Chapters 10-17





## DOCUMENT DETAILS

Client: **Umma More Ltd.**

Project Title: **Umma More Renewable Energy Development**

Project Number: **201050**

Document Title: **Volume 1 – Non-Technical Summary and Environmental Impact Assessment Report**

Document File Name: **Volume 1 EIAR Cover - 201050 - F**

Prepared By: **MKO  
Tuam Road  
Galway  
Ireland  
H91 VW84**



Rev	Status	Date	Author(s)	Approved By
01	Final	10/03/2023	EC, MW, PE, JH, MC	MW

# Table of Contents

10.	<b>AIR AND CLIMATE</b> .....	<b>10-1</b>
10.1	Introduction.....	10-1
10.1.1	Background.....	10-1
10.1.2	Relevant Guidance.....	10-1
10.1.3	Statement of Authority.....	10-2
10.2	Air Quality.....	10-2
10.2.1	Air Quality Standards.....	10-2
10.2.1.1	Air Quality and Health.....	10-6
10.2.2	Air Quality Zones.....	10-6
10.2.2.1	Sulphur Dioxide (SO <sub>2</sub> ).....	10-7
10.2.2.2	Particulate Matter (PM <sub>10</sub> ).....	10-7
10.2.2.3	Nitrogen Dioxide (NO <sub>2</sub> ).....	10-7
10.2.2.4	Carbon Monoxide (CO).....	10-8
10.2.2.5	Ozone (O <sub>3</sub> ).....	10-8
10.2.2.6	Dust.....	10-9
10.2.3	Likely Significant Effects and Associated Mitigation Measures.....	10-9
10.2.3.1	‘Do-Nothing’ Effect.....	10-9
10.2.3.2	Construction Phase.....	10-9
10.2.3.3	Operational Phase.....	10-12
10.2.3.4	Decommissioning Phase.....	10-13
10.3	Climate.....	10-15
10.3.1	Climate Change and Greenhouse Gases.....	10-15
10.3.1.1	Greenhouse Gas Emission Targets.....	10-15
10.3.2	Climate and Weather in the Existing Environment.....	10-27
10.3.3	Calculating Carbon Losses and Savings from the Proposed Development.....	10-29
10.3.3.1	Background.....	10-29
10.3.3.2	Methodology for Calculating Losses.....	10-29
10.3.3.3	Calculating Carbon Losses and Savings.....	10-30
10.3.4	Likely Significant Effects and Associated Mitigation Measures.....	10-32
10.3.4.1	‘Do-Nothing’ Effect.....	10-32
10.3.4.2	Construction Phase.....	10-32
10.3.4.3	Operational Phase.....	10-33
10.3.4.4	Decommissioning Phase.....	10-34
10.4	Cumulative Assessment.....	10-34
11.	<b>NOISE &amp; VIBRATION</b> .....	<b>11-1</b>
11.1	Introduction.....	11-1
11.2	Legislation, Policy and Guidelines.....	11-4
11.3	Consultation.....	11-5
11.4	Assessment Methodology and Significance Criteria.....	11-6
11.4.2	Potential Effects Scoped Out.....	11-10
11.4.3	Method of Baseline Characterisation.....	11-11
11.4.4	Criteria for the Assessment of Effects.....	11-12
11.5	Baseline Conditions.....	11-13
11.5.1	Current Baseline.....	11-13
11.5.2	Summary of Sensitive Receptors.....	11-14
11.6	Assessment of Likely Effects.....	11-15
11.6.1	Construction Noise Assessment Locations.....	11-15
11.6.2	Operational Noise Assessment Locations.....	11-16
11.6.3	Potential Construction Noise Effects.....	11-17
11.6.4	Potential Construction Vibration Effects.....	11-20
11.6.5	Potential Operational Noise Effects.....	11-20
11.6.6	Potential Cumulative Effects.....	11-26
11.7	Mitigation.....	11-27
11.7.1	Mitigation during Construction.....	11-27

