

Walleys Quarry Landfill Site

Community Impact Study

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Executive Summary

Purpose of the Study

1. Odours from the Walleys Quarry landfill site have been affecting people and businesses across Newcastle-under-Lyme and Stoke-on-Trent for a number of years. Partners across Staffordshire, including Staffordshire County Council (SCC), the Environment Agency (EA), Newcastle-under-Lyme Borough Council (NuLBC) and the UK Health Security Agency (UKHSA) have been working in collaboration to help mitigate the impacts and find a long-term solution to the issue. Earlier in 2024, Staffordshire County Council (SCC) on behalf of the Strategic Coordinating Group (SCG) commissioned Arcadis to prepare an independent Community Impact Study, the purpose of which is to understand the **health, social and economic impacts** of the air pollution (causing odours) and associated disruption arising from the operation of the Walleys Quarry landfill on the local community.
2. The purpose of the study is to present a **shared evidence base** for partners across Staffordshire and the local community. The aim is to understand the impact on the local population and inform potential mitigation, ongoing monitoring, management and remediation of the site, inform engagement with Central Government to highlight the issues and lobby for resolution and understand lessons learned to aid management of future incidents. It is emphasised that this is a truly **independent report**; whilst it has been commissioned by the SCG, it should not be read as the views of any individual member of the SCG. It reflects findings derived both from statistical datasets and importantly from community engagement.

Summary of Community Impacts

3. The report has explored various ways in which the community has been affected, including in relation to health, business and economy, the housing market, community cohesion and safety, reputational impact and cost of the ongoing incident. The report has considered a combination of information sources, including publicly available datasets, information provided by partner and stakeholder organisations and importantly, the views and opinions of a range of local residents, businesses, educational establishments, regulatory organisations and other local stakeholders.

Health

4. The ongoing situation at Walleys Quarry has led to significant health and mental health challenges for individuals in the area. Elevated levels of hydrogen sulphide exposure have resulted in short-term health symptoms like headaches, nausea, and respiratory issues. The UK Health Security Agency has raised concerns about potential long-term health risks for those exposed. In terms of mental health and wellbeing, anecdotal evidence from community engagement has highlighted levels of stress and anxiety for many residents living in the vicinity of the landfill site who experience a lack of control over their environment (using words like "stuck" or "imprisoned" to describe their situation). Evidence from GP prescribing data shows an increase in the prevalence of depression within nine of the ten GP surgeries in closest proximity to Walleys Quarry, although this trend is noted across the wider North Staffordshire area and may also be linked to the fact that doctors are more likely to diagnose and/or treat depression. There is evidence that prolonged stress can result in physical as well as mental health issues.
5. There is further evidence that vulnerable populations may be more susceptible to adverse health effects (both physical and mental); these include children, older people, people with pre-existing health conditions (for example individuals with breathing conditions like asthma are at higher risk of exacerbated symptoms) and people in lower-income groups who may already face health disparities due to multiple deprivation. The study has highlighted findings in relation to these populations – for example engagement with schools has suggested negative impacts on pupils' overall wellbeing and engagement with residents

of the traveller's site at Cemetery Road has highlighted how particular lifestyle / living conditions, coupled with proximity to the landfill site, has impacted their daily lives.

6. The Mental Health Clinic established by the Midlands Partnership NHS Foundation Trust (MPFT) and North Staffordshire Combined Healthcare NHS Trust together with other partners in 2021 saw increased utilisation by local residents, though there remains some stigma around mental health issues. Schools have employed mental health specialists to address children's broader issues exacerbated by the landfill site situation. Many individuals opt for self-medication using over-the-counter remedies for symptoms like eye irritation and allergies, reflecting a hesitancy to seek medical help. Overall, the community faces complex challenges affecting both physical and mental health, requiring multidimensional support strategies to address the ongoing crisis effectively.

Business and Economy

7. Data indicates a decline in business start-ups and closures across the UK, particularly in England, West Midlands, and Staffordshire due to various economic challenges in recent years such as the aftermath of the Covid-19 pandemic, energy and cost-of-living crises. The ability to recruit and retain staff does not appear to have been significantly affected, partially due to changes in working practices post-pandemic, such as increased remote working options. Attracting students to Keele University has improved owing to enhanced marketing and expanded course offerings, with no major concerns about environmental conditions impacting student decisions. Newcastle-under-Lyme's town centre has historically faced challenges associated with low footfall and high vacancy rates, exacerbated by online shopping trends and out-of-town retail locations, as seen in many other UK towns and reflected in the town being one of 100 eligible for Town Deal funding from the UK Government. Town centre improvements are underway using investment such as the £23.6mn Town Deal and £11mn Future High Street Fund monies. Despite negative media coverage of Walleys Quarry, the odour emissions themselves do not appear to have significantly impacted footfall or vacancy rates in the town centre.
8. Regarding other business impacts, the direct effects of odours from Walleys Quarry on businesses are likely minimal, influenced by various interconnected factors. However, very local aspects such as employee quality of life impacts for non-remote workers, increased sickness absence during peak odour periods, shifts in local shopping habits based on environmental conditions and disturbances near businesses due to protests, can have localised effects. Overall, businesses are navigating a complex landscape shaped by multiple influences, with some areas showing resilience while others face ongoing challenges that require tailored strategies for adaptation and growth.

Housing

9. Median house prices have decreased in some of the wards closest to Walleys Quarry during the ongoing incident period, notably in Westlands and Thistleberry wards. The median house price growth slowed in a number of wards closest to Walleys Quarry (notably Westlands, Thistleberry and Knutton) as compared to the rate of change in the baseline period, although it increased within one ward also considered to be in close proximity (Town). House prices in Silverdale ward showed little difference in median house price sales across the two analysis periods.
10. The number of house sales during 2020 and 2021 are likely to be a function of the Covid-19 pandemic, with pent-up demand from 2020 released during 2021. The peak in house sales during 2021 was almost certainly influenced by the reduced rates of Stamp Duty Land Tax which applied to sales between 8th July 2020 and 30th September 2021. Sales in the wards closest to Walleys Quarry appeared to follow wider trends in NuLBC and England, with Silverdale ward showing the most consistent rate of sales throughout the analysis periods.

Community Impact and Safety

11. The community were galvanised into action during early 2021 as a result of the concern relating to odour emissions. Membership of the various Stop the Stink groups that emerged and attendance at the numerous community protests were testament to the level of feeling amongst local people about what was happening and the need for resolution. There was anger at the Environment Agency for not effectively regulating the site, at other public sector organisations for not being able to improve matters, and ultimately at Walleys Quarry Ltd for allowing the situation in the first place. Over time, this anger has turned into moral outrage and sense of injustice, about the perceived failure across multiple organisations to improve the outcome. The protests have had both positive and unintended consequences – they allowed people from all ages and all walks of life to come together and express community sentiment; equally over time they (and the media interest they created) have amplified some of the negative aspects, particularly with a perception that some of the protests were less peaceful in nature, with police involvement and in terms of the disturbance they caused locally either in the town centre, along Cemetery Road, or for children getting to school.
12. Many people have highlighted that communication about what is happening / why it has happened / what is being done about it has been lacking, and has not necessarily reached all sections of the community (particularly those who may have less resources or ability to be online). Engagement may have improved more recently, but a clear lesson learnt would be around early and comprehensive engagement with the community, particularly in situations where there is fragmented responsibility amongst regulators.

Reputational Impact

13. In 2023, despite odour issues, a consumer organisation ranked Newcastle-under-Lyme as the best retirement place in the West Midlands considering healthcare access, happiness scores, recreational spaces, and housing affordability. However, in 2024, there was a notable surge in interest regarding the odour problem from Walleys Quarry, likely tarnishing the town's reputation. An online survey indicated that a majority of respondents found the landfill odour negatively impacted their willingness to host friends. Visitor reviews near the landfill site showed few odour references, but privately rented accommodation noted some guests detecting odours. While general reviews about Newcastle-under-Lyme varied, including positive feedback, the landfill's odour issue threatens to overshadow the town's attributes, underscoring the need to address environmental impacts to safeguard its longer-term reputation.

Incident Cost

14. The ongoing incident at Walleys Quarry has been resource intensive for a number of public sector organisations over the past four years (including for example the EA, NuLBC, SCC, UKHSA, Staffordshire Police and members of the Local Resilience Forum). Requirements have included not only the physical costs of monitoring equipment and resources, but also staff time and effort to undertake day to day regulatory activities, community engagement, and deal with indirect impacts. It is difficult to estimate the costs of the incident in any meaningful way, rather this section reviews where the main areas of staff time and involvement have been, together with cost aspects of relevance to other stakeholders (for example costs to the community, or to businesses).

Missed Opportunities, Lessons Learnt and Recommendations

15. Key outcomes relating to missed opportunities, lessons learnt and recommendations have been identified.

1 Introduction

1.1 Purpose of the Study

- 1.1.1 Odours from the Walleys Quarry landfill site have been affecting people and businesses across Newcastle-under-Lyme and Stoke-on-Trent for a number of years. Partners across Staffordshire, including Staffordshire County Council (SCC), the Environment Agency (EA), Newcastle-under-Lyme Borough Council (NuLBC) and the UK Health Security Agency (UKHSA) have been working in collaboration to help mitigate the impacts and find a long-term solution to the issue.
- 1.1.2 Earlier in 2024, Staffordshire County Council (SCC) on behalf of the Strategic Coordinating Group (SCG) commissioned Arcadis to prepare an independent Community Impact Study, the purpose of which is to understand the **health, social and economic impacts** of the emissions from the site and associated disruption particularly in relation to odour arising from the operation of the Walleys Quarry landfill site on the local community. It is emphasised that this is a truly independent report; whilst it has been commissioned by the SCG, it should not be read as the views of any individual member of the SCG. It reflects findings derived both from statistical datasets and importantly from community engagement.
- 1.1.3 The purpose of the study is to present a **shared evidence base** for partners across Staffordshire and the local community. Primary aims of the study are to:
- understand the impact on the local population and inform potential mitigation
 - inform ongoing monitoring, management and remediation of the site
 - inform engagement with Central Government to highlight the issues and lobby for resolution
 - understand lessons learned to inform management of future incidents.
- 1.1.4 The study has involved **extensive engagement** with a wide range of stakeholders, from partner organisations, community representatives, local businesses and local residents themselves. In this report we have attempted to present the views of individuals and organisations in a fair and transparent manner. The Walleys Quarry landfill site and the environmental effects created by its operation continue to be an understandably emotive subject for members of the community who's daily lives have been directly impacted now for years. We have drawn directly from the lived experience of local residents to develop this study and hope that the output presents a true reflection of the many discussions held over the course of the last few months.

1.2 Background and Context

- 1.2.1 Walleys Quarry was for many years used for the extraction of Etruria Marl for the brick and tile industry. In 1992, Redland Bricks Limited applied for planning permission for minerals workings and the deposit of waste material at the Walleys Quarry site. Following an appeal process, this was subsequently approved in 1997. Conditions 23 and 24 of the approved permission related to time limited conditions for specific types of waste that could be deposited at the site: Condition 23 stated that **prior to** January 2001, waste deposited at the site shall be restricted to reject bricks and tiles, excavated materials and process water; Condition 24 stated that **from** January 2001, materials to be tipped at the site shall be restricted to non-special industrial, construction, commercial, demolition waste and mineral waste. The first environmental permit for the site was issued by the Environment Agency to Lafarge Aggregates Ltd for landfilling activities in 2005, with waste first deposited at the site in 2007.

- 1.2.2 The permit, and subsequent variations, allow the operator to deposit 400,000 tonnes annually of certain specified types of defined waste at the landfill site. Gypsum and other high sulphate-bearing waste can only be deposited in cells where no other biodegradable waste is accepted. The operator is required to collect landfill gas and control the migration of such gas in accordance with the approved Gas Management Plan. Paragraph 3.3.1 of the permit requires that emissions from the activities *'shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.'* It is noted that residential properties are located within 100m of the boundary of the landfill site.
- 1.2.3 Odour issues emanating from the site were first reported in the press in 2011, with an article on the BBC's Stoke and Staffordshire website under the headline *'Lafarge say Silverdale landfill smell may never go away'*. The article highlighted actions being taken by Lafarge to lessen the smell and noted comments both from Lafarge (*'I can't guarantee that no, there will never ever be a smell complaint again from the site.....but I think that the work that went in at the end of last year, and has continued through this year, will mean that residents will see a really, really noticeable difference'*) and local residents (*'I've got air fresheners in every room just to mask the smell...at least they're addressing the issue; they know there's a problem there. But it doesn't help the fact that we're stuck in it'*).
- 1.2.4 The landfill site was taken over by Red Industries RM Ltd in 2016, who have operated it since that time. In April 2021, Red Industries changed the name of the business operating the landfill site to Walleys Quarry Ltd.
- 1.2.5 The site environmental permit¹ granted by the Environment Agency includes a requirement to measure emissions to air from the permitted sources and emission points listed in Schedule 3 of the permit (permit number WPR/DP3734DC) against stated emissions limits. However, this is limited to identified on-site monitoring of operational emissions sources such as landfill gas engines, gas flares, landfill gas via monitoring boreholes and monitoring of particulates from the asbestos disposal cell. As such the permit does not include any ongoing requirement to monitor ambient air off-site.
- 1.2.6 In response to complaints made, the Environment Agency deployed a Mobile Monitoring Facility (MMF) at Silverdale Road in 2017 in order to assess the air quality at the nearest residential properties to the site. The MMF checked for potential airborne pollutants, including levels of hydrogen sulphide (H₂S) and methane (CH₄), which are surrogates of odour. Monitoring took place for 224 days between the 6 July 2017 and 14 February 2018, with a second monitoring campaign between 15 January 2019 and 25 June 2019.
- 1.2.7 The first 'Stop the Stink' group was established by local residents in 2019, in response to ongoing issues with odour emissions from the landfill site. Over the next year, various Stop the Stink campaigns established an active Facebook following of over 11,000 members. Community protests increased in number and size during 2021 and onwards, with protests taking place not only outside the entrance to Walleys Quarry itself, but also at the (former) headquarters of Red Industries on Borough Road in Newcastle-under-Lyme.
- 1.2.8 The number of complaints relating to odour issues from Walleys Quarry began to increase significantly from 2020/21. In March 2021, the EA deployed two Mobile Monitoring Facilities in Silverdale, one at the pumping station run by Severn Trent Water, and a second at Galingale View. Monthly reporting at the time showed that, in early March 2021, concentrations of H₂S exceeded the

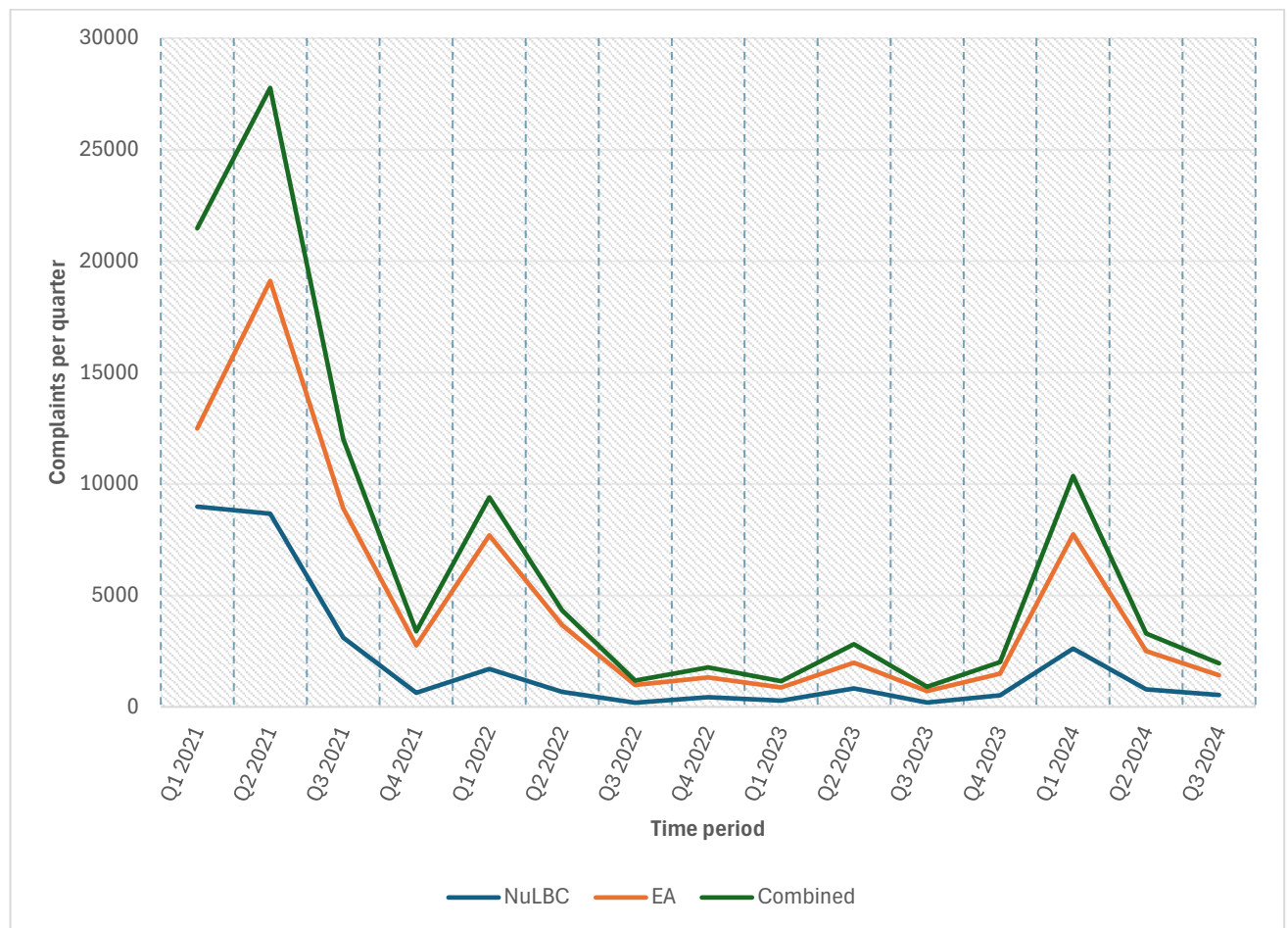
¹Environment Agency (2022) Permit No WPR/DP3734DC [available online at: https://assets.publishing.service.gov.uk/media/6262ae12d3bf7f55c0a4e5f9/Variation_Notice_DP3734DC-V003.pdf]
arcadis.com

WHO 24-hour health guidance level of 150µg/m³ were measured on two occasions at the Mobile Monitoring Facility located at Galingale View. Across the whole of March 2021, levels were above the WHO odour annoyance guide level of 7µg/m³ for 22% of the time. In April 2021, two additional MMFs were deployed in Silverdale – one near Silverdale Cemetery and a fourth deployed at Newcastle Community Fire Station.

