

Walley's Quarry Landfill site

Summary of surveys of odour and symptoms

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1. This report highlights findings from four surveys that have been undertaken to quantify health and well-being issues experienced by residents of Newcastle-under-Lyme living close to Walleys Quarry Landfill site.
2. The following surveys have been included:
 - Walleys Quarry Health Impact Survey - produced by MP Aaron Bell's Office, went live on 4th of May (**HISMP**)
 - Smell and symptom tracker - Staffordshire County Council, cumulative results from 18th May to 13nd of October (**ST**)
 - Health impact statements from local residents - Newcastle-Under-Lyme Borough Council, collected between 29th January and 25th of April (**HISLR**)
 - Walley's Quarry Landfill Community Health Survey Report - produced by Sian Rooney, et al., collected between 1st and 30th of June 2021 (**CHS**)
3. As with any self-reported survey there is a risk of bias: people tend to base their answers on how they feel at the time - for example, if they were responding to the survey on a day where there was no odour they might be more likely to under report; if severe odour they might be more likely to over report symptoms.
4. It is important to note that the four surveys have similarities and differences. Each survey asked respondents to self-report odour and symptoms that they were experiencing. However the questions were asked in different ways, which makes direct comparison difficult - for example, they included option to report different symptoms and some combined symptoms.
5. The data collection methods were also different between surveys. The HISMP, HISLR and CHS were undertaken at a single but different point in time so variations in responses may be due to the different levels of exposure at the different times.
6. The ST was longitudinal and for the purpose of this report cumulative results have been used covering the period 18 May to 13 October. Due to the nature of this survey allowing respondents to log on daily and record their symptoms it will include multiple responses from the same people.

- The CHS included respondents that were both over and under 18 years old, so in order to compare the results with the other surveys only responses from those over 18 years are included in the symptom table below.

Responses to the surveys

- Table 1 highlights the response rates for the different surveys. It is likely that some of the responses are from the same people completing each survey. The figures of 1,000 to 2,000 responses to each survey represent around 3-5% of the total population of the inner and outer zones identified in Figure 1 below.

Table 1: surveys and number of responses

Survey	Number of responses
Walley's Quarry Health Impact Survey (HISMP)	1,426
Smell and symptom tracker (ST)	2,168 cumulative responses
Health impact statements from local residents (HISLR)	800
Walley's Quarry Landfill Community Health Survey (CHS)	1,881 total 1,754 18+ years

Respondents distance from the site

- Figure 1 shows data from the ST highlighting the areas with the most frequent responses. 94% of respondents to ST lived within 3 miles, and 45% lived within one mile of the site. Data from the ST indicates an inner zone with very frequent responses and an outer zone with frequent responses. Based on ONS Mid-Year population estimates for 2019 these would have the following populations:
 - Inner zone: 10,200
 - Outer zone: 36,700 (or 26,500 excluding those within the inner zone)
- Figure 2 shows data from the CHS highlighting the area with the most frequent responses. This area is consistent with the results from the ST. The majority of respondents to CHS also lived within 5000m (3 miles) of the site. 49% of respondents to HISMP lived in the two postcode areas closest to Walleys Quarry landfill site (ST5 6, ST5 2).

Figure 1: responses to ST (cumulative to 13 October 2021)

