

Environmental Noise: Infrastructure Award

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★ **Winner:** RMP, Exxon Mobil, Fife Ethylene Plant

The flaring activities at Fife Ethylene Plant, have been an ongoing source of noise complaints for the surrounding communities.

The acoustic consultants worked closely with Exxon Mobil and SEPA to undertake 24/7 monitoring of flaring activity to quantify the nature of the noise sources, propagation paths, influencing factors and community impact. Detailed modelling, analysis and recommendations were provided to support the recommended mitigation plan.

The consultants used a network of time synced permanent noise and weather monitors to measure flaring events and calculate attenuation profiles. Permanent monitors also allowed for a detailed understanding of residual noise at Noise Sensitive Receivers. A significant low frequency component to the elevated flare tip noise which was the likely cause of the disturbance was identified.

Exxon Mobil committed to a three year £140million work programme including the replacement of the elevated flare tip to reduce the noise produced by the tip and change the source characteristics of the tip. The mitigation programme also included the construction of one of the largest enclosed ground flares in Europe. Following installation of the mitigation measures, monitoring and analysis of subsequent flaring events confirmed a significant reduction in noise was achieved within the surrounding communities.

The judges noted that this was an unusual project due to its scale, budget and the involvement of SEPA (Scottish Environmental Protection Agency), and that one of the challenges was the application of BS 4142 for the assessment. Creativity and innovation were shown in the analysis and measurement methods developing an approach that could be used elsewhere for other similar plant. Thousands of people benefit from the reduction in flare noise which the environmental noise mitigation achieved. "Major flaring events, associated with process disturbances at the Mossmorran Complex, have the potential to impact on nearby communities and generate a significant number of public complaints. A robust monitoring history of sound emissions from elevated flaring was considered essential in order to quantify the level of off-site impact and make informed decisions about Best Available Techniques to mitigate impact going forward. The comprehensive monitoring and analysis work undertaken by RMP at Mossmorran has provided a strong foundation on which significant and realistic sound reduction measures can be achieved at this facility." (Scottish Environmental Protection Agency, Noise Specialist)

ACOUSTIC AWARDS 2024

These awards demonstrate the unique skills of UK based acoustic consultants in addressing challenges, championing innovation and originality and showcasing the significance of a profession which blends art and science to transformational effect.