- 1.2.9 EA reporting at the time showed that no further measurements above the WHO health guideline level were recorded, with the data showing a reduction in daily average H₂S concentrations over the period March to April 2021 when compared to those measured at the beginning of the monitoring study. However, in autumn 2023 the EA became aware of an issue with the recording of H₂S data at the MMFs, with concerns around accuracy of this data and the implications associated with this. Following investigation, the air quality monitoring stations were recalibrated and historic reporting reviewed. The EA developed a methodology that would allow the historic data to be adjusted; this was independently reviewed by an expert group established by Defra's Chief Scientific Adviser. The report also confirmed that the approach taken to recalibration was appropriate for monitoring data collection in the future. The EA published adjusted historic data in August 2024, which was supported by an updated Health Risk Assessment prepared by the UKHSA. The latter stated that *'the hydrogen sulphide data up to the end of August 2023 shows continuing exposure to the population around the landfill site. Over this period, the three closest MMF sites regularly exceeded the long-term (lifetime) health-based guidance value'*.
- 1.2.10 The EA has issued four Enforcement Notices to the operator since March 2021 requiring various measures to reduce odour emissions, including capping of parts of the site, establishment of gas management systems and introduction of improved waste acceptance procedures. NuLBC served an Abatement Notice on the operator in August 2021 in relation to the statutory nuisance caused by the odours emanating from the site. This was appealed by Walleys Quarry Ltd, with the effect that the notice did not come into force until 2023. The Mediation Settlement Agreement between NuLBC and the operator included agreement from Walleys Quarry Ltd that the site had been the source of community complaint and best practice measures to manage odour emissions were agreed.
- 1.2.11 Despite these measures, odour emissions from the site have continued, impacting the community around the site and further afield. Media interest in the site culminated in the BBC Panorama programme 'Landfill: Britain's Toxic Secrets' in 2023, in which Walleys Quarry was featured. The landfill site has repeatedly been raised as a matter both in Parliament and the House of Lords, at Prime Minister's Questions, as part of various committees and hearings and has been commented on by MPs, Ministers and previous Prime Ministers.
- 1.2.12 The EA monitors compliance performance of landfill operations, based on site inspections, audits and monitoring activities. Compliance performance at Walleys Quarry has deteriorated between 2018 and 2023, from Compliance Band C in 2018 down to the lowest Compliance Band (Band F) in 2021, where it remains ('significant improvement required to achieve permit compliance'). The operator has breached its permit 109 times since 2019. The EA issued a Suspension Notice to Walleys Quarry in March 2024 to secure immediate action to remove the risk of serious pollution from fugitive emissions of landfill gas to the air causing significant and widespread offence to human senses due to odour. The Suspension Notice was withdrawn twelve days later following confirmation by the EA that 'the steps required have been completed', namely, to install additional gas extraction infrastructure in a key part of the operational area; to connect it so that it extracts gas; and to install additional temporary capping in two other operational areas.
- 1.2.13 The landfill site has understandably been the subject of many thousands of complaints both to the EA and NuLBC during its operation, with a vast majority of these being made in the last four years (estimated to be around 86,000 complaints between January 2021 and the end of 2023 alone). When

particular spikes in odour have been experienced (as was the case in March 2021), thousands of complaints were received in a matter of days (for example in 2021 more than 2,000 complaints were received over a single weekend). Figure 1.1 overleaf shows the number of complaints received by both the EA and NuLBC over the period January 2021 to September 2024. It should be noted that the 'combined' data inevitably includes an element of double counting – a proportion of residents will have made a complaint to both NuLBC and the EA at the same time, rather than to one or the other and therefore these complaints will have been counted twice.

Figure 1.1 Complaints Received by the EA and NuLBC in Relation to Walleys Quarry



1.2.14 A complication of the site has been how various aspects of regulation and responsibility are spread across multiple partners. The Staffordshire Local Resilience Forum aimed to bring all partners together to ensure a joined-up response; the responsibilities of various partners involved include:

- EA: regulates the two environmental permits held by the operator of the landfill. The role of the EA includes to monitor the site and take enforcement action to address compliance issues as appropriate.
- Staffordshire County Council: the planning authority in relation to waste and minerals (NuLBC is the planning authority in other respects, including housing).
- Newcastle-under-Lyme Borough Council: responsible for regularly monitoring air quality
- UK Health and Security Agency (UKHSA): providing advice and guidance on the risk to human health. Other health functions are undertaken by SCC Department of Public Health (for example responsibility for protecting and improving public health and wellbeing) and the Staffordshire and Stoke-on-Trent Integrated Care Board (ICB) (which focus on joined-up services, integrating care and improving population health).

1.2.15 Table 1.1 shows a timeline of various incidents and activities relating to the Walleys Quarry landfill site, with a particular focus on the last four years.

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Table 1.1 Timeline of Activity Related to the Walleys Quarry Landfill Site

Date	Content
1992	Planning application for Walleys Quarry Landfill Operation submitted
1997	Approval of planning permission, following appeal process
January 2001	Non-special industrial, construction, commercial, demolition waste and mineral waste permitted to be deposited at the site
January 2007	Waste was first introduced to the site
February 2011	Odour issues first reported in national press
2016	Site was taken over by Red Industries Ltd
2017	EA deploys Mobile Monitoring Facility on Silverdale Road for period of 224 days
2019	Second monitoring campaign undertaken between January and June 2019 First 'Stop the Stink' group established
2021	Number of odour complaints relating to the site rises significantly
2021	Protests take place outside Walleys Quarry and Red Industries offices
2021	Source of odour under investigation, including sources other than landfill site
March 2021	EA deploys two Mobile Monitoring Facilities in Silverdale and monthly reporting commences
March 2021	Concentrations of Hydrogen Sulphide (H ₂ S) above the WHO 24-hour health guidance level of 150µg/m ³ reported on two occasions (note this was based on historic data not readjusted data – the data was lost for this period when readjusted)
March 2021	Enforcement Notice issued to Red Industries by EA
April 2021	EA deploys a further two Mobile Monitoring Facilities in Silverdale UKHSA (formerly Public Health England) produced first monthly health risk assessment
April / May 2021	Reporting about Walleys Quarry seen in the national media
May 2021	The Coal Authority confirms that source of odour is not associated with former coal mining activity
August 2021	High Court of Justice 3-day hearing in relation to Mathew Richards and associated press coverage following the outcome
August 2021	NuLBC serves Abatement Notice on Walleys Quarry Ltd
September 2021	Walleys Quarry Ltd lodges an appeal against the Abatement Notice
September 2021	Mental healthcare support offered by Midlands Partnership NHS Foundation Trust

December 2021	EA launches investigation into alleged illegal waste activity at the site
2021	Weekly online updates prepared by the EA for the community in response to ongoing odour issues
January 2022	Court of Appeal grants the Environment Agency's appeal in respect of the order made in the High Court
February 2022	Debate in Parliament 'Waste Industry: Criminality and regulation'
February 2022	NuLBC Cabinet lodge a formal complaint with the Environment Agency regarding the effectiveness of their regulation of the site
April 2022	Walleys Quarry raised at Prime Minister's Questions
May 2022	EA issues Enforcement Notice against Walleys Quarry Ltd for inadequate waste acceptance procedures
July 2022	Revised procedures agreed with Walleys Quarry Limited and the Enforcement Notice is withdrawn by EA
September 2022	Mediation Settlement Agreement between NuLBC and Walleys Quarry Ltd, in which Walleys Quarry Ltd acknowledge that the site has been the source of community complaint and appeal proceedings cease
October 2022	NuLBC Abatement Notice is endorsed by Court, giving Walleys Quarry Ltd five months to abate the nuisance and prohibit the recurrence of the statutory odour nuisance
November 2022	Defra release report into Walleys Quarry Landfill odorous emissions compiled by Scientific Advisory Group (SAG)
March 2023	NuLBC Abatement Notice becomes live/enforceable, prohibiting the recurrence of a statutory odour nuisance
April 2023	Updated plan to reduce hydrogen sulphide emissions produced by EA
May 2023	Regulation 36 Enforcement Notice issued for failure to follow Waste Acceptance Procedures
May 2023	BBC Panorama programme launched 'Landfill: Britain's Toxic Secrets'
August 2023	EA become aware of issue with recording of H ₂ S data at MMFs, launch investigation
September 2023	Post-September 2023 monitoring data using new equipment
March 2024	EA issue Suspension Notice to Walleys Quarry to secure immediate action to remove the risk of serious pollution from fugitive emissions of landfill gas to the air causing significant and widespread offence to human senses due to odour
March 2024	Suspension Notice withdrawn 12 days later following action taken by Walleys Quarry Ltd
March 2024	Defra Chief Scientific Adviser report on findings of an expert group established to consider EA proposals for re-adjusting historical data of H ₂ S measurements (report published in August 2024)

April 2024	NuLBC reports breach of Abatement Notice and requests permission from the Secretary of State to commence legal proceedings against a site which is regulated by the EA
July 2024	NuLBC received permission to take legal proceedings for breach of the Abatement Notice
August 2024	EA publishes adjusted historic H2S monitoring data on its website
August 2024	UK Health Security Agency publishes an addendum Public Health Risk Assessment to the monthly risk assessment series published in August 2023
August 2024	NuLBC cross-party scrutiny committee holds Inquiry into Walleys Quarry operation
August 2024	Fire at Walleys Quarry Landfill site
September 2024	Report of NuLBC Inquiry published
December 2026	The site can accept non-hazardous waste and stable non-reactive hazardous wastes until this time
February 2042	The site can continue to accept inert waste, up to restoration levels, until February 2042

1.3 Report Structure

1.3.1 Walleys Quarry continues to be a source of contention for stakeholders and the local community, with the odour and associated disturbance from the landfill site affecting people's lives on a daily basis. The purpose of this report is to provide an assessment of the wider impacts of Walleys Quarry on the community, covering the health, social and economic impacts of the operation. The remainder of this Community Impact Study is structured as follows:

- Section 2** sets out the scope and methodology for the Community Impact Study detailing the approach used for data gathering across a range of topic areas.
- Section 3** presents an overview of findings from the online community engagement survey that are not topic-specific.
- Sections 4 to 9** provide an overview of findings in relation to a range of topic areas, including health, business and economy, community cohesion and safety, housing, incident cost, and reputational impact. The assessment of impacts against each topic includes a review of available data, findings from community engagement and a summary of topic-specific impacts.
- Section 10** summarises the findings of the study and presents information relating to missed opportunities, lessons learnt, recommendations and observations.

2 Research Framework

2.1 Introduction

2.1.1 This section provides information relating to the scope and methodology of the study. The study brief outlined the following key aspects to the research, namely:

- analysis of existing evidence and desktop review – a synthesis of existing evidence setting out known impacts
- interviews with SCG partners to capture their perspectives about impact on the community and on their services
- design and delivery of community engagement activities to involve the community in the development of the study and provide additional evidence. Part of this required the establishment of a Community Steering Committee, to ensure community representation from the start, in order to build trust and consensus.

2.1.2 The research methodology involved in relation to each of the above areas is covered below.

2.2 Analysis of Existing Evidence

2.2.1 There have been two aspects to this part of the study – firstly, a comprehensive review was undertaken of relevant literature, research findings and case studies in relation to health, social, and economic impacts associated with landfill operations in the UK and further afield; the second aspect has comprised a review of publicly available data and information provided by stakeholders in relation to each of the topics being assessed (health, business and economy, housing, community cohesion and safety, reputational impact and incident cost).

Literature Review

2.2.2 As stated above, the literature review considered health, social, and economic impacts associated with landfill operations in the UK and further afield with a focus primarily on impacts associated with air pollution, odour emissions (notably H₂S), short-term and long-term health impacts associated with exposure, as well as relevant learning from similar operations. The literature review targeted peer-reviewed literature / research from credible sources. The literature review provided context for the study and has given confidence to the areas / topics being assessed as part of a community impact study. A list of articles and research that formed part of the review can be found at Appendix A.

2.2.3 The core issues surrounding waste management sites can be linked to how they impact the senses and how people react to what they see, smell, or hear. The visual and odorous presence of waste management sites have been shown to severely depreciate the surrounding area, and due to ingrained stigma surrounding waste, impacts on the environment, and general lack of public engagement, waste management sites can be a source of significant health and environmental concern. This is particularly true in relation to how the perception of waste management sites can influence local businesses, residents and others to form a negative bias of the surrounding area.

2.2.4 The unique composition of waste within each landfill site has the potential to create a myriad of different impacts, including odours. This illustrates the variability across waste management sites and how differently they can impact surrounding populations, with the literature strongly recommending site-specific investigations to discover the most effective mitigation strategies to contain, capture and destroy landfill gas. The atmospheric conditions surrounding the siting of a landfill can further alter the magnitude of the impacts, though it is notable that even the weakest odour concentrations can

influence the surrounding population. Furthermore, how a waste management site is managed has been reported to influence the magnitude of impact, with greatly reduced impact potential when they are managed effectively and in tandem with the community.

Data Analysis

2.2.5 Data was collated for each of the topic areas under assessment. These included both publicly available datasets (for example Census data) as well as data provided by SCG partner organisations. Data reviewed as part of the study has comprised:

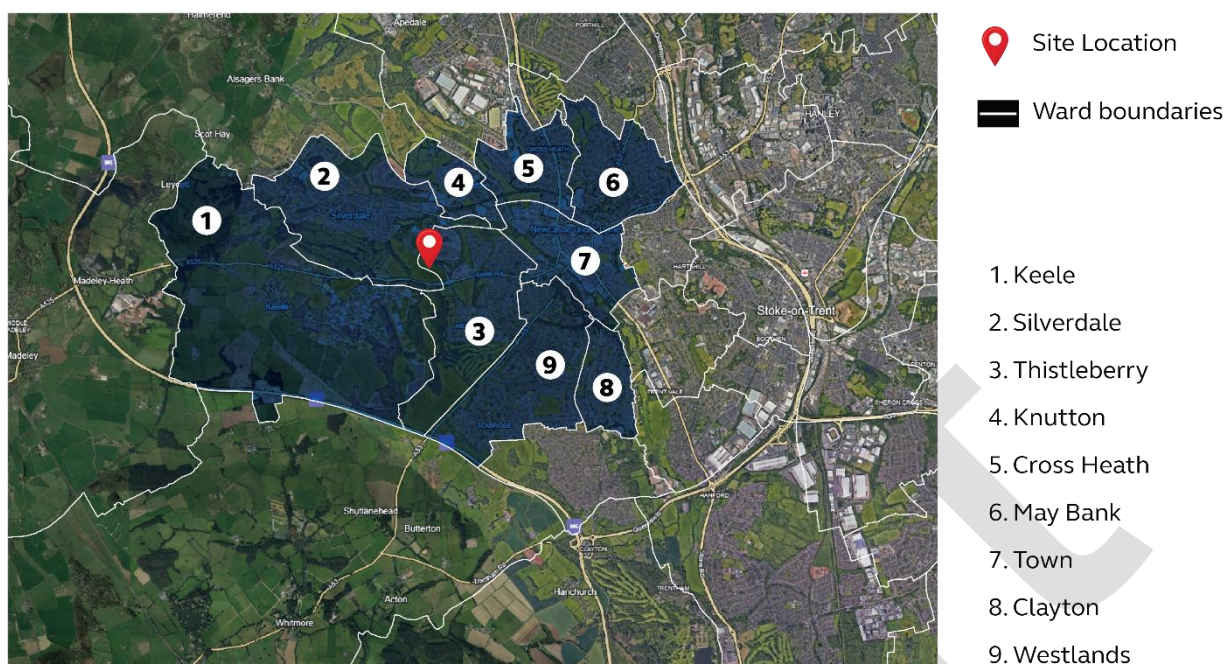
- Air quality monitoring data (available on the EA Engagement website)
- UKHSA risk assessments (available on the EA Engagement website)
- Smell and Symptom Tracker (provided by SCC)
- Usage data for mental health clinic (referrals data (numbers only) provided)
- Complaints data (information from EA and NuLBC)
- Office for National Statistics – for example Census 2021 data, quarterly business start-up and closure rates
- Crime data (available via Police.co.uk and the Staffordshire Police website)
- Data relating to number of protests (provided by Staffordshire Police)
- Reviews of national and local media.