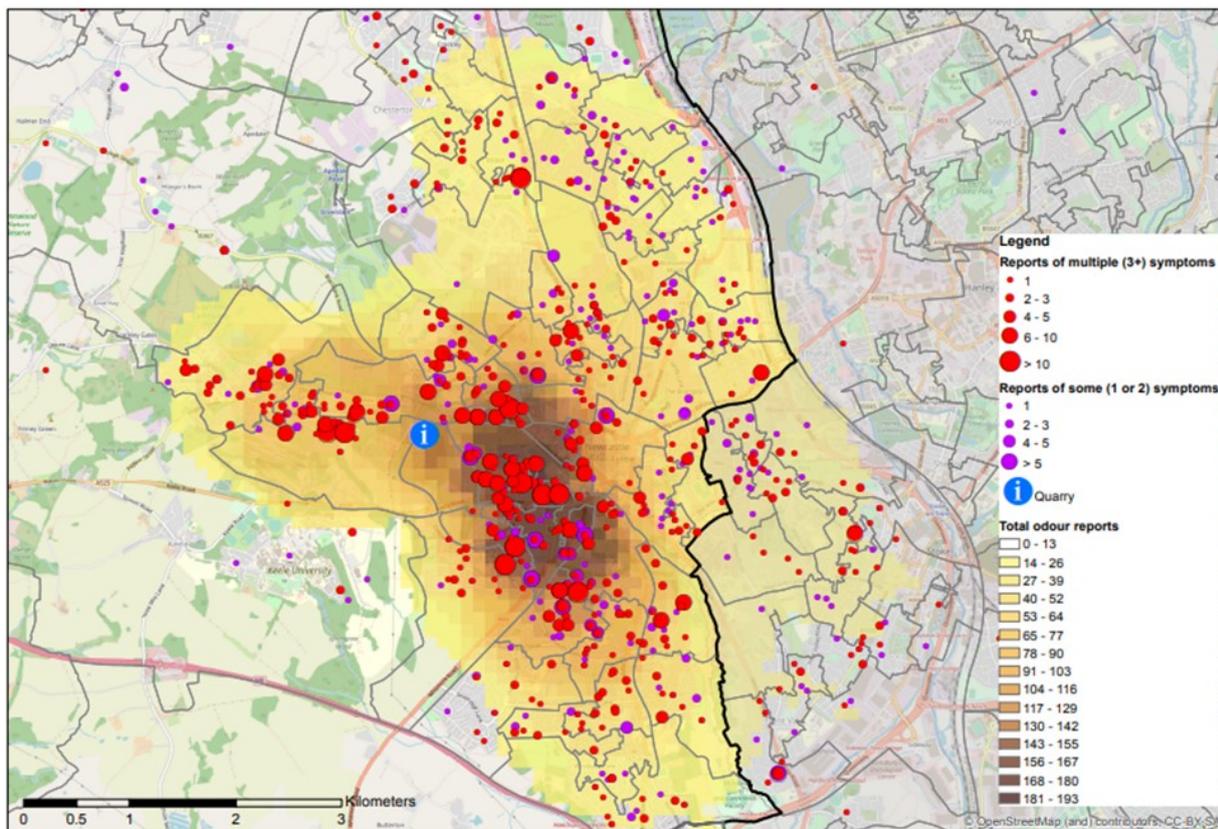
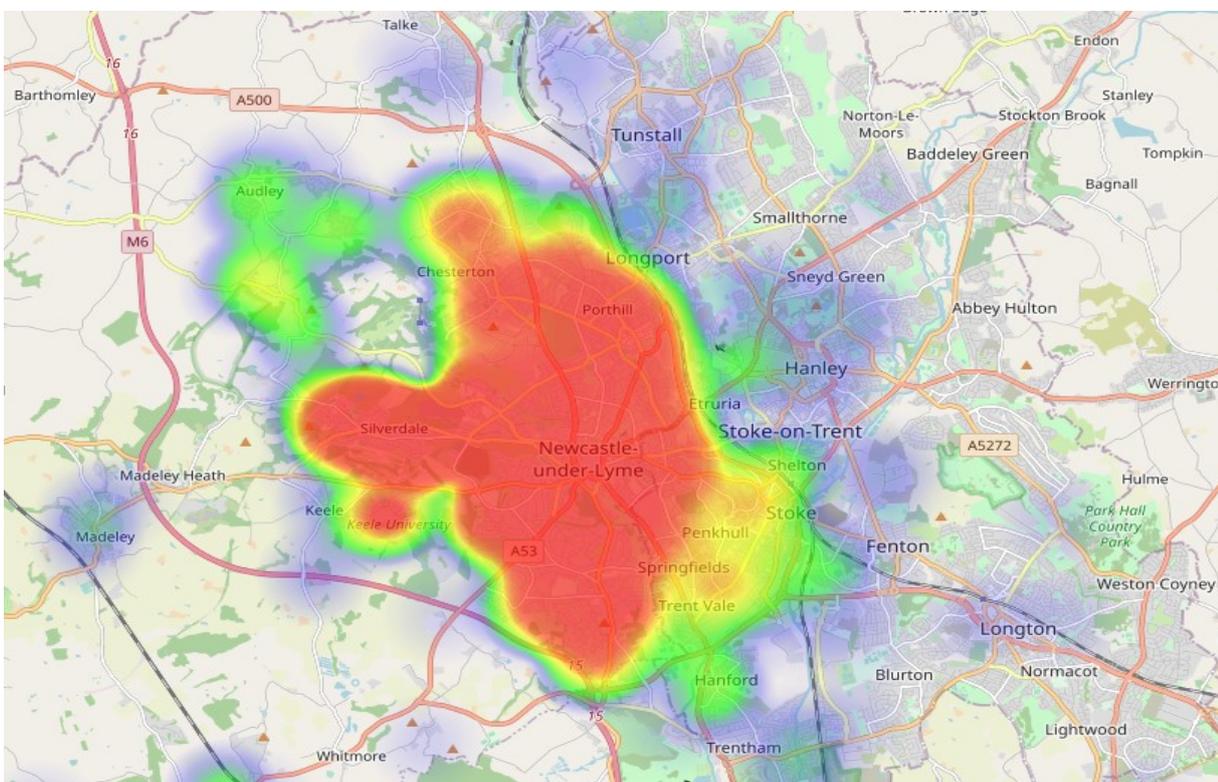


