



Report Title: Report to Health and Care Overview and Scrutiny Committee re: health & welfare impacts of Walleys Quarry

Date: 26 July 2021

1. Introduction

- 1.1. The following report has been produced at the request of the Health and Care Overview and Scrutiny Meeting focussing upon the health and wellbeing impacts of emissions from Walleys Quarry Landfill Site.
- 1.2. The contents are a consolidation of information from Staffordshire County Council (SCC), Newcastle-Under-Lyme Borough Council (NULBC), Public Health England (PHE) and the Strategic Coordinating Group (SCG) established for this incident. Please refer to the separate submission from the Environment Agency (EA) for information regarding the history of the site, its operation and the enforcement activity being undertaken.

2. The current position

- 2.1. For a number of years, parts of the borough have experienced problematic foul odours from the Walley's Quarry Landfill Site in Silverdale. Until recently the site was operated by RED Industries Ltd, but in April the name of the operator has been changed to Walleys Quarry Ltd, albeit with many of the same company directors.
- 2.2. Over the weekend of the 26–28 February 2021 NULBC received over 2000 complaints from residents and organisations in the borough and further afield about the foul odours present in the area.
- 2.3. Problems with odours have continued since the February incident. The table below shows the level of complaints received by NULBC and by the EA in 2021.

Complaints To	January 2021	February 2021	March 2021	April 2021	May 2021	June 2021	Total Year to Date
NULBC*	921	3,263	4,799	3,316	3,466	1880	17,649
Environment Agency	2,050	4,098	6,347	6,181	8,482	4444	31, 602

*verification of complaints data has been undertaken since the last reported figures.

- 2.4. Multi-agency activity was initiated in March 2021 with an Incident Management Group (IMG) established initially to provide support to the coordination of organisational activity. The IMG was escalated to a Strategic Coordinating Group (SCG) in June 2021 due to the persistence of the odour and to provide a sustainable structure and route to any additional technical support and advice identified in the prolonged response.
- 2.5. The SCG's role is to ensure that a co-ordinated effort is achieved in responding to the situation and while it does not have collective authority to instruct agencies how to act, it provides an opportunity to agree coordinated direction which is translated by each responder.
- 2.6. The SCG has established four separate workstreams focussing on the multi-agency activity related to the site:
 - Communication & engagement cell led by SCC
 - Communities cell led by NULBC
 - Regulation & enforcement cell led by the EA
 - Scientific, technical advisory cell led by PHE
- 2.7. Walleys Quarry Ltd is reported to be complying with EA enforcement notices, but this has not had a marked effect on exposure and odour levels, based upon ratified air quality data. This understandably, means that many local residents remain unhappy and concerned and rightly expect that the situation is resolved as soon as possible.

3. Air quality monitoring

- 3.1 The EA has deployed air quality monitoring equipment in the Silverdale area and the results are being reviewed by PHE. PHE are continuing to provide a human health risk assessment of the data.
- 3.2 NULBC commissioned air quality consultancy Ricardo to undertake a review of the first two EA monitoring campaigns. Ricardo concluded that the EA monitoring campaigns focussed on assessing the landfill's potential impact on public health through its influence on local H₂S concentrations, and were useful in showing that the H₂S concentrations measured did not pose a direct health issue to local residents. However the monitoring did not provide a comprehensive view on the presence/absence of offensive odours, nor the potential psychosomatic effects of such odours.
- 3.3 The Ricardo report recommended that future monitoring should robustly address whether there was significant pollution which may:
 - Be harmful to human health or the quality of the environment
 - Cause offence to a human sense
 - Result in damage to a material property
 - Impair or interfere with amenities or other legitimate uses of the environment.

- 3.4 Subsequently, the EA, SCC, and NULBC have jointly funded an extension to the air quality monitoring, with four static units being in operation. The parameters monitored include Hydrogen sulphide (H₂S), Methane (CH₄), Oxides of nitrogen (NO_x, NO, NO₂), Particulate Matter (TSP, PM₁₀ and PM_{2.5}), Volatile Organic Compounds (VOCs) including Benzene, Toluene, Xylene and Ethylbenzene. In addition meteorological data will be collected. The data from these units is assessed by PHE against international guidelines published by World Health Organisation (WHO) and the US - Agency for Toxic Substances and Disease Registry (ATSDR) for annoyance and health impacts, with both the data and their assessments published. This information is summarised in the table below.
- 3.5 In addition to joining with the EA on the provision of static air quality monitors, NULBC has also deployed Jerome hand held air quality monitoring devices to be used both by Environmental Health Officers undertaking home visits, and to leave in properties for extended periods to monitor levels of H₂S.
- 3.6 These monitors have helped officers to develop a picture of H₂S concentrations and patterns of those concentrations over time as part of the effort to determine whether the odours give rise to a Statutory Nuisance, and whether an Abatement Notice should be served.
- 3.7 As this data was collected for purposes which may result in particular legal action, it has not yet been published on the Council's website. The data from the four static monitoring stations, however, is routinely published.
- 3.8 The air pollutant recorded at elevated levels so far has been hydrogen sulphide. Table 1 shows the frequency with which hydrogen sulphide concentrations have been above the World Health Organization's (WHO) odour annoyance guideline level (7 µg/m³, 30-minute average).