2.2.6 Findings from data analysis has been summarised in relation to each of the topic areas assessed and is presented in the relevant chapter of this report. Analysis has considered trends, correlations, and key insights and has been used in tandem with findings from community and stakeholder engagement to identify impacts associated with the operation of the Walleys Quarry landfill site.

2.2.7 The time period covered by the study is loosely the period 2021 to 2024 – this covers the time from which the emissions from the landfill site were at their highest until today. However it is acknowledged that there have been odour emissions and disturbance related to the landfill site from before this time. It is important also to note that, prior to March 2021, there had been few situations in the UK where the EA and UKHSA have had to place monitoring equipment near to a waste site. Where relevant (for example where it has been raised by stakeholders or community representatives in relation to particular topics), the period prior to 2021 has been covered in the various assessment chapters. There are also reasons from a data gathering perspective why, for some types of data, consideration of the period before Covid-19 (i.e. pre-2020) may be relevant to help identify how things may have changed.

2.2.8 The geographical scope for the study varies according to the topic under consideration – for certain topics (such as health or housing market impacts), a more focused study area has been used based on the wards in closest proximity to Walleys Quarry, as that is where the majority of the impacts are likely to be found. These wards are shown in Figure 2.1. For other topics – for example reputational impact, or business and economy – a wider study area has been used which focuses on the geographical area covered by NuLBC as a whole and wider area as relevant.

Figure 2.1 Wards within Closest Proximity to Walleys Quarry Landfill Site



Source: Office of Health Inequalities and Disparities

2.3 Approach to Community and Stakeholder Engagement

- 2.3.1 A fundamental part of the study has been the approach to community and stakeholder engagement, specifically to involve the community in the development of the study and to use conversations with local people to provide additional evidence in relation to both the impacts of Walleys Quarry over the last few years, but also to focus on current feelings and future concerns. All responses from individuals and organisations has been anonymised for the purposes of reporting.
- 2.3.2 The following methods have been used to engage with stakeholders and members of the local community.

Online Community Survey

- 2.3.3 An online survey was developed in May 2024 and went live for a three-month period between June and August 2024. A copy of the survey questions can be found at Appendix B. The survey sought to obtain general information about how the Walleys Quarry landfill site potentially affected various aspects of people's lives, including their health and day-to-day activities. The survey probed whether people felt the odour issues associated with the landfill site had changed over time, and sought to understand how people obtained information about what was happening in relation to the landfill site.
- 2.3.4 Links to the survey were publicised through various networks, including NuLBC / SCC, through the Stop the Stink groups and other organisations spoken to as part of the study where relevant (for example local schools). The online survey received 527 responses in total. An overview of the key findings from the study is provided in Section 3 of this report. The summary in Section 3 shows that the survey responses were geographically representative of the area around the landfill site.

Community Steering Committee

- 2.3.5 The study brief specified the creation of a Community Steering Committee (CSC) as part of the commission, the purpose of which would be to ensure community representation from the start, to build trust and consensus. Facilitation of the CSC would include providing opportunities for the group to have an input into key stages of the project, including the research process and validation of key findings. Membership of the CSC was defined as follows:
- Number of Committee members to be restricted to in the region of 10-15 people, to ensure contributions were effective and enable management of the group
 - Committee membership to be geographically representative of the areas surrounding the landfill site
 - Membership to include a range of individuals including, but not exclusively, key community representatives.
- 2.3.6 The online survey gave respondents an opportunity to highlight whether they would like to be further involved with the study, either through becoming a member of a Community Steering Committee (CSC) or by attending a Focus Group. Around 60 respondents to the online survey stated that they would like to be part of the CSC. Respondents were contacted to ask basic details including road / area within which they lived and whether they were affiliated to a particular community group (e.g. Stop the Stink or other). This information was subsequently used to draw up a potential short-list of CSC candidates (according to the bullet points above) who were then approached to confirm whether they would still be interested. It is noted that this approach is subject to self-selection bias (discussed further in Section 2.4 Limitations of the Study).
- 2.3.7 A group of 12 people were selected; individuals agreed at the first meeting that they wished their membership of this group to remain anonymous during the course of the commission. A Terms of Reference for the group was established (see Appendix C). Three CSC meetings have been held over the course of the commission as follows:
- **July 2024:** introductory meeting to outline the purpose of the study, discuss draft Terms of Reference for the group, highlight areas of research and potential community contacts, discuss general feelings, issues and concerns relating to Walleys Quarry
 - **September 2024:** follow up meeting at which Terms of Reference were agreed, ongoing matters relating to Walleys Quarry discussed (for example community feedback relating to the fire that took place at the site during August), to share headline findings from the online survey and to highlight any further contact information for individuals or groups that might be interested in being involved with the study
 - **October 2024:** meeting to share emerging findings from the study and outline the next steps, including potential for the group continuing to meet outside of the Community Impact Study commission.

Focus Groups

- 2.3.8 A further 49 respondents to the survey stated that they would be willing to attend a Focus Group to discuss in more detail responses to the online survey and have a more rounded discussion about the potential community impacts associated with Walleys Quarry. Respondents were contacted by email in August and again in September to publicise dates and times of a number of Focus Group sessions (which included morning, afternoon and evening opportunities). A total of three Focus Groups were held – one in August and a further two in September 2024. Each group was attended by a small number of local residents and lasted for around 1.5 hours, enabling an extensive discussion to take place about how people felt they had been impacted by the landfill site and their concerns and hopes for the future.

One to One Interviews

2.3.9 A range of one-to-one interviews have taken place with organisations and individuals across the course of the study period. These included interviews with:

- representatives from organisations including the Environment Agency, SCC, NuLBC, UKHSA, Staffordshire Police, Staffordshire Fire Service
- representatives from local schools and educational establishments
- representatives of local businesses
- elected members from Staffordshire County Council and Newcastle under Lyme Borough Council and Parish Councillors
- representatives from Stop the Stink Fight for Justice and other community organisations
- a range of individuals / residents who have had historic involvement with the ongoing issues at Walleys Quarry
- representatives from the Cemetery Road Caravan Park, as people who live in particularly close proximity to the landfill site.

2.4 Limitations of the Study

2.4.1 Limitations of the study include the following:

- not all data has been available for the entire time period of the study (for example ward level house price and transaction volume information was discontinued by the ONS in March 2023, location specific crime data was not available before October 2021).
- it is noted that the Covid-19 pandemic has been a confounding factor for the period under consideration – for example when considering behaviour changes or working practices over the period 2020-2024, much of the early part of this period was dominated by lockdown, or the period immediately post-lockdown when behaviours were different to those that may be the case now.
- again, due to the pandemic, it has been difficult to make correlations between particular behaviours and operation / effects of the landfill site, because behaviours may equally have been the result of Covid-19 (for example the trend in absenteeism at local schools is similar across the country and therefore it is not possible to attribute this directly to odour from the landfill site).
- much of the data relating to health impacts is based on self-reported observations.
- symptom tracker data was received by postcode for the purposes of anonymisation; it is therefore a limitation of the study that the number of individuals making multiple complaints multiple times could not be disaggregated. Similarly, complaints data made available for the purposes of the study was postcode based.
- a section of the online community survey intended for completion by business owners received responses from only a small number of participants.
- the media coverage analysed in this report is based on publicly available news articles accessible online. Other forms of media coverage, such as radio broadcasts, were not included. There is the potential for recency bias in online news search results, which may favour more recent information over equally relevant but older data.
- it is noted that composition of the Community Steering Committee and attendance at the Focus Groups are affected by an element of self-selection bias, i.e. that individuals have proposed themselves for membership or attendance rather than being objectively selected. This was indeed the case to establish the initial 'pool' of interested individuals, although there has also been an element of objective selection from this pool in order to ensure, for example, geographic representation.

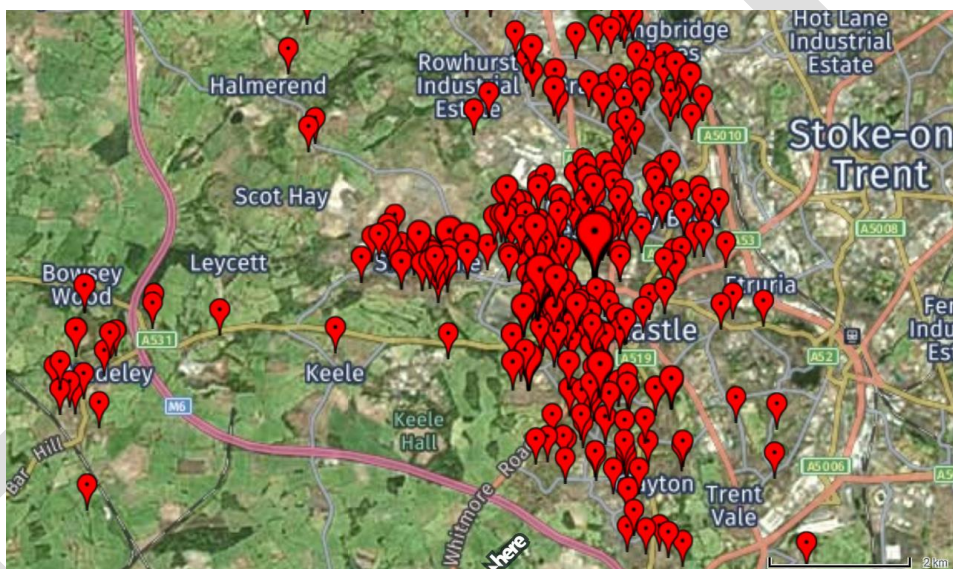
3 Findings from Online Community Survey

- 3.1.1 The online survey received a total of 527 valid responses. This section presents an overview of the characteristics of survey respondents (age, gender, geographic location and so on) as well as some of the more general information about how respondents feel the odour from Walleys Quarry has affected them.

3.2 General Characteristics of Survey Respondents

- 3.2.1 The vast majority of respondents were from postcodes within the Newcastle-under-Lyme area, as shown in Figure 3.1. The figure shows that respondents were drawn from all communities surrounding Walleys Quarry, including Silverdale and Knutton to the north, Westlands and Thistleberry to the south and east, and the Madeley area to the west of Keele. A small proportion of respondents were drawn from areas outside of Newcastle-under-Lyme / Stoke-on-Trent, and in many instances were former residents of the area who wanted to record their feelings about living near the landfill site when they did so.

Figure 3.1 Geographic Spread of Respondents

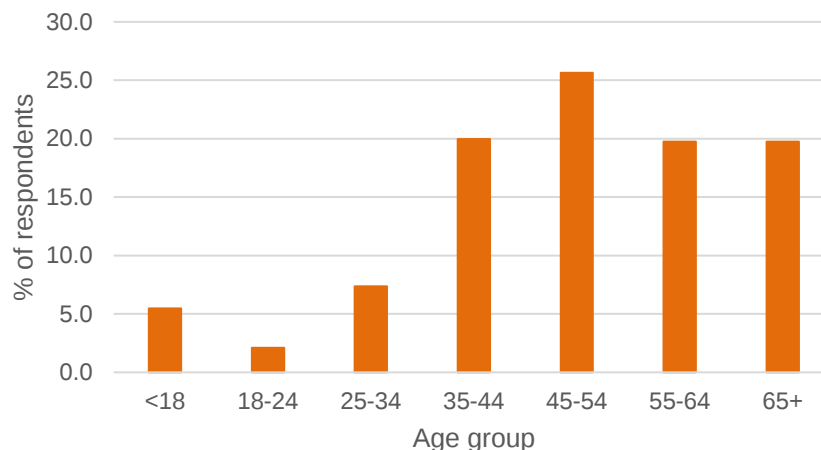


- 3.2.2 Of the responses:
- **61%** of respondents stated that they lived in the Newcastle-under-Lyme area
 - **23%** of respondents said they lived **and** worked in the Newcastle-under-Lyme area
 - **7%** of respondents said they worked in the Newcastle-under-Lyme area
 - **3%** of respondents said they were students
 - **2%** of respondents said they lived outside of the Newcastle-under-Lyme area but visited for social or leisure reasons
 - The remaining **4%** of respondents stated 'none of the above'; this category included for example, people who used to live in the area but have recently moved away, people who have children at school in the area close to the landfill site, and people who live slightly further afield but still consider themselves to be affected.
- 3.2.3 Respondents were asked for how long they had lived / worked / studied in the Newcastle-under-Lyme area. Of note is that the greatest proportion of respondents (71%) had lived, worked or studied in the area for more than ten years. A further 22% had done so for between three and ten years, with the

smallest proportion (7%) stating they had been in the area for less than three years.

- 3.2.4 Responses were fairly diverse in terms of age range (see Figure 3.2), with the highest proportion of respondents (25.6%) aged between 45-54 years. More females than males responded to the survey (69% compared to 31%).

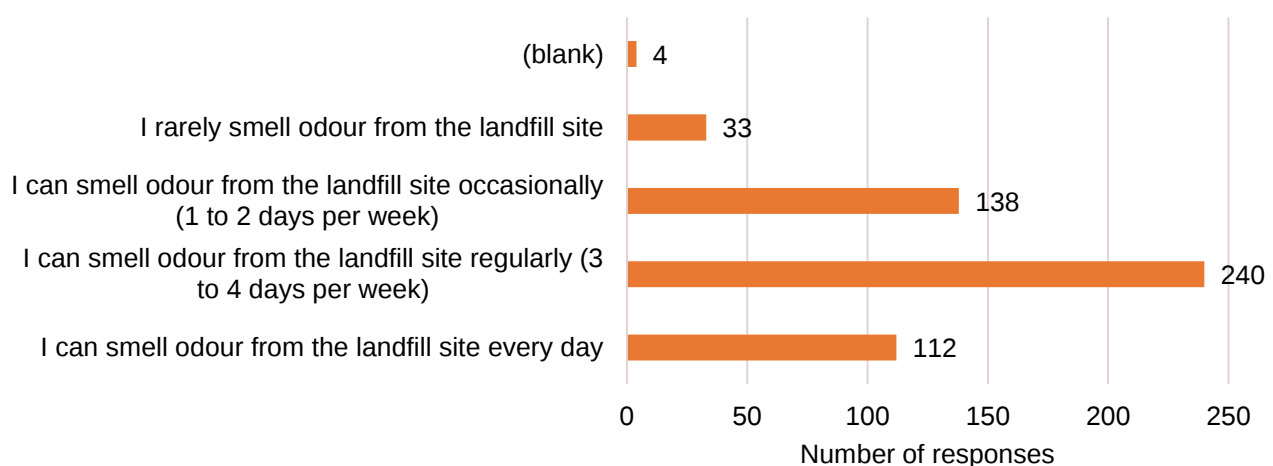
Figure 3.2 Age range of respondents to online community survey



3.3 Experiences of Odour from Walleys Quarry

- 3.3.1 Figure 3.3 shows responses to the question 'how often do you smell odour from the landfill site' (noting that this reflects the situation at the time of the survey in summer 2024). The figure shows that the vast majority of respondents (46%) stated that, at this time, they smell odour regularly (three to four days per week), with a further 21% stating they can smell odour from the landfill site every day. Postcode analysis shows that those in the latter category have a higher likelihood of living in closer proximity to the landfill site. For context, during June and July 2024 when the survey took place, levels of H_2S were above $7 \mu\text{g}/\text{m}^3$ (4.67 ppb) (the guide level above which substantial complaints about odour annoyance can be expected, as set by the WHO Guidelines for Europe (2000)), for lower proportions of individual monitoring periods than was the case for the period between January and May. The survey period therefore took place in months likely to be slightly 'better' than average.