11.7.2	Mitigation during Operation .....	11-28
11.8	Assessment of Residual Effects .....	11-29
11.8.1	Residual Construction Effects .....	11-29
11.8.2	Residual Operational Effects .....	11-29
11.9	Summary .....	11-29

**12. LANDSCAPE AND VISUAL.....12-1**

12.1	Introduction.....	12-1
12.1.1	Statement of Authority .....	12-1
12.1.2	‘Do Nothing’ Scenario.....	12-2
12.1.3	Proposed Development Description .....	12-2
12.1.4	Mitigation by Design.....	12-2
12.1.5	Assessments of Other Alternative Turbine Designs .....	12-3
12.1.6	Scoping Replies /Pre-Planning Meeting.....	12-4
12.2	Brief Methodology and Assessment Criteria .....	12-4
12.2.1	Scope and Definition of Landscape and Visual Impact (LVIA) Study Area.....	12-5
12.2.2	Guidelines .....	12-6
12.2.3	Baseline Landscape and Visual Information .....	12-6
12.2.4	Assessment of Potential Impacts .....	12-6
12.3	Visibility of the Proposed Development.....	12-7
12.3.1	ZTV Mapping: Theoretical Visibility of the proposed turbines .....	12-7
12.3.2	Half Blade ZTV of the Proposed Turbines.....	12-10
12.3.3	ZTV Versus Actual Visibility .....	12-11
12.3.3.1	On-Site Appraisal of Actual Visibility During Field Surveys.....	12-11
12.3.4	Visibility in Close Proximity to the Wind Farm Site – Route Screening Analysis .....	12-13
12.4	Landscape Baseline .....	12-17
12.4.1	Landscape Designations and Policy Context .....	12-17
12.4.1.1	County Westmeath.....	12-18
12.4.1.2	Landscape Policy within the Other Surrounding Counties.....	12-29
12.4.2	Landscape Character of the Proposed Development Site .....	12-33
12.4.2.2	Landscape Value and Sensitivity of the Proposed Development Site.....	12-43
12.4.3	Landscape Characterisation in the Guidelines (DoEHLG, 2006) (and with reference to the draft Guidelines (DoHPLG, 2019)) .....	12-46
12.4.4	Landscape Character of the Wider Landscape Setting .....	12-48
12.4.4.2	Designated Landscape Character Areas (LCAs) .....	12-50
12.5	Visual Baseline.....	12-56
12.5.1	Visual Receptors .....	12-56
12.5.1.1	Designated Scenic Routes and Views.....	12-59
12.5.1.2	OSI Viewing Areas.....	12-65
12.5.1.3	Settlements.....	12-65
12.5.1.4	Recreational Routes.....	12-69
12.5.1.5	Transport Routes.....	12-71
12.5.2	Visual Receptor Preliminary Assessment .....	12-73
12.5.3	Visual Amenity from Residential Receptors .....	12-77
12.6	Cumulative Context .....	12-78
12.6.1	Comparative Cumulative Visibility – ZTV.....	12-81
12.7	Likely or Significant Landscape and Visual Effects .....	12-82
12.7.1	‘Do-Nothing Scenario .....	12-82
12.7.2	Construction Phase Effects .....	12-82
12.7.2.1	Landscape Effects (Construction Phase).....	12-82
12.7.2.2	Visual Effects (Construction Phase).....	12-82
12.7.3	Operational Phase Effects .....	12-85
12.7.3.1	Landscape Effects (Operational Phase).....	12-85
12.7.3.2	Visual Effects .....	12-92
12.7.3.3	Other (non-turbine) Components of the Proposed Development – Landscape and Visual Effects.....	12-118
12.7.3.4	Cumulative Visual Effects.....	12-119
12.7.4	Decommissioning Phase Effects .....	12-119
12.8	Conclusion.....	12-120

