ENVIRONMENTAL CONSULTING CASE STUDY

COMAH Support at Rural Anaerobic Digestion Facility

CHALLENGE

An anaerobic digestion facility in a rural, industrial-zoned area posed significant safety and environmental challenges due to the storage and handling of flammable gases.

SOLUTION

AWN provided support such as a comprehensive land use planning assessment carried out in line with HSA's 2023 technical guidance for COMAH sites.

RESULT

The assessment confirmed that the development meets all regulatory requirements for land use planning and ensured that the off-site risk is acceptable.

CHALLENGE

The proposed development of an Anaerobic Digestion (AD) facility in a rural, industrial-zoned area presented significant safety and environmental challenges due to the storage and handling of flammable gases such as untreated biogas and upgraded biomethane. As a "lower tier" COMAH (Control of Major Accident Hazards) establishment, the facility was subject to strict regulatory oversight and required a detailed land use planning assessment. The primary concerns included the potential for major accident scenarios—such as vapour cloud explosions (VCE), jet fires, flash fires, fireballs, and pool fires—following the accidental gas releases from various site installations, including the energy centre, compressors, bay trailers, digesters, and biogas pipelines. A robust land use planning assessment was required due to proximity to residential properties, industrial buildings, and infrastructure (e.g., substations) to minimise off-site risks.

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SOLUTION

AWN Consulting Ltd., a Trinity Consultants team, was brought in for the team's expertise in supporting COMAH establishments. A comprehensive land use planning assessment was carried out in line with the Health and Safety Authority's (HSA) 2023 technical guidance for COMAH sites. This included identifying all credible major accident scenarios, such as pipeline ruptures, instantaneous vessel failures, and continuous gas leaks. Advanced modelling tools were used to simulate potential impacts, including overpressure, thermal radiation, and toxic gas dispersion. Event frequencies were assigned using HSA and industry-standard data. Individual risk contours were developed based on typical occupancy patterns while societal risk was assessed using FN curves and expectation values. Risk mitigation measures, such as limiting the number of biogas trailers on-site and installing gas leak detection and isolation systems, were incorporated into the analysis.

RESULT

The risk assessment determined that while individual risk contours extended beyond the facility boundary, they did not intersect with any occupied buildings or sensitive off-site receptors. The closest residential and industrial buildings were safely outside defined risk zones. Minor overlaps with access roads and unmanned facilities were considered acceptable due to low occupancy and limited exposure. No major accidents to the environment were identified, as the site does not store environmentally hazardous materials. Societal risk remained well within HSA tolerability thresholds. The assessment confirmed that the development meets all regulatory requirements for land use planning and off-site risk acceptability.

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.

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