Figure 3.3 Experience of Odour from Walleys Quarry

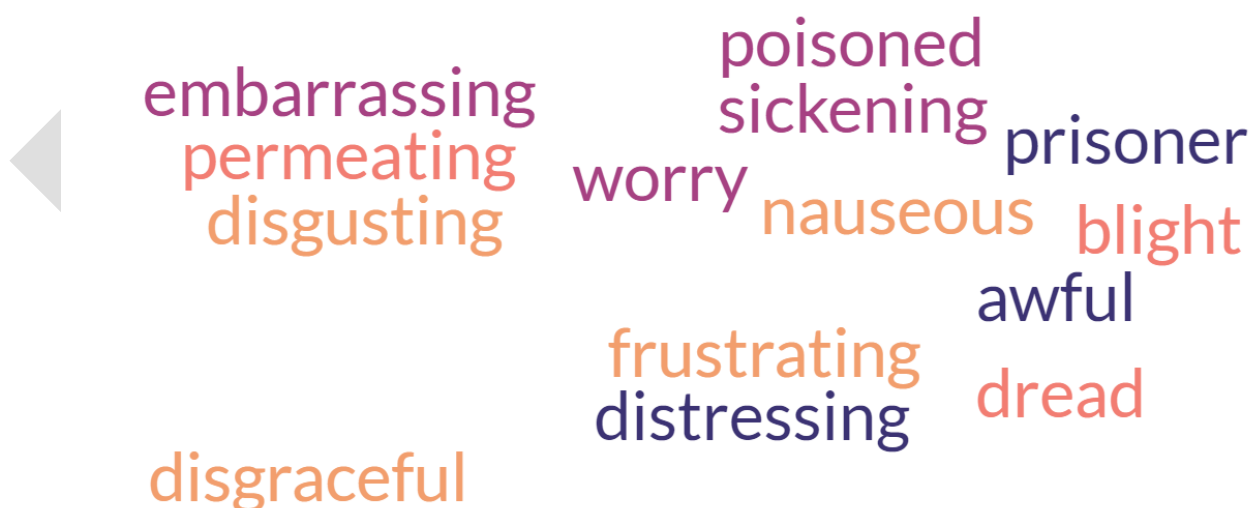


3.3.2 In terms of whether respondents felt they had noticed improvements in odour from the landfill site over time, one third of people stated that they had not seen a noticeable change or improvement; indeed more than 20% of people considered that the situation had in fact **got worse** over time. Further detail was provided by 304 respondents and is summarised as follows:

- **Weather and wind dependency:** the intensity and frequency of the smell are heavily influenced by weather conditions such as wind direction and damp days. Stronger odours are noted during colder mornings and nights, and the smell worsens on colder days. There are mentions of the smell worsening during the night and early mornings. Wind direction plays a significant role in the perception of the smell, with specific mentions of the westerly wind intensifying the odour. Changes in intensity are noted based on whether there is cloud cover / damp weather.
- **Variability in perception:** resident's experience varying levels of the smell, with some days being stronger than others. There are periods with no smell, followed by phases of foul smells. Some mention becoming 'nose blind' to the smell over time. The smell can also be perceived differently at different times of the day or night.
- **Persistence and long-term trends:** the issue has persisted over several years, with fluctuations in the severity of the odour. Reports of temporary improvements followed by regression to previous levels of odour intensity. The smell has been a persistent problem for many years, impacting the quality of life for residents.
- **Location-specific observations:** different areas experience varying levels of the smell, with some areas being more affected than others even at a distance. The smell can affect neighboring areas and even reach as far as Newcastle-under-Lyme town centre and beyond. Visitors to the area also note the strong smell, expressing concern for residents.

3.4 Words Used by Residents

3.4.1 The following words were frequently used by respondents to describe how they felt about the ongoing odour emissions from Walleys Quarry.



3.5 Impacts on Daily Life

3.5.1 Around **88%** of people considered that the odour from the landfill site affected their daily life. Ways in which this manifests itself include:

- opening windows (382 people)
- using the garden (352 people)

- letting their children play outdoors (117 people)
- having friends visit their home (214 people)
- going for a walk, run, cycle and other form of outdoor exercise (328 people)
- other activities (116 people) e.g. travelling by car, **sleeping**, impact on pets, **social isolation**, impact on shopping, *'planning your day around wind direction and weather conditions'*

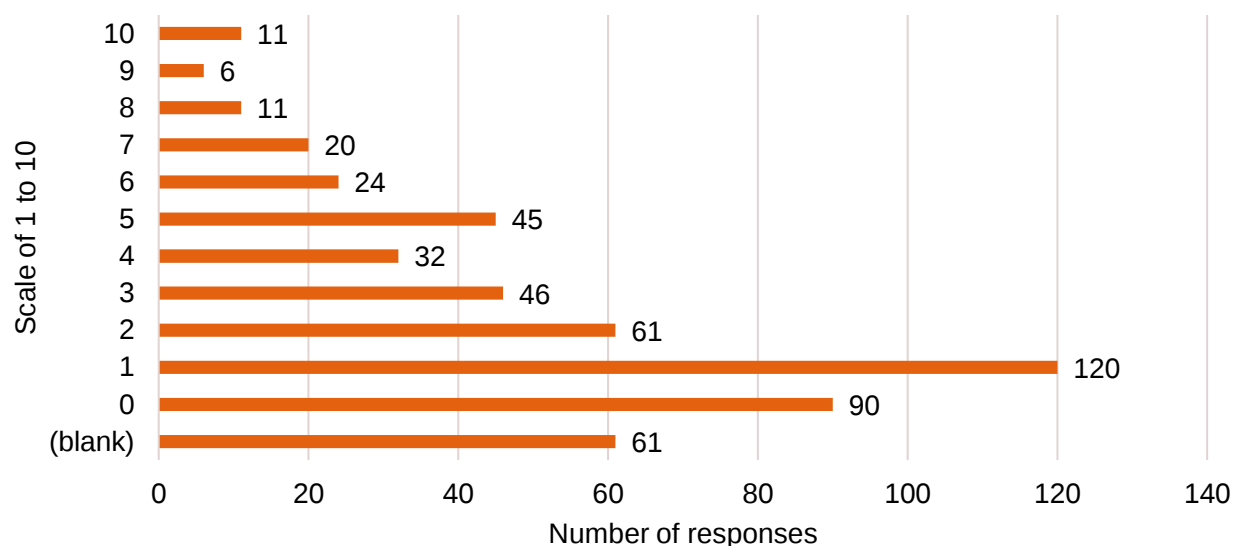
3.5.2 Many people expanded on their response above. Aside from impacts on health (which are discussed in more detail in the following section of this report), people described the following effects of the landfill site:

- **Infringement on quality of life:** by restricting use of outdoor spaces and gardens due to the 'foul stench', difficulty in enjoying outdoor activities, gatherings, or socialising at home, a 'constant worry about the quality of air', and sense of imprisonment in their own homes.
- **Social and emotional impacts:** feelings of embarrassment when visitors notice the smell, affecting social interactions and family events; emotional distress, feeling powerless, let down by authorities, and experiencing a sense of worthlessness and fear.
- **Financial and lifestyle impact:** financial costs incurred due to the need to travel to avoid the smell or because of health issues; disruption in daily routines, sleep disturbances, and the necessity to alter plans according to wind directions and weather conditions.
- **Environmental concerns:** suspicion and anxiety about the substances buried in the landfill, uncertainties about monitoring its safety, and fears of future health implications; impact on outdoor environments, reluctance to engage in gardening or outdoor activities, and concerns about contaminated water and soil.

3.6 Views about the Ongoing Management and Monitoring of Walleys Quarry

3.6.1 People were asked how informed they felt about the ongoing management and monitoring of Walleys Quarry. The results are shown in Figure 3.4, with 68% of those who responded to this question giving a score of 0 to 3 (i.e. feeling not informed), compared to 10% giving a score of 7 to 10 (i.e. feeling relatively to very informed).

Figure 3.4 How Informed People Feel about Ongoing Management and Monitoring on a Scale of 0 to 10 (Not to Very Informed)



- 3.6.2 A large majority of respondents get information about the landfill from social media (nearly 70% of respondents) with the second largest source being from people around them, including friends and colleagues (36% of respondents). A relatively small portion of respondents stated that they got information from official data sources (e.g. EA, UKHSA and the landfill operator's website) (22% of respondents). A large majority of respondents considered social media, friends and colleagues to be the most reliable source of information to obtain data, compared to a small proportion feeling this way about official data sources (again, EA, UKHSA and the landfill operator's website).

3.7 Summary

- 3.7.1 This section has outlined some of the overarching findings from the online community survey. Further detail – for example in relation to responses relating to health, to housing / the property market and responses from business – are outlined in the following topic-specific sections.

4 Health

4.1 Introduction

- 4.1.1 Health impacts associated with the ongoing operation of Walleys Quarry and the continued exposure of the population to odours and emissions continues to be the single most concerning aspect for local people. Potential ways in which people's health have been affected are varied, including direct physical and toxicological impacts associated with the gaseous emissions from the landfill site; the impacts on mental health and well-being as a result of stress and anxiety caused by the ongoing situation and lack of personal control; impacts on susceptible individuals (for example children, older people and those with pre-existing conditions); and impacts on healthcare resources (doctor's surgeries, pharmacies and so on). This section brings together data from various sources to review these aspects, accompanied by findings from the real-life experience of residents who have lived with, and been affected by, the odours for years.

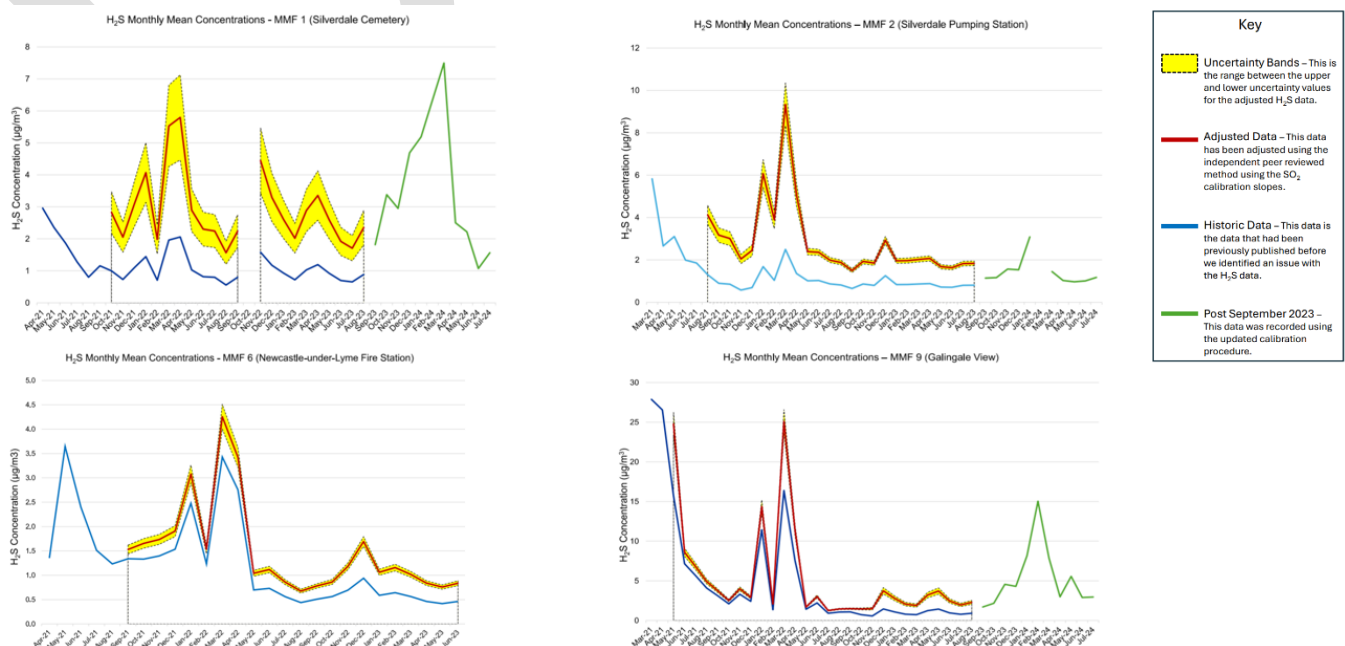
4.2 Data Overview

- 4.2.1 This section starts with a summary of the air quality monitoring data and associated health risk assessments provided by the EA and the UKHSA. This provides the background to the concerns that have been raised by stakeholders and members of the community in relation to the various emissions from the Walleys Quarry site and the potential impacts these have had on people's health and wellbeing. This is followed by a review of complaints data / symptom information submitted by members of the public and then contextual information relating to the local health baseline.

Air Quality Monitoring Data

- 4.2.2 Recalibrated air quality monitoring data compiled by the EA for each of the four MMFs is shown for H₂S in Figure 4.1. It is noted that the data adjustment method used by the EA could not be applied to the entirety of the dataset. For all four MMFs, the adjusted data is higher than the historic data. From September 2023 onwards, data is accurate using the updated calibration procedure.

Figure 4.1 Recalibrated Air Quality Monitoring Data (H₂S Concentration)



UKHSA Health Risk Assessments

- 4.2.3 The UKHSA has presented health risk assessments of the air quality monitoring results provided by the EA on a monthly basis since April 2021. The UKHSA has compared data provided by the EA to appropriate health-based air quality guidelines and standards or assessment levels for particulate matter, nitrogen dioxide, sulphur dioxide, methane and volatile organic compounds (VOCs comprising benzene, toluene, ethylbenzene and xylene (BTEX)). In addition, toluene concentrations have been compared to the odour detection threshold².
- 4.2.4 The readjustment to the hydrogen sulphide data introduces greater uncertainty, which the EA has quantified and included in the new data corrections. As noted earlier, the data adjustment method used by the EA for the historic data could not be used for the entirety of the dataset, because the diagnostic information necessary for the adjustment is only available for each specific monitoring location up to a certain historical point. For dates prior to this, the UKHSA can now only qualitatively assess the long-term risk to human health on a theoretical basis assuming that the local population may have been exposed to levels of hydrogen sulphide above the US Environmental Protection Agency's Reference Concentrations (EPA RfC³) value since 2016 when an increase in complaints were received by the EA and NuLBC. The UKHSA published a revised risk assessment for hydrogen sulphide for historic data in August 2024.
- 4.2.5 The results for each of the MMFs for the period March 2021 to July 2024 are shown in Figure 4.2. The figure uses adjusted historic data from the UKHSA Addendum Report⁴ up to August 2023, together with information contained in the July 2024 Health Risk Assessment⁵ for the period September 2023 to July 2024, which is based on data from the recalibrated monitoring stations. The dotted line between August and September 2023 demarcates when the new calibrated data availability began.

² Microsoft Word - Walleys EA AQ Monitoring health risk assessment November 2023 UKHSA final draft version (ehq-production-europe.s3.eu-west-1.amazonaws.com)

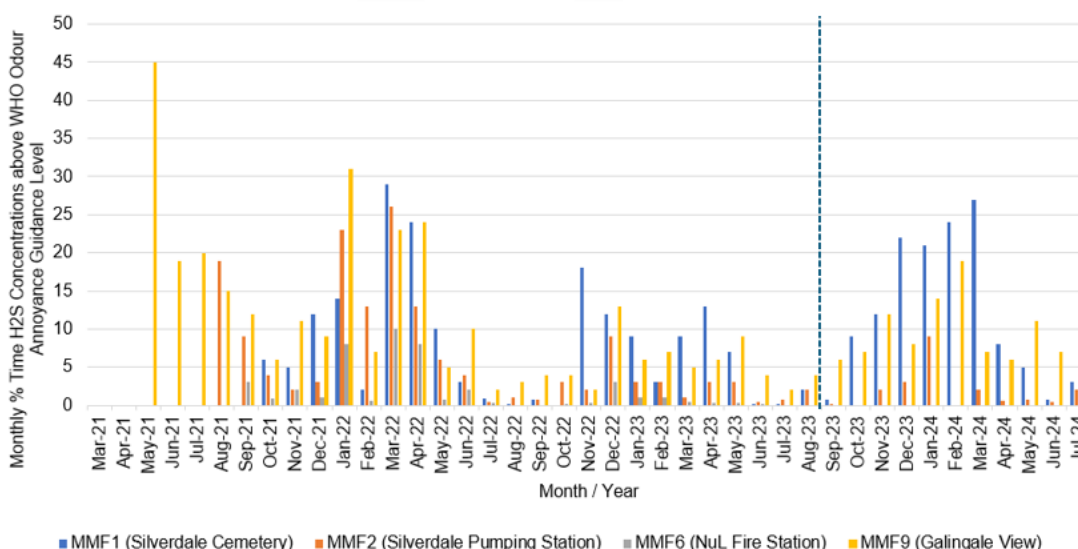
³ Note this is defined as an estimate of a continuous inhalation exposure concentration to people (including sensitive subgroups) that is likely to be without risk of deleterious effects during a lifetime.