Figure 2: responses to CHS (01 to 30 June 2021)



Results

Odour

11. The vast majority (80%) of responses to the ST stated that the odour from the Quarry was strong, with large proportions of responses rating the odour as very or extremely strong (25% and 35%, respectively). 94% of all responses rating the odour as strong were from people living less than three miles from the Quarry.
12. Over two thirds (68%) of respondents of the HISMP reported that they could smell the odour five or more days a week, with over a quarter (26%) of all respondents stating that they could smell the odour every day. The majority (58%) reported being significantly affected by the odour five or more days a week and 19% reported that they are significantly affected every day.
13. Nearly all (95%) of respondents to the HISMP, who had specified what measures they were taking due to the impact of the odour, reported having to close their windows in an attempt to avoid the odour, 83% reported not being able to use their gardens, 49% were not inviting friends over, and 29% had taken the decision to leave the area. Most respondents (75%) had also purchased products such as air fresheners and candles due to the odour.
14. Lower proportions of respondents of the HISLR reported impact of the odour on day-to-day living (although the responses to HISMP and HISLR may not be directly comparable due to differences in data collection between the surveys): 44% stated that they could not open windows/air vents/doors to get fresh air, 30% reported odours in property (house/flat or in cars), 22% stated that they cannot use garden/enjoy garden properly/put washing out, 18% reported impact on daily outdoor exercise, 6% reported odours in schools/college/hospital/ workplaces and 5% stated that they avoided/disliked visiting areas where smells permeate.

Symptoms

15. Each of the surveys asked people to report various symptoms that they were experiencing. Table 2 shows the symptoms reported to each survey:
 - Headache was consistently reported as the most common symptom across all the surveys, although the range is wide (between 49% HISLR to 82% HISMP).
 - The results for Mental Health are similar across all three surveys with symptoms reported by around half of all respondents, with the exception of the CHS with three quarters of respondents reporting some symptoms, although reports of anxiety and depression were in line with the other surveys.

- Nausea/feeling sick was reported by over half of respondents in two of the surveys (ST and HISMP).
- Eye irritation and disturbed sleeping were also reported by a high proportion of respondents in both the (ST, CHS and HISMP surveys).
- Difficulty breathing was reported by just under half of the CHS respondents, a third of ST respondents and just under a quarter of HISMP respondents.

Table 2: symptoms reported

	Health Impact Survey (HISMP)	Symptom tracker (ST)	Impact statements (HISLR)	Community Health Survey (CHS)
Symptoms related to odour				
Headache	82%	66%	49%	67%
Feeling sick/nausea	71%	54%	28%	N/A
Vomiting	13%	N/A	N/A	N/A
Dizziness	N/A	25%	Included with headache	N/A
Disturbed sleep	38%	64%	11%	60%
Symptoms related to hydrogen sulphide exposure				
Irritation of nose and throat	17%	N/A	19%	48%
Irritation of eyes	45%	11%	61%	N/A
Difficulty breathing	23%	32%	11%	47%
Exacerbation of respiratory conditions	20%	N/A	13%	N/A
Mental health symptoms				
Any symptoms	N/A	43%	46%	74%
Stress	51%	N/A	N/A	N/A
Anxiety	45%	N/A	N/A	32%
Depression	27%	N/A	N/A	19%
Low mood	N/A	N/A	N/A	44%
Panic attacks	10%	N/A	N/A	N/A

Conclusions

16. The surveys had some methodological limitations: they all rely on self-reported data and respondents were not necessarily reflective of the wider population living close to Walleys Quarry landfill site. The surveys are also not directly comparable because questions were not consistent, and the time periods were different.
17. Nevertheless, large numbers of people have reported odour and symptoms, and the surveys demonstrate that air pollution from Walleys Quarry landfill site is having a detrimental effect on the well-being of more than 35,000 people.
18. The advice from the UK Health Security Agency is that the air pollution is unlikely to cause serious long-term physical health problems if levels of hydrogen sulphide can be brought down and kept low by the end of 2021.
19. Whilst the risk of long-term physical health problems, residents have undoubtedly a short-term impact on their well-being and it must be a high priority to reduce air pollution from the Walleys Quarry landfill site as a matter of urgency.
20. A further report will explore whether routinely available data indicates any evidence of long term health problems associated with living close to Walleys Quarry landfill site.