

# Report into LNG Delivery System Noise Complaints

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## Report into LNG delivery Systems at the Newcastle Emlyn Dairy

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## Introduction

As per the requirement of the Environmental Permit for the site EPR/WP3231NB reference ICA 12:

*The operator shall review the refuelling of the on-site Liquefied Natural Gas (LNG) terminal against Best Available Techniques (BAT) for noise abatement, taking into account impact on nearby residential receptors. This review shall include: ·*

*Measurement of sound during LNG refuelling operations in accordance with the recognised BS4142:2014 noise assessment standard; ·*

*Consideration of the noise control techniques and technologies outlined in Part 3 of the published H3 Noise Assessment and Control horizontal guidance for industrial installations; and ·*

*Reference to the World Health Organisation guidelines for community noise. Upon completion of the work, a written report shall be submitted to Natural Resources Wales. If noise levels likely to cause complaints at nearby residential receptors are detected, the report shall include an assessment of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.*

## Background to the ICA

This ICA was included due to the number of complaints raised by local residents linked to the refuelling of the onsite bulk LNG tank situated on the eastern side of the factory, within what is currently known as the contractor's compound.

The delivery of LNG is completed using road tankers, and due to usage, the tank is currently refilled between once and twice per week.

At the time of the complaints the deliveries were being completed using a fixed vacuum pump attached to the lorry unit, this was an intrinsically safe pump which is fitted to all road delivery (LNG) tankers and is therefore an accepted delivery method, and one that is common across the UK.

When using the vacuum type pump the delivery takes approximately 1.5 hours from start to finish, this includes a cooling down period at the start of the process to reduce warming of the product during transfer.

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### Control measures implemented

It was recognised by Dairy Partners that the unloading of the LNG was a significant noise emitter and accepted that this was an intrusive sound, as a matter of course the supplier of fuel in this case Calor Gas products were contacted, and a number of meetings were held to discuss the possible actions that could be taken to reduce noise at source.

After a number of meetings Calor Gas made it clear that the delivery pump was a common type unit on the tankers used at Dairy Partners, however they also accepted that the older delivery vehicles may have pumps that were slightly louder than on the newer fleet, as such Calor agreed to ensure that all deliveries made to the Newcastle Emlyn site were done so using the newer type vehicle, however this was still based on the delivery using a vacuum based pump.

To mitigate further at this point, Dairy Partners formally advised Calor Gas that deliveries would only be permitted between 0900 – 1400 hrs Monday to Friday, therefore completing the task in a window that would cause the least possible disruption to the neighbours.

Dairy Partners continued to work with Calor Gas to understand if further improvements could be made to the delivery process while following BAT

### Best Available Techniques (BAT)

#### Noise Management Techniques

For noise and vibration IED requires installations to be operated in such a way that all appropriate preventative measures are taken against pollution, in particular through the application of Best Available Techniques (BAT). Best Available Technique means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole. BAT includes both the technology used and the way in which the installation is designed, built and operated.

In deciding what level of control constitutes BAT for a given installation, a number of factors need to be considered and balanced. These include:

- costs and benefits;
- the technical characteristics of the installation concerned;
- geographical location; and
- local environmental conditions BAT, in a general sense or at sector level, will be set- out in process- or sector-specific guidance.

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In all cases, the specific requirements relating to a particular sector should be reviewed as part of the decision-making process.

Assuming that all management, operational and maintenance issues have been satisfactorily addressed, once noise has been generated, there are a number of physical factors involved in determining how it is propagated and how much reaches the receiver. Noise levels at sensitive receptors can be minimised by:

- reduction at source;
- ensuring adequate distance between the source and receiver;
- the use of barriers between the source and receiver In determining the degree of control required, it is usual to calculate or measure the sound pressure level close to the source and, knowing the desired end-point, calculate:
- the attenuation provided by the environment at the sensitive location; and
- the additional attenuation required.

### Noise Control Measures

#### Procedures for managing noise

For some operational facilities, there are effective ways of reducing noise simply by being aware of its presence as an issue for the site, and by adopting appropriate procedures when carrying out everyday activities.

Such procedures can be collectively called “noise management” and can be particularly important where substantial noise control has been incorporated in a plant design.

The hierarchy for control should be to:

1. Prevent generation of noise at source by good design and maintenance.
2. Minimise or contain noise at source by observing good operational techniques and management practice.
3. Use physical barriers or enclosures to prevent transmission to other media.
4. Increase the distance between the source and receiver.
5. Sympathetic timing and control of unavoidably noisy operations.