⁴

c89b097b56b2f1f013182cd1f28d5c3c_Walleys_EA_AQ_Monitoring_health_risk_assessment_August_2023_UKHSA_addendum_(readjusted_data)_final_190824.pdf (ehq-production-europe.s3.eu-west-1.amazonaws.com)

⁵ 81c112211332bfb51148eacc41717111_UKHSA_Health_Risk_Assessment_July_2024.pdf (ehq-production-europe.s3.eu-west-1.amazonaws.com)

Figure 4.2 Health Risk Assessment Data by MMF – concentrations above WHO odour annoyance guideline level (7 µg/m3)



4.2.6 The following is taken from the UKHSA health risk assessment addendum, and summarises for each MMF the periods over which the adjusted monitoring data values exceeded the WHO odour annoyance guideline value. The significance terminology is that used by the UKHSA:

- at MMF1 between 6 October 2021 to 31 August 2023, there were eight months where the WHO odour annoyance guideline value was exceeded for a significant percentage of the time and a further nine months where the WHO odour annoyance guideline level was exceeded for a considerable percentage of the time
- at MMF2 between 5 August 2021 to 31 August 2023, there were five months where the WHO odour annoyance guideline value was exceeded for a significant percentage of the time and a further 14 months where the WHO odour annoyance guideline level was exceeded for a considerable percentage of the time
- at MMF6 between 29 September 2021 to 31 August 2023, there was one month where the WHO odour annoyance guideline value was exceeded for a significant percentage of the time and a further six months where the WHO odour annoyance guideline level was exceeded for a considerable percentage of the time
- at MMF9 between 19 May 2021 to 31 August 2023, there were 11 months where the WHO odour annoyance guideline value was exceeded for a significant percentage of the time and a further 17 months where the WHO odour annoyance guideline level was exceeded for a considerable percentage of the time.

4.2.7 The UKHSA Risk Assessment August 2024 states that *'the risk to long-term (lifetime) health cannot be excluded, where the cumulative average concentrations are above the long-term health-based guidance value. Currently this risk is likely to be small, but the longer the exposure is above the US Environmental Protection Agency's Reference Concentrations (EPA RfC), the greater any potential risk will become.....UKHSA is concerned that this is a protracted incident and the odour annoyance guideline value for hydrogen sulphide is exceeded for a considerable percentage of the time at one of the monitoring sites. The cumulative average concentration is above the long-term health-based guidance value at two of the monitoring sites. UKHSA strongly recommends that all measures be taken to reduce the off-site odours from the landfill site, to reduce the health impacts experienced in the local community.'*

- 4.2.8 It should be noted that the health-based guidance values relate only to the direct, toxicological effects of hydrogen sulphide and do not take into account wider health impacts, for example mental health effects or physical health effects that may be associated with chronic or long-term stress.

Health-related Symptoms Associated with Odour Emissions

Potential Health Effects

- 4.2.9 Health-related symptoms associated with odour emissions from Walleys Quarry have been widely reported on over the past four years. The UKHSA state that people living around the site may experience health effects such as irritation to the eyes, nose and throat, in addition to headache, nausea, dizziness, watery eyes, stuffy nose, irritated throat, cough or wheeze, sleep problems and stress described above. People who have health conditions that affect breathing, such as asthma and chronic obstructive pulmonary disease (COPD), may experience increased frequency and/or severity of symptoms.
- 4.2.10 Findings from the literature review in relation to health as a result of waste management site operations / odour emissions suggest the following:
- there is very limited evidence of health risks directly linked to living within close proximity to a waste management site (unless there is exposure to high concentrations of H₂S for a long period of time). However, there is also a general lack of understanding about how combined gases can affect respiratory health, calling for further research into the possible health impacts of the variety of compounds emitted from waste management sites. Highlighting the importance of developing this understanding, air pollution is the most pressing concern to human health, and current research surrounding this relationship is hindered by its inability to counter confounding variables. Regarding landfills, most of the evidence suggesting respiratory symptoms is self-reported.
 - complaints regarding odour from landfill sites have been on the rise in recent years. In one study investigating the social impacts of odour, nearly 84% of respondents felt that odour affected the tranquillity and quality of their life, with 80.5% perceiving the foul smell as being associated with their health.
 - one study identified that odour nuisance within a 2-3.6km radius from the landfill site was substantial (noting that impacts are likely to be based on the size of the site and material being disposed of), with H₂S being of high relevance due to the distinctive odour (and noting that some people can detect the gas by its odour at concentrations as low as 0.5 ppb). The unpredictability of odour, its presence over time and the inability to defend from it can create tension and anxiety within populations surrounding waste management sites. Limitations of studies include reliance on self-reported evidence and the presence of confounding factors.
 - the only scientifically robust evidence of respiratory health impacts due to waste management sites is symptoms such as shortness of breath. No correlations have been made to chronic respiratory diseases unless there are cumulative impacts of multiple volatile gases that have been experienced long-term under high concentrations. Findings have demonstrated that perception and adaptability to odours are strongly influenced by context, emphasising that behavioral responses to environmental odours can be variable over time for single individuals and among individuals exposed to the same odour. Perception of risk can be the manifestation of various social, personal, and demographic foundations.
 - odour perception has been indicated to be the most pressing concern from communities surrounding waste management sites. Perception has been linked to increased discomfort, environmental worry, health concern, and localised economic decline. Odour emissions are often due to airborne pollutants at levels below toxicity thresholds. Odour can be a great source of worry due to an individual's internal assessment of air quality serving as a personal warning agent, which can lead to affected mood and psychological distress if they perceive the odour as dangerous.
 - in one study in Iceland, however, short-term exposure to H₂S concentrations has been linked to

emergency hospital visits, although it is noted in this instance that the mean age in the affected community was 70. The study highlights the potential for impacts on vulnerable populations (for example older people, children or those with pre-existing health conditions) in particular.

- following on from the Covid-19 pandemic, it has become increasingly difficult to convincingly convey health risks to the population. Finally, air pollution, impaired health, and deprivation can combine to create a 'triple jeopardy' for affected individuals.

4.2.11 Impacts on mental health and wellbeing have been identified in relation to the ongoing situation at Walleys Quarry due to the protracted nature of the incident, the feelings of frustration and helplessness experienced by individuals, anxiety about long-term health impacts for both individuals and their loved ones, and anxieties about what else might happen as a result of the site (for example another fire, or whether the site will be properly closed and restored). Long-term stress can have a significant impact on both physical and mental health, including:

- **increased risk of chronic conditions:** prolonged stress can contribute to the development of various chronic conditions such as heart disease or diabetes.
- **weakened immune system:** stress can weaken the immune system, making individuals more susceptible to infections and illnesses.
- **mental health issues:** chronic stress is closely linked to mental health problems such as anxiety disorders and depression.
- **digestive problems:** stress can affect digestion and lead to issues like irritable bowel syndrome (IBS), stomach ulcers, and other gastrointestinal problems.
- **sleep disturbance:** long-term stress can disrupt sleep patterns, leading to insomnia or other sleep disorders, which in turn can further exacerbate stress levels.
- **impact on relationships:** stress can strain relationships with family, friends and co-workers, leading to social isolation and ultimately more stress.

Self-Reported Health Impacts

4.2.12 Data relating to potential health impacts associated with Walleys Quarry has been collected from a variety of sources including:

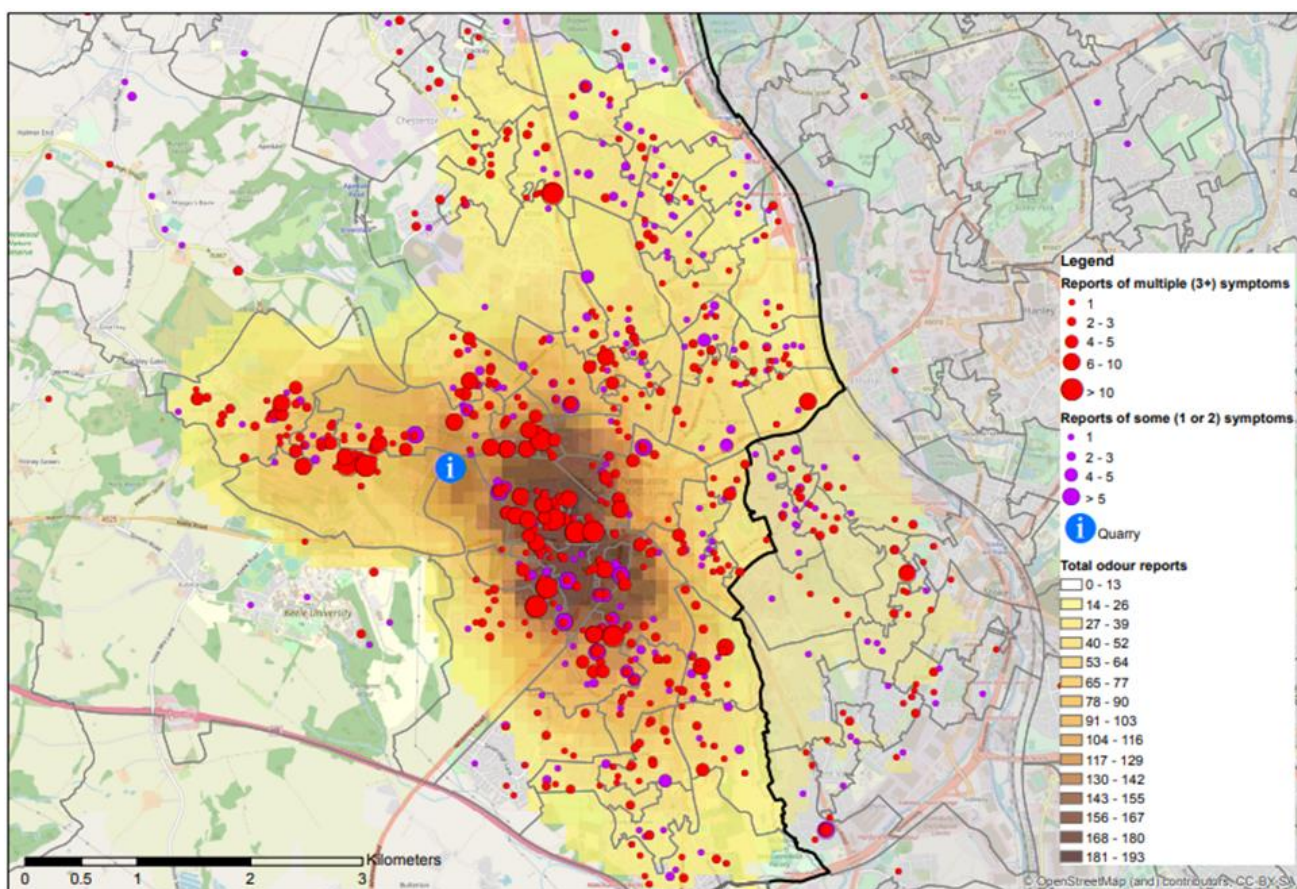
- various community surveys during 2021 when the odour issues were at their worst (for example the Walleys Quarry Health Impact Survey produced by former MP Aaron Bell in May 2021, health impact statements collected from local residents by NuLBC between January and April, and the Walley's Quarry Landfill Community Health Survey Report produced by Sian Rooney et al. which referenced data collected in June 2021)
- the Smell and Symptom Tracker set up and administered by Staffordshire County Council which was active between May 2021 and January 2023
- findings from community engagement undertaken as part of this study during 2024.

4.2.13 It is noted that these sources are all reliant on self-reported information with which there is inevitably a risk of bias with people under- or over-reporting symptoms. Typical symptoms reported by residents include those relating to odour, hydrogen sulphide exposure and mental health. These include physical symptoms such as headaches, nausea / feeling sick, eye irritation, irritation of the nose and throat, itching skin, difficulty breathing and exacerbation of existing respiratory conditions; symptoms relating to sleep disturbance; and reports relating to worsening mental health including anxiety, depression, low mood and in some instances panic attacks.

4.2.14 Figure 4.3 shows a summary of data from the Smell and Symptom Tracker covering the period May to October 2021, highlighting the area across which symptoms have been experienced and identifying clusters of multiple symptoms within the areas immediately to the west and east of the landfill site.

Tracker information identified that 94% of respondents lived within three miles of Walleys Quarry, with nearly half (45%) living within one mile of the site. As a self-reporting mechanism, it is possible that there are instances shown on the figure which are not connected with Walleys Quarry.

Figure 4.3 Odour and Symptom Reports Taken from the Smell and Symptom Tracker (2021) [produced by SCC]



Source: Staffordshire County Council

- 4.2.15 The Smell and Symptom tracker received a total of 2,351 responses between May 2021 and January 2023, with the vast majority (92%) received in the eight months between May and December 2021. The majority of records were entered by females (67.9%) compared to 31.6% by males and 0.3% by people who prefer to self-describe. Of the responses received, over a third of people (34.5%) stated that they had an underlying health problem or disability and that the odour made it 'a little worse' for 28.5% of these people and 'much worse' for 45%.
- 4.2.16 Tracker data was made available by Staffordshire County Council by postcode of report. Table 4.1 ranks the number of reports made by ward, highlighting the ten wards where the number of reports has been greatest. This has been translated into number of reports per 1,000 population. This metric was used to rank the wards as it accounts for the differences in population between the wards.

Table 4.1 Wards Ranked by Reports per 1000 Population to Symptom Tracker 2021-2023

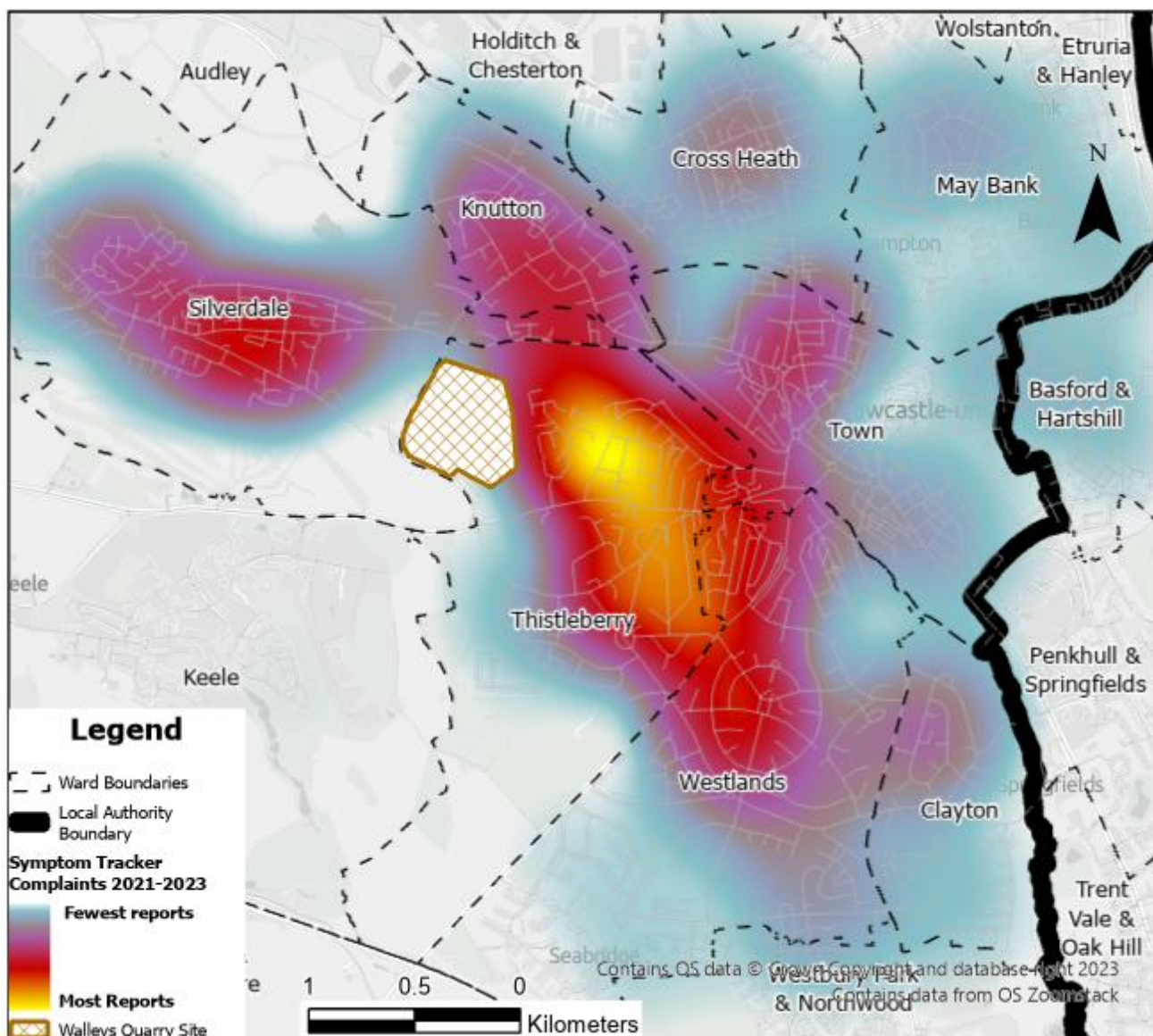
Ward	Population of Ward	Report Count	Maximum Reports in a single postcode within ward (and as a percentage of total)	Reports per 1000 Population	Rank (Reports per 1000 population)
Silverdale	5744	396	97 (24%)	69	1
Thistleberry	5647	361	34 (9%)	64	2
Knutton	2925	158	36 (23%)	54	3
Westlands	8368	355	62 (17%)	42	4
Town	5606	184	32 (17%)	33	5
Cross Heath	5491	172	75 (44%)	31	6
Clayton	2853	70	10 (14%)	25	7
May Bank	8585	100	8 (8%)	12	8
Wolstanton	6143	70	32 (46%)	11	9
Holditch & Chesterton	5736	58	12 (21%)	10	10

4.2.17 Table 4.1 shows that Silverdale, Thistleberry, Knutton, Westlands and Town represent the wards with highest reports to the symptom tracker per head of population. Some wards had outliers where a single postcode had a much higher proportion of the total reports within a ward than the rest of the reports; Cross Heath and Wolstanton were examples of this.