13.	<b>ARCHAEOLOGY AND CULTURAL HERITAGE.....</b>	<b>13-1</b>
13.1	Introduction.....	13-1
13.1.1	Proposed Development.....	13-1
13.1.2	Location and Topography.....	13-1
13.1.3	Statement of Authority.....	13-1
13.1.4	Relevant Legislation.....	13-2
13.1.4.1	Granada Convention.....	13-2
13.1.4.2	Westmeath County Development Plan 2021-2027.....	13-3
13.1.4.3	Offaly County Development Plan 2021-2027.....	13-5
13.1.5	Statutory Consultations.....	13-11
13.1.5.1	Westmeath County Council.....	13-11
13.1.5.2	National Monuments Service.....	13-11
13.2	Assessment Methodology.....	13-11
13.2.1	Geographical Information Systems (GIS).....	13-11
13.2.2	Desktop Assessment.....	13-11
13.2.2.1	Record of Monuments and Places, Sites and Monuments Record and National Monuments	13-12
13.2.2.2	Cartographic Sources and Aerial Photography.....	13-12
13.2.2.3	Topographical Files - National Museum of Ireland.....	13-12
13.2.2.4	Archaeological Inventory Series.....	13-12
13.2.2.5	Record of Protected Structures.....	13-12
13.2.2.6	Excavations Database.....	13-12
13.2.2.7	National Inventory of Architectural Heritage (NIAH).....	13-13
13.2.2.8	Previous Assessments.....	13-13
13.2.3	Field Inspection.....	13-13
13.2.3.1	Limitations Associated with Fieldwork.....	13-13
13.2.4	Assessment of Likely Significant Effects.....	13-13
13.2.4.1	Types of Impact.....	13-13
13.2.5	Methodology for the assessment of impacts on visual setting (indirect effects).....	13-14
13.3	Existing Environment.....	13-16
13.3.1	Results of Field Inspection.....	13-16
13.3.1.1	Wind Farm Site.....	13-16
13.3.1.2	Grid Connection.....	13-40
13.3.2	Archaeological, Architectural and Cultural Heritage.....	13-52
13.3.2.1	UNESCO World Heritage Sites and those on Tentative List.....	13-52
13.3.2.2	National Monuments.....	13-57
13.3.2.3	Recorded Monuments within the Wind Farm Site.....	13-60
13.3.2.4	Recorded Monuments within 5km of the nearest proposed turbines.....	13-64
13.3.2.5	Excavations Database.....	13-90
13.3.2.6	Topographical Files of the National Museum of Ireland.....	13-90
13.3.2.7	Sub-Surface Archaeological Potential.....	13-91
13.3.2.8	Protected Structures within 5km of the nearest proposed turbine.....	13-92
13.3.2.9	NIAH structures within 5km of the nearest proposed turbines.....	13-97
13.3.2.10	Cartographic Evidence and Local Cultural Heritage.....	13-102
13.3.2.11	Townlands and administrative boundaries.....	13-105
13.3.3	Grid Connection Underground Electrical Cabling Route.....	13-106
13.3.3.1	National Monuments in State Care.....	13-106
13.3.3.2	Sites and Monuments Record.....	13-106
13.3.3.3	Protected Structures.....	13-121
13.3.3.4	NIAH 13-127.....	
13.3.4	Proposed Turbine Delivery Route.....	13-132
13.4	Likely Effects and Associated Mitigation Measures.....	13-132
13.4.1	Construction Phase Potential Impacts (Indirect).....	13-132
13.4.2	Construction Phase Potential Impacts (Direct).....	13-132
13.4.2.1	UNESCO World Heritage sites.....	13-132
13.4.2.2	National Monuments.....	13-133
13.4.2.3	Recorded Monuments within the Wind Farm Site.....	13-133
13.4.2.4	Recorded Monuments within 5km of the nearest proposed turbine.....	13-134
13.4.2.5	Recorded Monuments along the Grid Connection Underground Electrical Cabling Route.....	13-134
13.4.2.6	Recorded Monuments along the Transport Delivery Route.....	13-136
13.4.2.7	Sub-surface Archaeological Potential.....	13-136
13.4.2.8	Protected Structures within the Wind Farm Site.....	13-137
13.4.2.9	Protected Structures within 5km of the nearest proposed turbine.....	13-137