Table 1: frequency with which hydrogen sulphide concentrations have been above the WHO odour annoyance guideline

Location	19/4 – 25/4	26/4- 2/5	3//5 – 9/5	10/5- 16/5	17/5- 23/5	24/5 – 30/5	31/5 – 6/6	7/6 – 13/6	14/6 – 20/6	21/6 – 27/6	28/6 – 4/7	5/7- 11/7
MMF1 - Silverdale Cemetery	18%	4%	6%	15%	1%	7%	30%	1%	11%	2%	1%	5%
MMF2 - Silverdale Road	8%	10%	21%	20%	9%	15%	1%	10%	7%	1%	8%	18%
MMF6 - NuL Fire Station	4%	13%	6%	1%	10%	16%	6%	10%	9%	4%	8%	3%
MMF9 - Galingale View	21%	35%	48%	10%	53%	47%	18%	19%	13%	12%	10%	17%

- 3.9 The data provided to PHE by the EA have been compared to available health-based air quality guidelines and standards or assessment levels for hydrogen sulphide, particulate matter, nitrogen dioxide, and methane. Where the concentrations in air are shown to be lower than appropriate health based standards or guidelines, it may be assessed that the risk to long term health is minimal. The 24-hour average guideline value for hydrogen sulphide (150µg/m³) was exceeded at one monitoring station on two days during the monitoring period: 7 & 8 March 2021, the highest of which was 202 µg/m³.
- 3.10 Exposure to concentrations of hydrogen sulphide above the WHO 24-hour guideline value does not necessarily mean that health effects will occur, but it reduces the margin of safety that is considered desirable to protect health. The human nose is very sensitive to odours, and substances that are perceived as odorous are commonly present at levels below which there is a direct toxicological effect.

4. Health impacts

- 4.1 Based on the air quality monitoring data PHE's assessment is that any risk to long-term physical health is likely to be small. However, they stress that they cannot completely exclude a risk to health from pollutants in the area, especially if exposure continues at these levels. PHE's human health risk assessment along with further information can be found at the following link: <https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/>
- 4.2 PHE are becoming increasingly concerned about the potential for long term health effects because of the duration of exposure to air pollution that residents have already suffered and the uncertainty about how much longer this will persist.
- 4.3 The results for hydrogen sulphide continue to be above the WHO annoyance guideline value for a considerable percentage of the time, which is undesirable due to the effects on people's wellbeing and the symptoms they are experiencing.
- 4.4 Residents have reported a range of symptoms associated with the air pollution, with reports made to a survey by local MP Aaron Bell, 'impact statements' to NULBC, and a 'symptom tracker' established by SCC <https://www.staffordshire.gov.uk/Care-for-all-ages/Publichealth/Walleys-Quarry/Smell-and-symptom-tracker.aspx>.
- 4.5 The results of all of these are similar, with people reporting a range of symptoms such as headache, nausea, irritation to the eyes, exacerbation of underlying respiratory illness and mental health problems including anxiety and depression.
- 4.6 At Tuesday 13 July there had been a cumulative total of 1807 responses to the 'symptom tracker'. Reports of odour are shown in Table 1 and reports of symptoms in Table 2. PHE, SCC and the NHS are working with Keele University to conduct a study to try and more accurately quantify the impact of emissions of hydrogen sulphide on health.
- 4.7 The frequency and intensity of reported odour and symptoms is greater in the area closer to the site. In the map in Figure 1 below the 'inner zone' where reports of odour and symptoms are most common and intense has a population of around

11,000 and the 'outer zone' a population of 37,000 (26,000 in addition to the 'inner zone').