4.2.18 An updated heat map (Figure 4.4) has been prepared covering the entire period for which the Smell and Symptom Tracker was operational. To update the heatmap, the following steps were undertaken:

- entries in the symptom tracker were provided by postcode in order to retain granularity whilst preserving anonymity
- postcodes were then ranked by volume of reports (i.e 1. ST983DU – 97 reports, 2. ST983DW – 92 reports etc)
- the top and bottom 1% of postcodes by report volume were removed – the purpose of this was to remove outliers and thereby facilitate a more representative geographical spread of complaints.

Figure 4.4 Heat Map Showing the location of Reports to the Smell and Symptom Tracker 2021 to 2023



- 4.2.19 The map shows the areas where the most reports were made and is consistent with the 2021 heatmap generated by Staffordshire County Council. It demonstrates odours were being reported in the wards closest to Walleys Quarry, with a 'long arm' extending to the southeast of the site, which broadly corresponds with H₂S data gathered by the MMFs. Keele is notable for the lack of reports which is likely driven by its relative elevation and transient student population who may not have been so engaged with / aware of the Smell and Symptom Tracker. The heat maps provide a useful basis for establishing a more localised study area.
- 4.2.20 A Freedom of Information request made by a local resident in September 2024 related to the number of odour reports received by the Environment Agency National Incident Communication Service over the period 1st January 2020 and 21st August 2024 attributed to health establishments including Royal Stoke Hospital and the West Midlands Ambulance Service. FoI data revealed 600 reports had been attributed to the Royal Stoke Hospital over this time period and six to the West Midlands Ambulance Service; data is not available as to whether these reports were submitted by patients, visitors or employees, however.

Overarching Socio-economic Profile

4.2.21 Important context to understanding health impacts relates to having a detailed understanding of the local socio-economic context. The following sections describe the various wards potentially affected by odour emissions from the landfill site in relation to age profile, deprivation data, and health indicators. The majority of wards are located within the administrative area of NuLBC, and this area has been used as the primary area of focus; however as shown in Figure 4.4 there are further wards to the east, within the administrative boundary of Stoke-on-Trent City Council (notably Basford and Hartshill, and Hartshill Park and Stoke), which are a source of reporting to the Smell and Symptom tracker and where potential health impacts may occur, and data has been included for these wards too where relevant.

Age Profile

4.2.22 Mid-year population estimates for 2023 suggested that Newcastle-under-Lyme had a population of 128,060⁶. The borough has an older population than the England average, with around 22% of residents aged over 64 compared to just over 18% for England as a whole. The age profile for the nine wards in closest proximity to Walleys Quarry is shown in Table 4.2. Wards which exhibit a similar profile to NuLBC as a whole include May Bank and Thistleberry. Wards with a younger age profile include Keele (primarily due to the presence of Keele University in this ward), Town (which also has a much higher proportion of residents aged 20-24 than is the case for other wards), Silverdale, Knutton and Cross Heath. Wards with a slightly older age profile than NuLBC as a whole include Westlands and Clayton (23.4% and 24.6% of residents respectively are aged over 64, compared to 21.8% for NuLBC). Age profile is important because older and younger populations can be more vulnerable to health impacts; older people in particular are more likely to have long-term health conditions that may increase their susceptibility to poor health outcomes as a result of air pollution.

Table 4.2 Age Profile for Wards in Closest Proximity to Walleys Quarry

Age Band	Clayton	Cross Heath	Keele	Knutton	May Bank	Silverdale	Thistleberry	Town	Westlands	NuLBC
4 years and under	4.3	5.5	1.1	7.5	4.4	5.1	5.0	3.6	4.4	4.7
5 to 9 years	5.5	6.8	1.6	7.4	5.2	6.4	5.5	3.2	5.5	5.3
10 to 15 years	7.1	6.9	2.3	9.1	5.6	7.3	6.5	3.3	7.0	6.3
16 to 19 years	4.7	5.6	37.6	3.8	4.0	4.6	4.8	6.6	5.4	5.1
20 to 24 years	5.0	7.2	33.0	5.5	5.3	7.0	9.9	20.8	6.9	7.0
25 to 34 years	10.2	14.3	4.9	15.1	11.5	13.8	11.0	14.8	9.2	11.7
35 to 49 years	17.1	19.6	6.3	19.5	18.9	18.1	17.0	15.4	17.3	17.5
50 to 64 years	21.4	17.9	6.7	16.6	22.3	19.5	17.7	15.3	20.9	20.7

⁶ Estimates of the population for England and Wales - Office for National Statistics (ons.gov.uk)

Age Band	Clayton	Cross Heath	Keele	Knutton	May Bank	Silverdale	Thistleberry	Town	Westlands	NuLBC
65 to 74 years	11.4	8.7	3.5	8.1	11.6	10.3	10.8	7.8	11.6	11.5
75 to 84 years	9.9	5.8	2.4	5.7	7.4	5.7	7.9	5.8	8.2	7.4
85 years and over	3.3	1.8	0.8	1.5	3.8	2.4	3.9	3.4	3.6	2.9

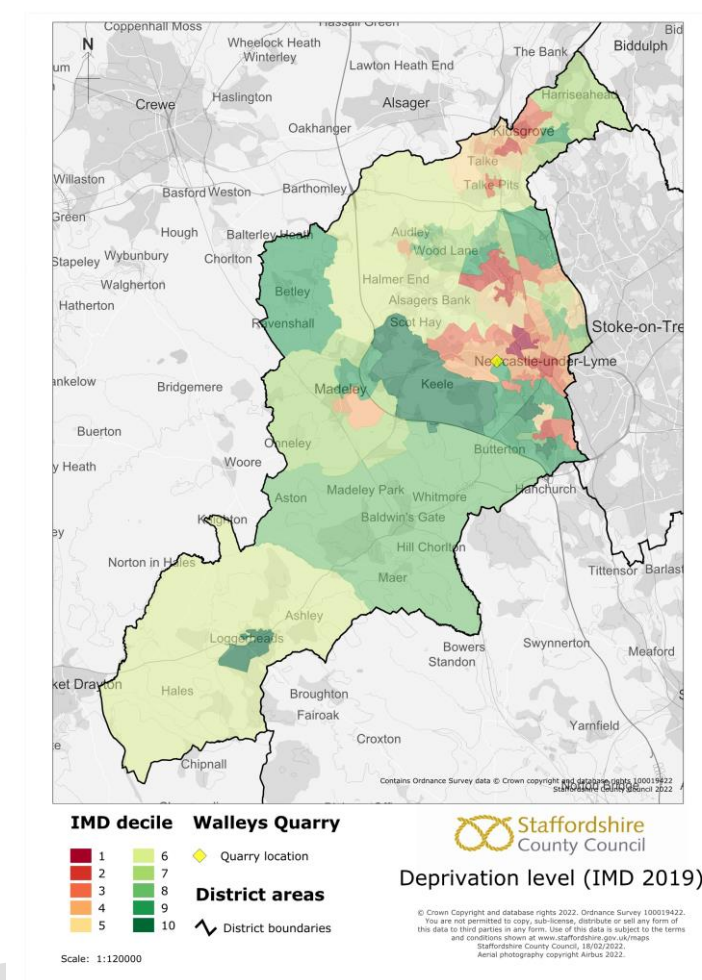
Source: Office for National Statistics, 2021

Deprivation

- 4.2.23 The Indices of Deprivation (IoD) measure relative levels of deprivation across Lower Super Output Areas (LSOAs)⁷ in England. The IoD are based on 39 separate indicators organised against seven distinct domains of deprivation (income, employment, health deprivation and disability, crime, barriers to housing and services, living environment, and education and skills training). The seven domains are combined and weighted to calculate an Index of Multiple Deprivation (IMD) which shows levels of deprivation at local level. The most recent IoD statistics were released in 2019.
- 4.2.24 There are 80 LSOAs within NuLBC, nine of which are in the 20% most deprived in England and Wales, according to the 2019 IMD. Two LSOAs, one predominantly in Cross Heath ward and one predominantly in Knutton ward (both of which are amongst the nine wards in closest proximity to Walleys Quarry) are in the 10% most deprived in the country. The wards of Silverdale and Town also exhibit a greater level of deprivation when compared to the national average. IMD data for NuLBC is shown in Figure 4.5 classifying LSOAs into ten groupings according to relative deprivation (1=most deprived, 10=least deprived). It is well documented that people living in more deprived areas consistently experience poorer health outcomes.

⁷ Lower Layer Super Output Areas (LSOAs) are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales, they have an average population of 1,500 people or 650 households.

Figure 4.5 Deprivation Data by Ward for Newcastle-under-Lyme (Index of Multiple Deprivation, 2019)



Source: Staffordshire County Council

4.2.25 There has been a long history of industrial activity in the Newcastle-under-Lyme area, much of which could have had long-term impacts on the socio-economic characteristics and health of the local population. For example, coal mining has been present in the area since the mid to late 1800's, with the deep mine at Silverdale only closing in 1998 and other coal mines (such as at Wolstanton and Holditch) being operational in the 1970's and 80's. Other industrial sites located in the area have included tile works, factories, an iron foundry and clay pits; there remains an operational open cast mine to the north of the Walleys Quarry site which is for brick clay.

Overview of Local Health Data

4.2.26 Self-reported health data⁸ taken from the 2021 Census is summarised in Table 4.3. The table shows that Newcastle-under-Lyme as a whole has slightly poorer self-reported health than is the case for Staffordshire or England as a whole. More deprived wards – notably Cross Heath, Knutton and Town – show significantly higher proportions of residents reporting bad and very bad health than is the case for the wider Newcastle-under-Lyme area or for England (8.6%, 8.6% and 8.2% for the three wards, compared to 6.2% for Newcastle-under-Lyme and 5.2% for England).

⁸ Self-reported general health draws together an individual's perception of all aspects of their health and is a useful indicator of general well-being and health-related quality of life.

Table 4.3 Self-Reported Health Data for NuLBC and Wards Closest to Walleys Quarry (% residents)

Ward	Very good health	Good health	Fair health	Bad health	Very bad health
Clayton	42.6	34.2	16.1	5.2	1.8
Cross Heath	41.1	35.1	15.1	6.5	2.1
Keele	47.5	40.2	10.0	2.1	0.2
Knutton	43.6	33.0	14.8	6.7	1.9
May Bank	44.9	35.5	14.6	3.8	1.2
Silverdale	43.5	34.4	15.0	5.6	1.6
Thistleberry	44.6	35.0	14.0	5.1	1.2
Town	41.4	34.6	15.8	6.6	1.6
Westlands	48.8	34.0	12.7	3.4	1.1
Newcastle-under-Lyme	43.9	35.3	14.5	4.8	1.4
Staffordshire	45.4	35.3	13.8	4.2	1.2
England	48.5	33.7	12.7	4.0	1.2

Source: Census 2021

4.2.27 A combined health profile for the nine wards in closest proximity to Walleys Quarry is shown in Figure 4.6. The profile identifies a number of areas where the area performs worse than the national average, notably in relation to:

- emergency hospital admissions (all causes)
- emergency hospital admissions for Chronic Obstructive Pulmonary Disorder (COPD)
- emergency hospital admissions for self-harm
- limiting long-term illness or disability
- deaths from all causes under 75 years
- deaths from all causes, all ages.

Figure 4.6 Combined Health Profile for Wards in Closest Proximity to Walleys Quarry



Source: Office for Health Inequalities and Disparities

4.2.28 Looking at individual wards in more detail, Table 4.4 shows that life expectancy at birth ranges from 76.6 years (Cross Heath) to 81.5 years (Westlands) for males and from 76.1 years (Town) to 86.6 years (Keele) for females. This is compared against a national life expectancy of 78.9 years (males) and 82.3 years (females) for NuLBC and of 79.5 years (males) and 83.2 years (females) for England.

Table 4.4 Life Expectancy by Ward

Ward	Life expectancy at birth (males)	Life expectancy at birth (females)	Ward	Life expectancy at birth (males)	Life expectancy at birth (females)
Clayton	80.0	83.5	Silverdale	76.8	81.4
Cross Heath	76.6	80.0	Thistleberry	79.2	84.2
Keele	81.3	86.6	Town	75.9	76.1
Knutton	77.7	82.9	Westlands	81.5	86.3
May Bank	77.9	81.0			

Source: Office for Health Inequalities and Disparities

4.2.29 Finally, Table 4.5 shows more detailed information relating to health indicators by individual ward. The table highlights how the more deprived wards of Cross Heath, Knutton and Town perform worse than their less deprived counterparts. Data relating to Standardised Admission Ratios (SAR) covers the period 2016-2021, with data relating to Standardised Mortality Rates (SMR) covering the period 2016-2020 (noting that this is prior to the main period of odour emissions taking place at Walleys Quarry).

Table 4.5 Health indicators by ward

Indicator	Clayton	Cross Heath	Keele	Knutton	May Bank	Silverdale	Thistleberry	Town	Westlands
Deaths from all causes, under 75 years	109.9	149	47.8	150	123.1	128	105.3	161.9	92.8
Deaths from all causes, all ages	91.3	128.7	68.9	111.1	111	116.1	86.5	150.5	79.7
Deaths from respiratory diseases, all ages	76.3	160.3	94.1	127.5	117	124.6	97.4	113	82.0
Emergency hospital admissions, all causes	122	160.2	51.5	159.5	128.9	139.7	124.5	149.8	109.2
Emergency hospital admissions, COPD	106.4	267.2	112.7	311.6	114.7	233.5	118.3	225.1	89.8

Source: Office for Health Inequalities and Disparities

General Practice Profiles

- 4.2.30 A previous review was undertaken of ten general practices within two miles of Walleys Quarry, namely Silverdale Medical Centre, Milehouse Medical Practice, Higherland Surgery, Keele Practice, Lyme Valley Medical Centre, Miller Street Surgery, Loomer Road Surgery, Kingsbridge Medical Centre, The Village Surgery and Wolstanton Medical Centre. A further review has been undertaken of the characteristics and health outcomes of people registered with these practices, focusing in particular on aspects likely to be of relevance to specific conditions and issues (namely proportions of vulnerable populations registered at individual practices, long-standing health conditions, respiratory conditions and mental health). A summary of the latest data taken from GP practice profiles (accessed via the Department of Health and Social Care) is shown in Table 4.6 overleaf.
- 4.2.31 Direct comparison between the latest data shown overleaf and previous data obtained for 2021 is not possible in every instance due to the introduction of new metrics. However, a high-level comparison shows that for each practice, the percentage of patients with a long-standing health condition has increased (the greatest increases – of more than 10% of patients – have been seen at Silverdale Medical Centre, Milehouse Medical Practice and Kingsbridge Medical Centre, the latter showing an increase of 22.1%).
- 4.2.32 The percentage of patients with a long-term mental health condition has seen both increases and decreases according to general practice – for example Milehouse Medical Practice has seen an increase from 12.86% to 17.1% between 2020 and 2023, Wolstanton Medical Centre and Higherland Surgery have seen increases of around 2% in each case; Lyme Valley Medical Centre has, however seen a dramatic decrease from 24.65% in 2020 to 19.7% in 2023. QOF prevalence for COPD (all ages) has remained broadly the same or reduced for the majority of practices, with the exceptions of The Village Surgery, Miller Street Surgery, Wolstanton Medical Centre and Loomer Street Surgery, where prevalence has increased slightly. These trends should be treated with caution due to other confounding factors that may play a role (for example the role of the Covid-19 pandemic in terms of people's mental health and wellbeing).