13.4.2.10	Protected Structures within 100m of the Grid Connection Underground Electrical Cabling Route.....	13-137
13.4.2.11	NIAH structures within the Wind Farm Site.....	13-139
13.4.2.12	NIAH structures within 5km of the nearest proposed turbines.....	13-139
13.4.2.13	NIAH structures within 100m of the Grid Connection Underground Electrical Cable Route..	13-139
13.4.2.14	Features of Local Cultural Heritage Merit (Direct effects) .....	13-140
13.4.3	Operational Phase Potential Impacts (Indirect) .....	13-143
13.4.3.1	UNESCO World Heritage sites .....	13-143
13.4.3.2	National Monuments.....	13-146
13.4.3.3	Recorded Monuments within the Wind Farm Site .....	13-147
13.4.3.4	Recorded Monuments within 5km of the nearest proposed turbine .....	13-149
13.4.3.5	Protected Structures within 5km of the nearest proposed turbine.....	13-168
13.4.3.6	NIAH Structures within 5km of the nearest proposed turbine .....	13-171
13.4.3.7	Features of Local Cultural Heritage Merit.....	13-177
13.5	Cumulative Impacts .....	13-178
13.5.1	Arterial Drainage Maintenance.....	13-178
13.5.2	N52 Tullamore to Kilbeggan Link Scheme.....	13-178
13.5.3	Other windfarms within 25km .....	13-179
13.5.4	Cumulative Impacts (Direct Impacts – Construction stage) .....	13-179
13.5.4.1	Cumulative impacts (direct) considering other windfarms within 25km.....	13-180
13.5.5	Cumulative Effects (Indirect Impact on Setting) .....	13-180
13.5.5.1	UNESCO World Heritage sites (tentative).....	13-181
13.5.5.2	National Monuments in State Care .....	13-181
13.5.5.3	Recorded Monuments (5km).....	13-182
13.5.5.4	Protected Structures and NIAH (5km).....	13-182
13.6	Do Nothing Scenario.....	13-182
13.7	Decommissioning Phase.....	13-182
13.8	Conclusion.....	13-183
13.8.1	Direct Effects .....	13-183
13.8.1.1	UNESCO sites.....	13-183
13.8.1.2	National Monuments in State Care .....	13-183
13.8.1.3	Recorded Monuments .....	13-183
13.8.1.4	Local Cultural Heritage .....	13-184
13.8.1.5	Sub-surface Archaeology.....	13-184
13.8.1.6	Protected Structures.....	13-184
13.8.2	Indirect Effects.....	13-185
13.8.2.1	UNESCO WORLD HERITAGE SITES (TENTATIVE LIST).....	13-185
13.8.2.2	National Monuments in State Care .....	13-186
13.8.2.3	Recorded Monuments within the Wind Farm Site .....	13-186
13.8.2.4	Recorded Monuments, RPS structure and NIAH in the wider study area of 5km .....	13-186
13.8.3	Cumulative Effects .....	13-186
14.	<b>MATERIAL ASSETS .....</b>	<b>14-1</b>
14.1	Traffic and Transport.....	14-1
14.1.1	Introduction.....	14-1
14.1.2	Receiving Environment .....	14-4
14.1.3	Existing Traffic Volumes .....	14-9
14.1.4	Proposed Development and Traffic Generation .....	14-13
14.1.5	Construction Traffic Vehicles .....	14-19
14.1.6	Traffic Effects During Construction, Operation and Decommissioning ...	14-23
14.1.7	Effect on Network of Grid Connection .....	14-37
14.1.8	Traffic Management of Large Deliveries .....	14-40
14.1.9	Abnormal Load Route Assessment.....	14-41
14.1.10	Provision for Sustainable Modes of Travel .....	14-55
14.1.11	Likely and Significant Effects and Associated Mitigation Measures.....	14-55
14.2	Telecommunications and Aviation.....	14-61
14.2.1	Introduction.....	14-61
14.2.2	Methodology and Guidance.....	14-61
14.2.3	Background .....	14-62
14.2.4	Preventing Electromagnetic Interference .....	14-62
14.2.5	Likely Significant Effects and Associated Mitigation Measures .....	14-65
14.3	Other Material Assets .....	14-67

