

From: Andrew Richards

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To: Aldridge, Steven; helen.skinner@planninginspectorate.gov.uk; Lea Castle Quarry <leacastlequarry@worcestershire.gov.uk>

Subject: [WCC EXTERNAL]Objections to Lea Castle Farm Quarry

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Good evening,

I'm contacting you in regards to the current Lea Castle Farm Public Inquiry. I understand the inquiry is already underway however I would like my objections attached recorded and presented if possible? I have written a short essay/letter expressing my views and in more detail.

I moved to the village of Cookley in March 2018 and live there with my wife and two young children. I am a HART (Hazardous Area Response Team) Paramedic for West Midlands Ambulance Service.

Many thanks,

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Objections to Lea Castle Farm Quarry

Andrew Richards *November 2024*

With the expansion of the world's population comes the need for expanded infrastructure through the construction of housing and other buildings, road construction and maintenance. The urban population boom is devouring colossal amounts of sand. Sand accounts for 79% of the primary material inputs for buildings and transport infrastructure, with demand in 2010 alone topping out at 21 gigatonnes. For each tonne of cement, the building industry needs about six to seven times more tonnes of sand and gravel. Thus, the world's use of aggregates for concrete can be estimated at 25.9 billion to 29.6 billion tonnes a year for 2012 alone. This production represents enough concrete to build a wall 27 metres high by 27 metres wide around the equator.

The environmental impact of mineral extraction is not commonly understood by the general public but continues to contribute massively to decreasing air quality and adding to greenhouse gas emissions from both the extraction process itself and the transport, sometimes over long distances of the mined materials. It also has an indirect impact from the production of cement for use in concrete together with sand and gravel: for each tonne of cement, an average of 0.9 tonnes of carbon dioxide are produced. Emissions of 1.65 billion tonnes of carbon dioxide were estimated from cement production in 2010 alone (about 5% of total greenhouse gas emissions) and total carbon emissions from cement amount to about 30 billion tonnes of carbon dioxide.

We are all responsible for playing our part in trying to look after the environment and attempt to slow or reverse where possible the harmful effects of our very existence as a race. Deciding how our local environments are managed and protected should be influenced by what is right and in the best interest of the people that live there, but also how that contributes to the wider environment and the planet.

In January 2019 Worcestershire County Council launched a biodiversity scheme that offers funding and specialist advice to improve natural spaces; funding for the programme was secured by the County Council from the European Regional Development Fund. It is being delivered in partnership by Worcestershire Wildlife Trust and aims to offer organisations with publicly accessible land funding and specialist advice to improve the quality of Worcestershire's natural environments. Councillor Tony Miller, Cabinet Member with Responsibility for the Environment at the County Council, is quoted on WCC's website and said: "This is a great opportunity for

organisations to get involved with creating and maintaining local natural heritage and making a difference to wildlife in Worcestershire.

"Our countryside assets and natural heritage are some of the things that set Worcestershire apart and this is a chance to not only celebrate and appreciate but really take part in conserving our rich natural landscape."

The proposed site lies just 2.3km from the center Kidderminster, 700 metres from Wolverley and 370 metres from Cookley. It contains farmland and an equestrian centre and is accessible for leisure activities by residents of those local communities. Access to the site by main roads makes the site very convenient for NSR Aggregates from a logistical aspect and will clearly aid profits. However, reasons not to extract sand from here are surely overwhelmingly apparant.

The effects of health through the inhalation of silica dust are widely accepted and documented. Exposure can cause and exacerbate asthma, chronic obstructive pulmonary disorder (COPD) and silicosis among others. Silica dust is one of the most harmful components of "particulate matter," a mixture of small airborne particles of organic chemicals, metals, minerals and soil (Reff 2009). Smaller particles pose the greatest danger because they can get deeper into the respiratory system.

Fine particles smaller than 2.5 micrometers in diameter – less than 1/30th the width of an average human hair – are more harmful than larger particles. (The shorthand designation for particulate matter of a given size is "PM" followed by the diameter, as in PM2.5, PM4, PM10 etc.) Epidemiological studies have shown that breathing air polluted with PM2.5 particles causes heart and lung problems and increases the death rate from heart disease and lung cancer (Lepeule 2012). Particles larger than 2.5 micrometers in diameter do not get as deep into the lungs, but PM10-size pollutants do exacerbate respiratory diseases, particularly asthma, and cause heart failure (Shah 2013; Weinmayr 2010).

One study of a sand and gravel facility in California found that at 750 meters (almost half a mile) downwind, the furthest point monitored, the level of silica in the air was twice as high as at an upwind site (Shiraki 2002). The silica content in particulate matter samples decreased from 33 percent at the plant itself to 10 percent at 750 meters away (Shiraki 2002). The American Environmental Working Group (EWG) recommends that air quality should be monitored at up to 1,500 meters (almost a mile) from sand mining and processing facilities. Monitoring at even greater distances may be necessary if significant quantities of silica are found at 1,500 meters downwind.