Table 4.6 General Practice Profiles Relevant to Potential Health Impacts

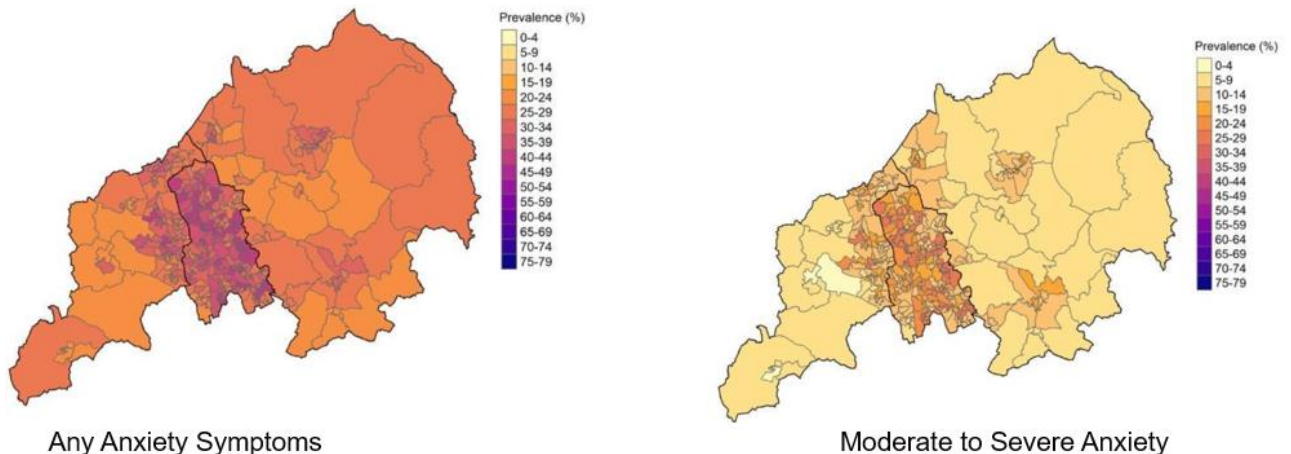
Indicator	Silverdale Medical Practice	Keele Practice	Milehouse Medical Practice	Higherland Surgery	Lyme Valley Medical Centre	Miller Street Surgery	Wolstanton Medical Centre	Loomer Road Surgery	Kingsbridge Medical Centre	The Village Surgery
% aged 0-4 yrs (2024)	4.5	2.0	6.7	4.5	4.4	3.6	4.0	5.1	4.1	5.1
% aged 5-14 yrs (2024)	11.1	3.2	13.1	12.2	10.1	8.0	10.0	13.1	11.8	11.9
% aged <18 yrs (2024)	20.3	11.0	24.8	21.3	18.9	15.2	18.3	23.5	21.1	21.6
% aged 65+ (2024)	22.3	5.0	16.1	21.3	17.0	24.9	23.5	17.3	23.8	16.4
% aged 75+ (2024)	11.6	2.4	8.8	10.8	8.0	12.9	12.3	8.3	12.7	8.1
% aged 85+ (2024)	3.6	0.6	3.5	3.3	2.6	3.7	3.4	2.4	3.3	2.1
% with a long-standing health condition (2024)	76.1	61.8	72.7	61.9	54.0	64.7	67.9	66.0	78.1	62.0
COPD: QOF Prevalence (all ages) (2023/24)	3.4	0.3	3.2	2.8	2.0	2.2	2.9	3.7	1.8	2.3
Asthma: QOF Prevalence (6+ years) (2023/24)	8.1	4.2	6.0	6.6	6.2	6.2	7.6	6.3	7.5	7.2
Depression: QOF Incidence (18+ years) (2023/24)	2.5	1.8	1.0	2.8	0.4	1.6	2.0	0.9	2.1	2.0
Mental health: QOF Prevalence (all ages) (2023/24)	1.14	0.44	0.94	1.56	0.97	1.13	0.53	1.01	0.71	0.89
% reporting a long-term mental health problem (2023)	11.5	30.9	17.1	14.6	19.7	6.2	12.2	17.2	8.3	13.9

Source: Department of Health and Social Care, fingertips

Mental Health and Wellbeing

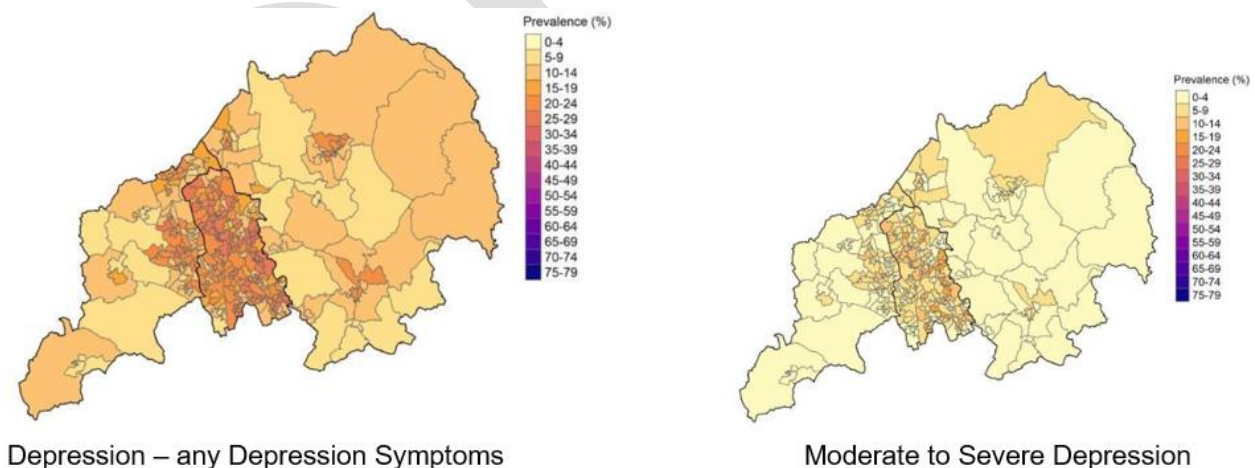
- 4.2.33 The figures below show information taken from a study at Keele University investigating the health of the populations of North Staffordshire and Stoke-on-Trent. The study used information collected from questionnaires and enabled the preparation of maps similar to those below describing the prevalence of various health conditions across the area in people aged 35 and over. Figure 4.7 and Figure 4.8 show information relating to anxiety and depression; both sets of information describe the proportion of people in each area who experience symptoms for any amount of time during a one week period

Figure 4.7 Prevalence of Anxiety – ‘Any Anxiety Symptoms’ and ‘Moderate to Severe Anxiety’



Source: Keele University [Health of the population - Keele University](#)

Figure 4.8 Prevalence of Depression – ‘Any Depression Symptoms’ and ‘Moderate to Severe Depression’



Source: Keele University [Health of the population - Keele University](#)

- 4.2.34 The Annual Population Survey has included questions relating to personal wellbeing since 2011. Personal wellbeing is assessed using four measures designed to evaluate how satisfied people are with their lives overall, whether they feel they have meaning and purpose in their lives, and their emotions during a particular period (both positive and negative). The ONS describes the benefits of monitoring personal well-being year on year as being to ‘show how people feel their quality of life changes in relation to changes in circumstances, policies and wider events in society’.

4.2.35 The four areas of questioning require a response on a scale of 0 to 10 relating to:

- **life satisfaction:** how satisfied are people nowadays, where 0 is 'not at all satisfied' and 10 is 'completely satisfied'
- **worthwhile:** to what extent people feel that the things they do in their life are worthwhile, where 0 is 'not at all worthwhile' and 10 is 'completely worthwhile'
- **happiness:** how happy did people feel yesterday, where 0 is 'not at all happy' and 10 is 'completely happy'
- **anxiety:** how anxious did people feel yesterday, where 0 is 'not at all anxious' and 10 is 'completely anxious'.

4.2.36 Figure 4.9 and Figure 4.10 show responses from the personal well-being survey for Newcastle-under-Lyme residents over the period 2019 to 2023, focusing on life satisfaction, worthwhile and happiness responses and anxiety responses respectively. Although the survey results do have limitations in that it is difficult to correlate findings to specific circumstances or incidents, and there are wider factors at play in relation to all the areas covered, Figure 4.9 shows a dip in 'happiness' within NuLBC that does not correlate with the national data trend; similarly Figure 4.10 shows an uptick in 'anxiety' from the April 2020/March 2021 point onwards which is greater than the national average. A range of other factors are likely to be involved, including the period immediately after the Covid-19 pandemic, the changing UK economy and wider political situations.

Figure 4.9 Personal Well-being Ratings 2019-2023 NuLBC (life satisfaction, worthwhile, happiness)

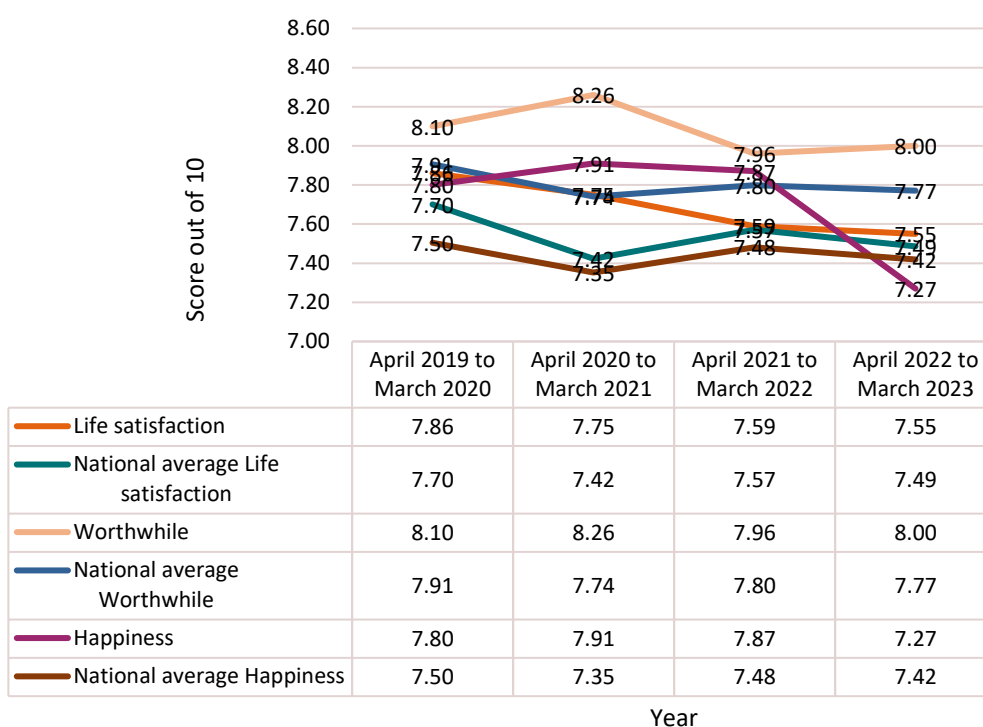
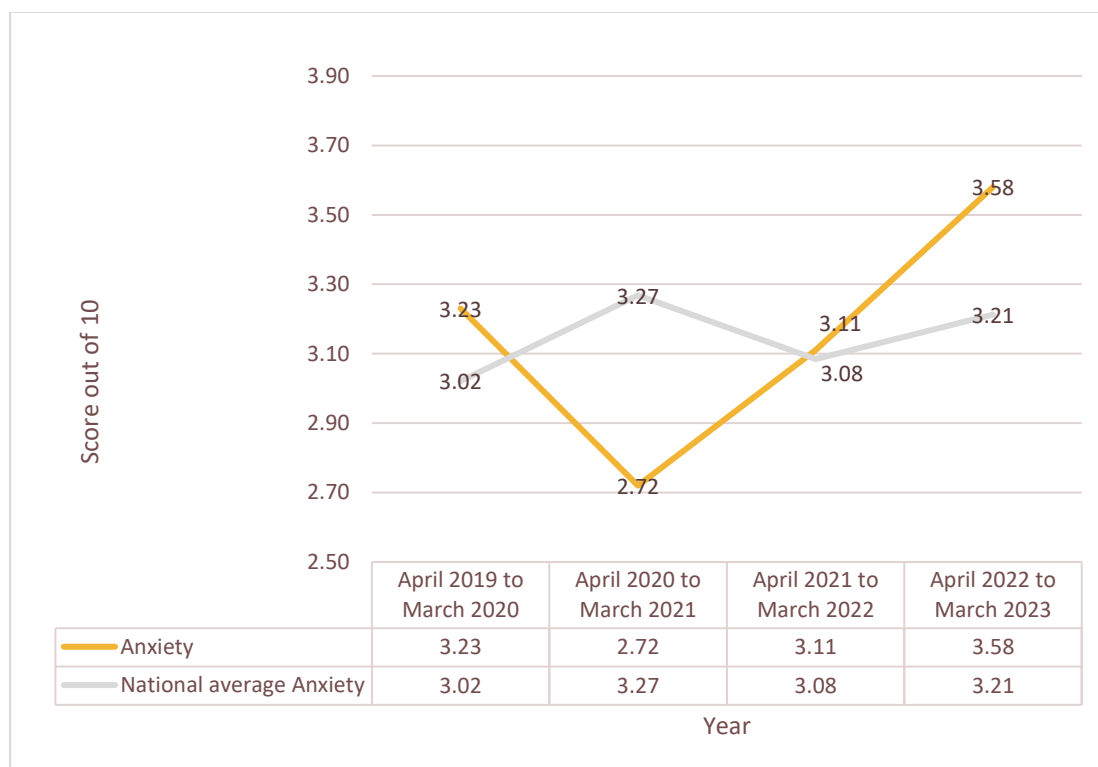
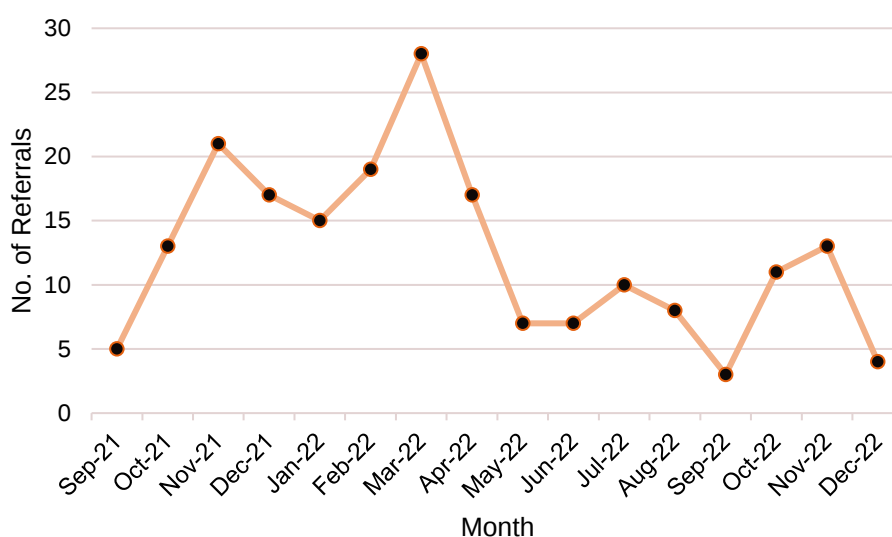


Figure 4.10 Personal Well-being Ratings NuL 2019-2023 (Anxiety)



- 4.2.37 Health impact studies prepared for the NuL area in 2021 and amended in April 2022 reviewed prescribing data for anti-depressants and hypnotics (used to treat depression and assist with sleep disturbance respectively). The review found that prescribing of anti-depressants had increased generally over a five-year period and that it had also increased within nine of the ten GP surgeries in closest proximity to Walleys Quarry. The use of hypnotics had decreased in seven of the ten surgeries. The data suggested that either the prevalence of depression had been slowly increasing across the North Staffordshire Clinical Commissioning Group (CCG) area and the ten general practices within two miles of Walleys Quarry Landfill over the last ten years, or that doctors were more likely to diagnose and/or treat depression. One of the recommendations from the health impact study was that NHS mental health support should be made available to local residents until the situation has been resolved.
- 4.2.38 A Mental Health Clinic was established in April 2021 specifically to offer additional mental health support to local residents living or working in close proximity to the Walleys Quarry landfill operation, and who were experiencing emotional distress as a result of the odours emanating from the site. The service, which included individual counselling, support groups and self-help materials, was provided by the Midlands Partnership NHS Foundation Trust (MPFT) and North Staffordshire Combined Healthcare NHS Trust in partnership with Mental Health Matters, the Dove Service, North Staffs Mind, Burton and District Mind and Changes Health & Wellbeing.
- 4.2.39 Information provided by the Staffordshire and Stoke-on-Trent Integrated Care Board in relation to the 'Talking Therapies' service identified that the service received 198 referrals over the period September 2021 to December 2022, as shown in Figure 4.11. Of these, 59 people entered treatment during this period.