#### Good Operational Site Practices

There are a number of common-sense procedures that can help to reduce noise emissions. Although these tend to be specific to operations at a particular facility, some common examples are listed as follows:

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- closing doors and windows in noisy buildings and using acoustic enclosures;
- ensuring that generator or vehicle engine hatches are kept closed;
- locating mobile plant away from noise-sensitive receivers;
- avoiding dropping materials from a height;
- switching off plant when not in use;
- stockpiling materials (for example, containers) so as to provide acoustic screening between noise sources and receivers;
- considerate behaviour by the workforce, especially at night, to avoid or minimise shouting, whistling and the alike;
- arranging delivery or on-site vehicle routes away from sensitive receivers; and
- use of “smart” reversing alarms, which produce sound at a volume relative to the background level, for example 5 or 10 dB above, rather than at a fixed volume; or using other safe systems of work which obviate the need for reversing alarms. Although the noise-reduction benefits of these practices can be difficult to quantify, they should form a routine part of best practice to reduce overall noise emissions.

### Training

The need for noise minimisation is widely advertised on site. As part of staff training and induction, it is explained to employees that they are to carry out their work with the minimal amount of noise possible especially if they are working outside.

### Maintenance

#### Routine Maintenance of Plant

Noise generated in mechanical plant by the interaction of moving or rotating parts can increase over time, as these parts wear. Specific acoustic attenuators may also degrade and wear out. The following are just a few examples:

- fans can go out of balance;
- bearings can wear and become noisy;
- the perforations in duct attenuators can become clogged and the acoustic lining damaged;
- ducts can start to rattle;
- internal combustion engine silencers can break down and burn out;
- acoustic enclosures (including building panels) may become damaged. All of these sources of increased noise could be avoided by ensuring a satisfactory standard of maintenance;
- Vibrating machinery with rotating parts; and
- Friction on conveyors.

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All plant will be maintained in good working condition. Dairy Partners has an in-house maintenance team who are available 24hrs a day. The maintenance team are competent to maintain and repair all pieces of equipment/machinery on site (with the exception of delivery lorries).

### **New Machinery & Tools**

All new machinery/tools will be assessed for noise using manufacturer's specifications before purchase and installation. All machine purchases will be completed by Managing Director.

Upon receipt of the new machinery/tools the maintenance manager will add into his preventative maintenance programme

### **Planned Works**

The maintenance team is instructed to carry out any potential noisy works after 8am and before 8pm (where possible). They are to inform the compliance manager if the work they are going to carry out is going to be potentially 4-6 out of 6 on the scoring system;

4– Extreme noise; 5 – Very extreme noise; 6 – deafening loud noise

### **Current Situation**

After a number of reviews with Calor Gas, it was found that newer vehicles to the fleet have silent delivery systems, this takes advantage of the pressure within the tanker to deliver the gas into the stand alone storage vessel, with the only disadvantage being the time taken to deliver the product, taking the delivery window from 1.5 hours to 3 hours.

It has been agreed with Calor Gas Products that only tankers with the silent delivery option will be permitted to deliver to the Newcastle Emlyn site, in turn Dairy Partners has agreed to open the window of delivery to 0800 – 1700 Monday to Friday, and 0900 – 1300hrs on Saturday.

Further mitigation has been taken in the form of instructions issued to the delivery drivers meaning that vehicles will not be permitted to idle when on site, all engines must be switched off once the vehicle is in place, and lights must be switched off unless the vehicle is moving.

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## Noise Assessment

To evaluate the delivery system, both Dairy Partners and Calor Gas products completed spot evaluations using individually calibrated noise monitors, as well as taking a number of videos of the delivery process, the videos showed the gauges on the delivery unit, and acted as evidence that the delivery was taking place. Both the video and spot noise samples showed / highlighted there was no additional noise to the industrial background and the main public highway, as already stated the delivery is silent with the only noise associated to the refuelling the occasional pipe movement due to the temperature of the gas.

## Ongoing Monitoring

Dairy Partners will continue to monitor the delivery system and have discussed the current situation with the neighbours in the community action forum, at this time there are no complaints from the closest receptor.

Dairy Partners have committed to the completion of a full site noise survey upon completion of the construction projects at the site. Prior to this, 3 monthly internal site noise assessments will be conducted as well as continued spot assessments, and video audits during LNG deliveries.

Videos of the unloading have already been shared with NRW, however further videos are available, as well as documented noise monitoring 'Spot Check' results.