Table 1: Symptom tracker cumulative reports of odour (highest rating given for that day)

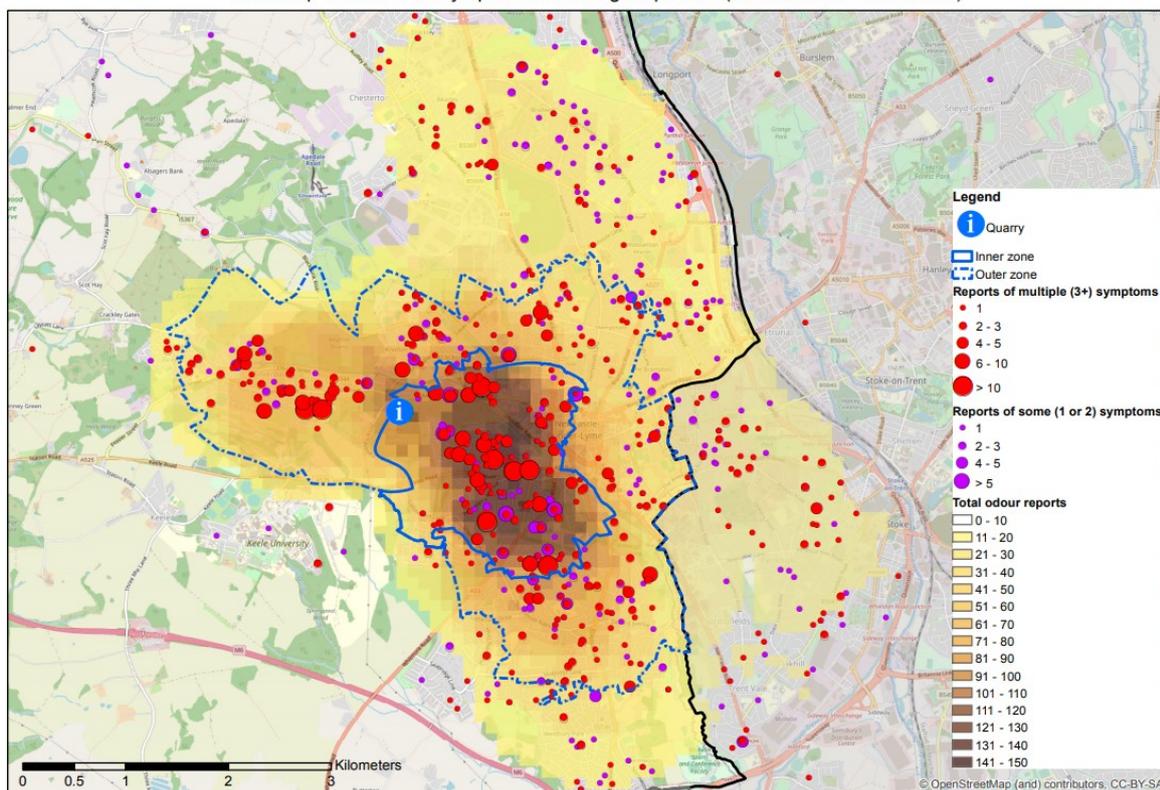
Odour level	Cumulative responses
6 - Extremely strong odour	629 (35%)
5 - Very strong odour	445 (25%)
4 - Strong odour	358 (20%)
3 - Distinct odour	213 (12%)
2 - Faint odour	68 (4%)
1 - Very faint odour	23 (1%)
0 - No odour	71 (4%)
Grand Total	1807 (100%)

Table 2: Symptom tracker cumulative reports of symptoms (irrespective of time of day)

Symptom	Cumulative responses
Feeling sick	949 (53%)
Headache	1199 (66%)
Dizziness	438 (24%)
Stinging eyes	805 (45%)
Difficulty breathing	553 (31%)
Disturbed sleep	1148 (64%)
Feeling anxious or depressed	774 (3%)

Figure 1: map showing location of reports of odour and symptoms

Heatmap of odour and symptom monitoring responses (cumulative to 24-06-2021)



5. Actions underway and planned to mitigate the risk to resident's health

- 5.1 The EA is responsible for regulating the landfill site and are working with the operator to carry out works to try and remediate the problem.
- 5.2 PHE, SCC and the NHS strongly recommends that all measures are taken to reduce the offsite odours from the landfill site. The rapid reduction in emissions of hydrogen sulphide from the site is fundamental to minimising any further harm to health.
- 5.3 The NHS has put in place extra capacity for people with mild or moderate mental health impacts such as anxiety, depression and sleep disorders.

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