

# Mitigating Wind Farm Impacts Through Assessments and Modelling



## CHALLENGE

The CWP Project presented challenges related to airborne noise and vibration during construction and after implementation.

## SOLUTION

AWN performed detailed noise and vibration assessment and provided mitigation strategies in accordance with city guidelines.

## RESULT

Noise and vibration levels remained within acceptable limits, addressing environmental and social concerns.

## APPLYING STRATEGIC MITIGATION STRATEGIES FOR SUSTAINABILITY

The proposed Codling Wind Park (CWP) is currently going through the Irish planning process and if granted planning permission, is a major step forward to achieving Ireland's 2030 Renewable Energy & Climate Action Plan targets for 2030 and energy independence. CWP has the potential to generate 1,300 MW and the potential to provide power to over 1 million Irish homes every year. AWN Consulting, a Trinity Consultants, team, was engaged to provide assessments and propose mitigation strategies during development.

The CWP Project is located approximately 13-22 kilometres off the County Wicklow coast and comprises of the following main components:

- Offshore components consisting of the wind turbine generators and transmission infrastructure
- Onshore components connecting the offshore infrastructure to the onshore substation at Poolbeg, Co. Dublin

## CHALLENGE

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The CWP Project presented aspects that required consideration related to airborne noise and vibration, particularly from construction activities such as offshore monopiling, and onshore infrastructure development. Noise from operational wind turbines, including mechanical and aerodynamic sources, required further understanding for nearby communities and wildlife. Managing vibrations during piling also required study to prevent impacts on protected structures.

While offshore windfarm developments require a focus to be placed on underwater acoustic impacts, assessing airborne noise and vibration on human receptors is equally critical, during both the offshore and onshore construction and operational phases.

AWN has been involved during the optioneering, scoping and Environmental Impact Assessment Report (EIAR) stages of the CWP Project. The airborne noise and vibration impact assessment was conducted as part of the EIAR to ensure compliance with the Irish and European standards for environmental noise and vibration to minimise impacts on the onshore human receptors.

## SOLUTION

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AWN performed a detailed airborne noise and vibration assessment, incorporating advanced noise modelling and predictive analysis. Mitigation strategies included consideration and adoption of the Dublin City Council's Good Practice Guide for Construction and Demolition and setting a maximum sound power level to be achieved by the operational WTGs.

Predictive modelling for offshore monopiling construction and operational turbine noise was carried out for onshore receptors between Greystones and Wicklow Town. This included considerations for factors such as height of noise sources, atmospheric conditions, terrain and wind direction. A site review was conducted to achieve the threshold criteria outlined in the Irish Wind Energy Development Guidelines 2006. Cumulative operational noise assessments were also required, giving consideration to other Phase 1 offshore windfarm developments proposed in the Irish Sea.

Attended and unattended noise surveys were carried out in the wider Poolbeg area to identify the existing noise environment in the community. Predictive calculations for onshore piling and other construction works were carried out, giving consideration to the various construction stages of the project and mitigating their impact on future residential receptors in the area. A 3D computer-based prediction model was generated to quantify the noise level associated with the operational noise levels from the onshore substation and assessed against the BS 4142 standard for rating and assessing against industrial and commercial sound.

Separately AWN has also calculated onshore construction noise levels and generated noise contours from piling works and general construction for the ornithology and ecology specialists to incorporate into their impact assessments.

## RESULT

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The assessment and mitigation measures ensure minimal disruption to human receptors. Noise and vibration levels remained within acceptable limits, addressing environmental and social concerns. These actions demonstrated the CWP Project's commitment to sustainable energy development while preserving local environmental and social integrity.

### ABOUT TRINITY CONSULTANTS

Trinity Consultants, a leading global environmental consulting firm, provides services and solutions in the EHS Regulatory Compliance, Built Environment, Life Sciences, and Water & Ecology markets. Founded in 1974, Trinity has the technical expertise, industry depth, and capabilities to help clients achieve their goals across the natural and built environments.