14.3.1	Existing Built Services and Utilities.....	14-67
14.3.2	Waste Management.....	14-68
14.3.3	Likely Significant Effects and Associated Mitigation Measures .....	14-68
14.3.4	Cumulative Impact Assessment.....	14-69
<b>15.</b>	<b>INTERACTION OF EFFECTS .....</b>	<b>15-1</b>
15.1	Introduction.....	15-1
15.1.1	Statement of Authority .....	15-3
15.2	Impact Interactions .....	15-3
15.2.1	Population and Human Health .....	15-3
15.2.2	Biodiversity .....	15-4
15.2.3	Birds .....	15-5
15.2.4	Land, Soils and Geology .....	15-6
15.2.5	Air and Climate .....	15-6
15.2.6	Landscape and Visual.....	15-6
15.3	Mitigation and Residual Impacts .....	15-7
<b>16.</b>	<b>MAJOR ACCIDENTS AND NATURAL DISASTERS .....</b>	<b>16-1</b>
16.1	Introduction.....	16-1
16.1.1	Statement of Authority .....	16-1
16.2	Assessment Methodology .....	16-2
16.2.1	General .....	16-2
16.2.2	Legislative Context.....	16-2
16.2.2.1	Legislation.....	16-2
16.2.2.2	Guidance Documents .....	16-3
16.2.3	Categorisation of the Baseline Environment.....	16-3
16.2.4	Impact Assessment Methodology .....	16-3
16.2.4.1	Introduction.....	16-3
16.2.4.2	Site Specific Risk Assessment Methodology .....	16-4
16.3	Baseline Conditions.....	16-8
16.4	Risk Assessment.....	16-11
16.4.1	Likely Significant Effects .....	16-11
16.4.1.1	Do-Nothing Scenario.....	16-11
16.4.1.2	Identification of Effects During Construction.....	16-11
16.4.1.3	Identification of Effect During Operation.....	16-13
16.4.1.4	Identification of Effect During Decommissioning .....	16-14
16.4.1.5	Assessment of Effect – Summary.....	16-16
16.4.1.6	Contamination During Construction, Operation and Decommissioning .....	16-30
16.4.1.7	Fire/Explosion During Construction, Operation and Decommissioning.....	16-30
16.4.2	Mitigation Measures .....	16-31
16.4.2.1	Mitigation – Contamination During Construction, Operation and Decommissioning.....	16-31
16.4.2.2	Mitigation – Fire/Explosion During Operation.....	16-31
16.4.3	Residual Effects.....	16-31
16.4.4	Monitoring .....	16-32
16.4.4.1	Monitoring During Construction.....	16-32
16.4.4.2	Monitoring During Operation.....	16-32
16.4.4.3	Monitoring During Decommissioning .....	16-32
16.4.5	Impacts of Cumulative and In Combination Impacts.....	16-32
<b>17.</b>	<b>SCHEDULE OF MITIGATION AND MONITORING PROPOSALS .....</b>	<b>17-1</b>
17.1	Introduction.....	17-1
17.2	EIAR Mitigation Measures.....	17-2
17.3	EIAR Monitoring Measures.....	17-73

## REFERENCES



**Volume 1a – Non-Technical Summary and EIAR Main Report Chapters 1-9**

**Volume 2 – Photomontage Booklet**

**Volume 3 – Appendices**

- Volume 3a – Appendices 2-1 to 7-7
- Volume 3b – Appendices 8-1 to 14-3