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Prif Swyddog (Cynllunio a'r Amgylchedd)

CYNGOR
Sir y Fflint
Flintshire
COUNTY COUNCIL

Mrs Kay Roberts
Clerk to Gwernaffield and Pantymwyn CC
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Your Ref/Eich Cyf
Our Ref/Ein Cyf GN/Cefn Mawr
Date/Dyddiad 06 September 2017
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Dear Mrs Roberts

Blasting at Cefn Mawr Quarry

Thank you for your email of 6th July 2017. I have provided a comprehensive response set out within this letter because this matter continues to be raised within both the Gwernaffield and the Gwernymnydd Community Council areas.

The blasting limits imposed on Cefn Mawr Quarry are the most stringent in North Wales, partly due to the close proximity of a number of dwellings. Condition 15 of planning permission 047536 requires, 95% of blasts which take place in any 12 month period to be within the peak particle velocity (ground movement speed) limit of 4.0 millimetres per second (4mm PPV) at any residential property and for no individual blast to exceed 10mm PPV. Condition 16 requires the blasts to be monitored, and these are recorded at a number of different locations depending upon where within the quarry any given blast is carried out, and periodically the Council also takes its own readings. The blasting is carried out by EPC, who are specialist blasting contractors employed by Castle Cement Ltd, the trading entity of Hanson Cement. The blast monitoring results are normally in the range 1-3 mm PPV and the blast compliance history for this quarry is very good. The limit set by Condition 15 is lower than the government recommended guidance limit of 6mm PPV, which is a value set on the basis at which 50% of the population are able to detect ground movement (as distinct from air overpressure) and thus might make a complaint.

You have enquired whether the blasting regime can be amended, however, the blasting limit is fixed by a planning condition and the Planning Authority is unable to change this without good reason. The only means of imposing different limits would involve the serving of a modification order which would certainly be challenged by the current quarry operator, Castle Cement Ltd (Hanson Cement), on the basis that it would be unreasonable and unnecessary, and would be the subject of a compensation claim against the Council. In our capacity as Mineral Planning Authority, we have no concerns regarding blasting at this quarry at the present time.

We do occasionally receive complaints from residents regarding blasting at Cefn Mawr Quarry, and what prompts a complaint is highly variable and depends upon where within the quarry the blasting is taking place, variability of the rock characteristics, the blast design, the weather and the circumstances of the complainants. In some instances complainants arise from people who would not normally be at their property when the quarry blasts, and if unaccustomed to it can be quite alarming for the individual concerned. The quarry does sound a warning siren prior to blasting, mainly for the benefit of walkers, but this may not necessarily be audible from within people's houses.

It is impossible to blast and for there to be no effects, and the limits set are a compromise to balance the residential amenity with the need to work the quarry. Normally the effects of a typical blast are hearing the blast and experiencing a "shake" which often makes loose fittings and fixtures vibrate and rattle. The more alarming blasts are the ones which give rise to a very abrupt loud bang akin to an explosion, and the least alarming ones are those that last for a few seconds as a rumble as the explosive charge detonations "zips" its way through the individual blast holes by the use of timed delays, which limits the maximum instantaneous charge that is going off at any given instant in time.

The design of a blast is complicated and depends upon variables such as the volume of stone to be moved and the structural geology, and it is not always possible to design a perfect blast due to unknown factors. The objective of a blast is to shift and break as much rock up as is possible using the minimal quantity of explosive whilst complying with safety requirements and blasting limits. The best blasts are those which all of the energy is used in fracturing and shifting rock into a neat muck-pile on the quarry floor, as this saves money on subsequent handling, crushing and grading activities and this will give the least impacts off-site. Poorer blasts fail to break and shift the rock, or have excess of explosive necessary to break the rock up, and in both instances will impart greater ground movement and air overpressure, and more likely to give rise to complaint.

The overwhelming majority of complaints are not due to ground movement, but instead are due to the perception of ground movement brought about by the effects of the shock wave, or air over-pressure. This is very difficult to control, and is worse if the rock in the blast breaks too soon, or fails to break adequately, meaning that the energy of the explosion vents to the atmosphere rather than being dissipated in breaking up the rock. This shock wave is often worse in bad weather with low cloud,

as the shock wave is reflected off the base of the cloud back to the ground. The shockwave will typically cause loose fittings, fixtures and any poorly maintained structures to resonate relative to fixed structures or the ground, and is often felt. Generally, if the blast is with its limits, the air overpressure will be at an acceptable level.

A number of residents have alleged that blasting is causing damage to their property. There is a wealth of information and studies have been carried out on this and cosmetic damage (hairline cracking of plaster) normally only starts to occur at ground movement levels exceeding 25mm PPV, and contrary to popular belief, continual exposure to lower intensity blasts do not give rise to cumulative damage. The majority of alleged damage such as plaster cracking and cracks in masonry are due to other factors, such as soil shrinkage & expansion, tree induced heave, differential settlement of foundations, internal and external building alterations, disturbance from installing solar panels and loft insulation, shrinkage and deterioration of timbers with age, rot, or woodworm, rusted screws and nails, thermal expansion and contraction and wind or snow loading. It is normally coincidental that cracks are noticed following blasting. The blasting levels at this quarry are very low and would not be capable of causing structural damage unless a building has pre-existing structural weaknesses or defects.

In a well maintained property the impact of a blast will have no effects on the structural integrity of a building. Buildings are flexible and are subject to repeated stresses induced by wind loading, thunderstorms, thermal expansion, snow loading and occupancy effects such as loud music, washing machines and slamming a door without ill effect. In a poorly maintained building a blast could trigger a component to fail, such as a rotten window, but in these circumstances, these could fail due to other stresses, such as slamming a door, or strong wind. However, where air over pressure is very high this can cause loose fixtures and fittings to rattle and potentially fall, such as photos hanging on a wall, or crockery, but generally this would only occur if the blast was significantly over its PPV limits.

Whilst this quarry is normally considered to be one of our exemplar operations, and we have no concerns regarding blasting, I can, however, advise you that we have raised concerns with the quarry relating to the cleanliness of the public highway between the quarry entrance and the junction with the A494(T) since the aggregates production has switched from the nearby Aberdunna Quarry in Maeshafn to Cefn Mawr Quarry. Unlike the cement lorries which load up under automated concrete silos, the aggregates lorries have to travel into the working quarry to be loaded and as a consequence have been carrying a slurry of limestone and clay out on to the public highway. The quarry has carried out some improvements, such as a wheel wash, with limited success but periodically breaches of the planning condition No 9 which prohibits material from being deposited on the highway continues to take place. This aesthetically degrades the local environment, is a potential highway safety hazard and is a source of off- site dust. We have formally written to Hanson to advise them of the need to remedy this, and if no improvement is made, will escalate the matter.

I trust this updates you on the issues concerning Cefn Mawr Quarry. Should you require further information or updates, please do not hesitate to contact me

Yours sincerely

Manager, Minerals and Waste Planning
Rheolwr, Cynllunio a'r Mwynau a Gwastraff