The biggest risk is to construction workers themselves. Heavy and prolonged exposure to RCS can cause lung cancer and other serious respiratory diseases. HSE commissioned estimates it was responsible for the death of over 500 construction workers in 2005.

Since 2013, the rate of asthma deaths has increased 17%, from 2.15 to 2.5 per 100,000 people. In 2018, 20 children aged under 14 died from asthma in 2018, up from 17 in 2017 and 13 the year before. One third of childhood asthma cases are being linked to air pollution. (ONS). While NSR Aggregates will have strict regulations to abide by in terms of impact on local air quality, they won't be able to completely stop the release of silica dust. Any risk to the public is unacceptable.

With Worcestershire being a largely rural county, it seems unthinkable that a site has been proposed that is within such close proximity to residents. While I am against the principle of destroying natural habitats and leisure spaces I understand that materials must come from somewhere and that we all use materials for construction in the buildings we live and work in and roads we travel on. However forward thinking environmentally sustainable alternatives do exist.

Sand is a natural material that may seem abundant, but it is being depleted quicker than it is formed by the environment. Some contractors have started to use plastic waste as an alternative. Non-recyclable bits of plastic waste are ground up into small pellets which are then used as the fine aggregate in a concrete mixture. This process has started to gather momentum in India and here in the United Kingdom. While the long-term effects of using plastic in concrete are not fully known, researchers have studied its durability, thermal properties and fire resistance. Plastic is a good alternative to sand and also allows contractors to use up non-recyclable plastic waste in the process.

Contractors are also exploring the use of other sand-like aggregates, including crushed glass and quarry dust. Glass bottles can be recycled but small fractions of broken glass cannot. These bits of broken windows, mirrors, tubes and bottles can be crushed into a sand-like texture. Quarry dust from rock blasting and granite excavation also has similar properties to sand and crushed glass. Where alternatives to sand cannot be found, contractors have started to recycle sand from old construction projects and sites. Recycling old building materials such as sand, concrete and rubble is starting to gain traction around the world. By embarking on sustainable campaigns, engineers, architects and construction practitioners can minimise their impact on the environment and reduce consumption of natural materials (LaFarge, 2019).

Workplace exposure standard

The current UK exposure limit is set at 0.1mg/m³ which is shared with the U.S. the U.S regulator OSHA has said that the limit was set over four decades ago and is based on what we knew about silica in 1968. In 1974 the U.S government's occupational health research institute, NIOSH recommended cutting the limit by 50% to 0.5mg/m³ (Hazards.org, 2019). Considering the wealth of evidence into the risks of lung cancer from inhalation of silica this proposal is long overdue. In British Columbia, Canada the limit is set much lower at 0.025mg/m³. It's worrying that the UK permits exposure levels in the workplace to a level based on knowledge over 40 years old. If workers can be exposed to this higher level on site compared to other countries then what would local residents be exposed to who live within 500 metres of this proposed site? The industry and HSE both maintain it is not feasible at workplace level to measure respirable crystalline silica down to the 0.05mg/m³ level. In a 2014 statement to *Hazards* its consideration of whether to shift from the current 0.1 mg/m³ Workplace Exposure Limit (WEL) has "focused on the ability to reliably measure below this limit in the workplace. Although under controlled conditions it is technically possible to measure below 0.1 mg/m³ results of work undertaken by the Health and Safety Laboratory [HSL] have shown that this is not currently practical within a workplace setting." So for now the level remains at 0.1mg/m³.

The British Geological Survey on its Centre for Sustainable Mineral Development website states: "Minerals are vital to our modern economy. However, the extraction of minerals impacts on the environment, economy and people. These impacts can be negative or positive, temporary or permanent." In the case of proposed Lea Castle Farm quarry these impacts will be wholly negative for the local residents living near to it through loss of recreational spaces, disruption from a large-scale mining operation from lorry's, light and noise pollution. It will be a direct risk to health from silica dust as well as risk harm to people's mental health and wellbeing. Please refuse this appeal.

<https://www.theguardian.com/cities/2017/feb/27/sand-mining-global-environmental-crisis-never-heard>

<https://lafargeholcim.co.tz/sand-alternatives-for-sustainable-construction/>

http://www.worcestershire.gov.uk/news/article/1700/official_launch_of_the_biodiversity_scheme_that_offers_funding_and_specialist_advice_to_help_improve_natural_spaces

<https://www.greenfacts.org/en/sand-extraction/l-2/index.htm>

<http://www.hse.gov.uk/construction/healthrisks/cancer-and-construction/silica-dust.htm>

<https://www.ewg.org/research/sandstorm/health-concerns-silica-outdoor-air>

<http://www.hazards.org/dust/silica.htm>

<https://www.bgs.ac.uk/mineralsuk/sustainability/home.html>