Figure 4.11 Referrals to the Mental Health 'Talking Therapies' Clinic

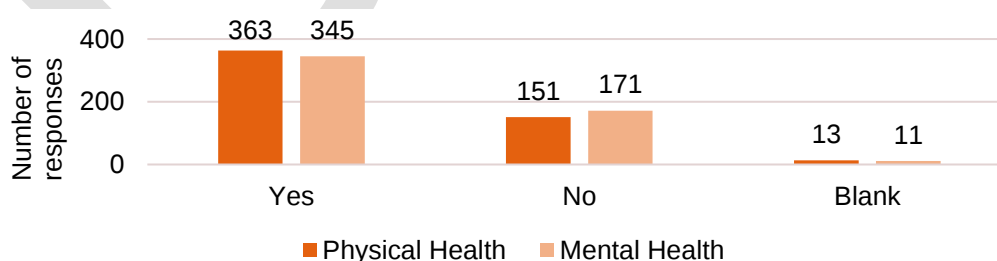


4.3 Findings from Community and Stakeholder Engagement

- 4.3.1 The online community survey asked respondents a number of questions about whether and how the ongoing odour issue from Walleys Quarry affected their physical and mental health. Figure 4.12 shows respondents felt strongly that their health has and continues to be affected, with 69% and 65% of respondents stating that the ongoing odour issue did affect the physical and mental health respectively of themselves / the people in their household or in their place of work. In terms of people who felt their health had not been affected, a greater proportion responded 'no' in terms of mental health, which is perhaps a feature of some of the stigma that continues to be attached to mental health and a lack of awareness about the range of disorders that it may encompass (from mental wellbeing through to more defined conditions). A small number of respondents stated that they had moved away from the immediate local area to escape the smell and due to 'concerns for our health, both physical and mental'.

Figure 4.12 Responses to Whether the Ongoing Odour Issue has Affected your Physical and Mental Health

Has the Ongoing Odour Issue Affected Your Physical and Mental Health:



- 4.3.2 Further detail provided by respondents in terms of the ways in which they felt their physical and mental health had been affected is provided below:

Ways in which **mental** health has been affected

Anxiety and depression: caused by the 'constant exposure to unpleasant odours' and the inability to ventilate the house properly or escape in any way '...the stress it's caused is immeasurable and has been life changing'.

Feelings of frustration and helplessness: unable to stop or control the situation that is affecting and their children / loved ones negatively *'....mentally knowing you can't do anything to stop this happening and raising children in the area....it's saddening'*.

Restrictions on enjoyment: being unable to use, for example the garden or outdoor activities close to home due to the persistent smell.

Generalised emotional distress: feeling down and saddened by the situation affecting everyday life *'...it gets you down everyday'*.

Ways in which **physical** health has been affected

Respiratory issues: including breathing difficulties, frequent chest problems, worsening asthma *'...at the worst point I was put on stronger asthma inhalers and Montelukast was added in as extra'*.

Headaches: regular headaches caused to the unpleasant smell *'...I regularly wake up with a headache then realise the house has been flooded through the night with the odour'*.

Symptoms akin to allergic reactions: itchy eyes, ongoing sneezing, worsening eczema / skin reactions in some cases.

Sleep disruption: being woken by the smell in the night, leading to sickness, breathing problems, and regular nosebleeds *'...gasses wake us up in the middle of the night'*.

- 4.3.3 Just over half of respondents (55%) stated that they felt their health had worsened over time, with accounts provided demonstrating a clear pattern of health deterioration, marked by worsening respiratory issues, increased prevalence of physical symptoms, exacerbation of chronic conditions, heightened mental health challenges, and significant impacts on daily life due to the continued exposure to the adverse environmental situation. Statements made by respondents include:

'Nausea is more often and feeling drained and headaches'

'Headaches, coughs and colds are more frequent'

'I find....that small exposure worsens my asthma and I get a sore throat.....We get it at lower levels, for less time & less frequently than we did previously and my health has improved. I still experience short term adverse health effects when I am exposed to it'

'I am more short of breath and am less tolerant to smells of the landfill than I was which is seemingly getting worse'

- 4.3.4 Equally, a number of respondents emphasised uncertainty with direct associations between the odour emissions and worsening health, and / or an understanding that the odour was often a 'confounding factor' to existing health conditions:

'Last year I had a period of sick leave due to mental health issues. There were many other aspects to it, but leaving/not leaving the house was one of them'

'My asthma has got worse so that could be a contributing factor'

'...My husband already has poor physical and mental health. Has worsened as he barely goes in the garden due to the stench and his mental health has deteriorated due to spending most of his time shut indoors'

'....I am currently awaiting blood tests And an MRI...If its quarry related....I don't know.....But I am wondering if it is...'

Impacts on Susceptible Individuals

- 4.3.5 The 2021 court case Richards vs The Environment Agency (presided over by Judge Fordham) highlighted the issues associated with the odour and impacts on susceptible individuals (Mathew Richards at the time being a 5½ year old boy for whom *'the levels of hydrogen sulphide are preventing recovery and lung development, during a crucial window of time, absent which recovery he faces the development of the condition Chronic Obstructive Pulmonary Diseasewhich would dramatically shorten his life expectancy (meaning earlier death in adulthood)'*⁹.
- 4.3.6 The 2021 judgement by Judge Fordham highlighted *'the problem of an information gap in relation to the human health implications of long-term (chronic) exposure to low concentration hydrogen sulphide, especially in relation to children'*. Reference was made to WHO information which notes a requirement for further epidemiological studies on possible effects of long-term, low-level hydrogen sulphide exposure. The judgement included summaries of impacts of the odours from the landfill site during 2021 as noted in the Community Health Survey report referred to earlier, together with social media comments specifically relating to issues affecting children. The judgement concluded that Mr Justice Fordham was *'satisfied that there is a direct effect on Mathew's home, family life and private life from adverse effects of severe environmental pollution'*.
- 4.3.7 The EA lodged an appeal in December 2021 on grounds including that it was for the EA to evaluate and determine what further action needed to be taken in light of guidance and recommendations made by (at the time) Public Health England. The Court of Appeal held that it was not for the court to prescribe precise outcomes and timescales. The second ground of appeal was allowed on the basis that, at the time of the hearing in August 2021, it was found that the EA had not acted or was proposing to act unlawfully by failing to comply with its obligations under Articles 2 and 8 of the European Convention of Human Rights. The case was tried to be taken to the Supreme Court to hear an appeal against that decision, but permission was refused stating that the case does not raise an arguable point of law.
- 4.3.8 Engagement with local schools in the vicinity of Walleys Quarry highlighted particular ways in which young people were perceived to have been impacted over the last few years as a result of the odours and specifically relating to potential impacts on their health:
- *'asthma rates went up....the number of headaches went up...we were asking parents to come in and give the children Calpol during the day'*
 - *'staff were affected with feelings of dizziness / vertigo and had to take time off work'*
 - *'concerned about the mental health of the children...we have a large number of children on a pastoral plan for their social and mental health needs....plus increasing number of SEND...and the children can't go outside'*
 - *'we don't push the active travel agenda because of the smell....would prefer them to be in a car and be away from the smell for ten minutes'*
 - *'attendance levels have plummeted since Covid...but seen more headaches and minor illnesses since 2020/21'*
 - *'some children do seem to be particularly sensitive to the smell...the days lost through sickness does seem to have increased'*
 - *'we saw a down-turn in extra-curricular activities when the smell was at its worst, particularly outdoor sports'*
- 4.3.9 Engagement with travellers at the Cemetery Road Caravan Park highlighted that a number of the older residents had experienced breathing difficulties as a result of the gas emissions from the landfill

⁹ 2501.pdf (bailii.org)

site, headaches were common and that skin irritation was particularly severe for one younger individual.

Long-term Stress and Anxiety

4.3.10 One of the areas frequently mentioned by residents of all ages and across all settings relates to the ongoing and prolonged nature of the matter, the frustration and lack of control that residents have to improve or change the situation and ongoing uncertainty about what the future will bring, whether this is around what happens to the landfill site, or whether there will be long-term health impacts arising from the air pollutants they have been exposed to. Examples of ongoing causes of stress and anxiety include:

- Frustration, distress and anger directed towards the EA and other public sector organisations at their apparent inability to resolve the situation. Reference has been made to the powerlessness and helplessness that people feel to do anything about it.
- Anxieties have now turned to what will happen to the landfill site once tipping ends in 2026, what is the exit strategy and how will this be implemented. Residents feel worried that site closure and restoration will not happen due to the perceived unreliability of the site operator *'given that the operational strategy is not robust, why should the exit strategy be?'*
- The fire in August 2024 generated significant additional concern for local residents and has fuelled an ongoing anxiety relating to the safety of the site *'people were really frightened about the fire and what might potentially happen...the children were crying'*.
- The socio-economic profile of the local community shows that there is a high level of income deprivation and social mobility is therefore much lower for many people in the community than may be the case elsewhere; there is a higher proportion of people in private rented and social housing who are not able to easily move away from the area in order to 'escape' the smell. For this group, the lack of control and powerlessness is particularly valid. Others in the community feel they cannot move away because of caring responsibilities for elderly relatives.

4.4 Impact Summary

4.4.1 There is no denying that the odour emissions from Walleys Quarry have had, and continue to have, an impact on the physical and mental health of people living in the area. The following is a summary of the key areas of impact in relation to health:

- **direct toxicological impacts:** the continuing exposure of the population to elevated levels of hydrogen sulphide that are experienced by individuals in the vicinity of the Walleys Quarry site has resulted in people experiencing a range of short-term health symptoms, including headaches, nausea, dizziness, eye and skin irritation, wheezing and coughing. The UKHSA has highlighted that the risk to long-term (lifetime) health cannot be excluded, where concentrations are above the long-term health-based guidance value. Health risk assessments state that *'currently this risk is likely to be small, but the longer the exposure is above the US EPA RfC, the greater any potential risk will become'*. Although health indicators or prescribing data do not show evidence of a recent deterioration in the clinical condition of people with various health conditions related to the current situation at Walleys Quarry, there continues to be a large number of people experiencing miserable symptoms on a regular basis.
- **mental health and wellbeing:** the ongoing situation at Walleys Quarry has inevitably affected people's mental health and wellbeing. Given that this is a spectrum, and that there are likely to be other compounding factors affecting people's mental health and wellbeing on any given day, it is very hard to quantify or correlate the impact directly. Prescribing data, the number of referrals to the Mental Health Clinic during 2021 and 2022, and data obtained for individual GP surgeries shows that depression and other mental health conditions remain an important area. However, the community and stakeholder engagement findings show that the impacts on people's general

wellbeing is likely to be much more extensive and potentially have longer-term implications. The Mental Wellbeing Impact Toolkit¹⁰ cites four protective factors for mental wellbeing, one of which relates to sense of control – whether this be over individual circumstances, the environment within which people live, or the ability to influence decisions; these are all areas where people of all ages and backgrounds feel as though they are struggling. Whilst this may not result in visits to a GP or to mental health specialist, it continues to have an adverse effect on the quality of people's daily lives. For people who have less control over where they live (for example in social rented accommodation), the situation is likely to be worse, and this is where people have used phrases and words like 'prisoner', 'lack of freedom' and 'stuck' to describe their daily lives. Similarly, there may be a greater impact experienced by children who feel less able to use outdoor spaces, are less inclined to walk or cycle to school, or who feel 'ignored' or 'overlooked' by those in positions of responsibility.

- **Impact of long-term stress:** aligned with the above are the likely impacts associated with a protracted situation, with (in the eyes of local residents) 'no end in sight'. The impacts of long-term stress are likely to only just be emerging and are likely to present as a variety of physical and mental health symptoms which, for populations already experiencing poorer health outcomes as a result of deprivation, may have a greater impact on their lives.
- **Impact on susceptible individuals:** as noted by the UKHSA, people who have health conditions that affect breathing, such as asthma and COPD may experience increased frequency and/or severity of symptoms as a result of the continued exposure. There is a clear correlation between deprivation and poor health outcomes, and many of the people living and/or working in close proximity to the landfill site are more susceptible to impacts associated with odour emissions as a result. Anecdotal feedback from schools has demonstrated how the health and wellbeing of pupils have been impacted during the past four years, with impacts particularly associated with their wider wellbeing and quality of life. Many of the community members engaged through the online survey, focus groups or interviews, referenced concerns for family members who may be more susceptible to adverse health impacts (older people, those with pre-existing conditions, their children and so on). The residents of the traveller's site at Cemetery Road are particularly vulnerable due to the nature of their living accommodation, their lifestyle (much of which involves use of the outdoor areas within their pitches) and poorer health outcomes.
- **Use of healthcare resources:** the Mental Health Clinic was used to a degree by local residents during 2021 and 2022. There has historically been a stigma attached to mental health diagnoses and treatments, although this is less so these days. Schools have reported effective use of mental health specialists in schools to help with broader issues experienced by children, some of which may have been exacerbated by the situation at Walleys Quarry. There is anecdotal evidence that many people do not visit their GP to report symptoms necessarily, but that instead use 'over the counter' medication to treat some of the minor, day-to-day symptoms associated with H₂S exposure (for example use of antihistamines, eye drops and so on). This is very difficult to evidence, because it is not possible to know the specific reason for which people are buying medication.

¹⁰ [MentalWellbeingImpactAssessmentAtoolkitforwellbe-1.pdf \(healthycampuses.ca\)](#)

5 Business and Economy

5.1 Introduction

- 5.1.1 This section explores the broader impacts that odour emissions from the Walleys Quarry landfill site have had on businesses and the local economy, including impacts on the image of Newcastle-under-Lyme as a place to do business, the ability of businesses to recruit and train staff, impacts relating to business start-ups and closures and impacts as they may relate specifically to particular institutions.

5.2 Data Overview

- 5.2.1 Findings from the literature review in relation to some of the broader socio-economic impacts associated with waste management operations and landfill sites in particular, highlighted that:
- in general, socio-economic impacts of landfills can arise from groundwater contamination, diffusion of litter into the wider environment, odour nuisance, perception, and exposure to volatile gases. They have also been found to **decrease the market value of the surrounding area**, and businesses near sensitive odour perception sites have been suggested to be at a disadvantage to those not.
 - reviewed literature highlights that the presence of landfill sites are strongly related to reductions in the **value and perceived quality of the surrounding area**, even long after they have been out of operation. Moreover, perception has been found to play a significant role within the realms of waste management and the local community, with a lack of **transparency and communication** between waste management and local residents exacerbating the potential socio-economic impacts of landfills in general.

Economy and Employment

A review of publicly available data from the Office for National Statistics (ONS) and Nomis has been undertaken to understand background information relating to the economy and employment for the Newcastle-under-Lyme and wider Staffordshire area. Basic data relating to economic activity and employment is shown in

- 5.2.2 Table 5.1 for the period 2021 to 2023. It is noted that changes in economic indicators during this period are likely be affected by Covid-19, for example the period immediately following lock-downs and post-Covid recovery, changing working practices and lifestyle impacts. The economic activity rate for the NuLBC population aged 16-64 shows a notable fluctuation between 2021 and 2023 and increased significantly to 86.0% in 2023. Similarly, the employment rate mirrored this trend and rose from 76.0% to 86.0% in 2023.
- 5.2.3 Economic activity data for NuLBC between 2021 and 2023 has been gathered from the national Annual Population Survey and is presented in Table 5.1. The data presents the estimates to provide a comparative change in economic activity for the borough over time.
- 5.2.4 The percentage of economically inactive individuals increased from 20.1% in 2021 to 25.5% in 2022, but dropped significantly to 14.0% in 2023; the proportion of the population in Newcastle-under-Lyme who are economically inactive and do not want a job increased in 2023. This trend suggests that by 2023, the majority of economically inactive individuals were less interested in rejoining the workforce, potentially due to retirement, health concerns, or other factors affecting labour market participation.

Table 5.1 Economic activity in Newcastle-under-Lyme

	2021 (%)	2022 (%)	2023 (%)
Economic activity rate - aged 16-64	79.9	74.5	86.0
Employment rate - aged 16-64	76.0	72.4	86.0
Unemployment rate - aged 16-64	4.8	!	!
% who are economically inactive - aged 16-64	20.1	25.5	14.0
% of economically inactive who want a job	!	18.5	!
% of economically inactive who do not want a job	92.9	81.5	100.0

Note: ! represents the estimate and confidence interval are not available since the group sample size is zero or disclosive (i.e., 0-2).

Source: Nomis, 2024

- 5.2.5 When reviewing economic activity excluding full-time students in the different wards across Newcastle-under-Lyme, rates for various wards are largely in line with the England and West Midlands averages as shown in Table 5.2. Areas which present a lower economic activity rate include Keele at 16.7% (which is likely due to its high student population); Town at 41.0% (which may be due to the relatively low residential density in the area with the second largest proportion of student population); and Thistleberry at 49.0% (which may be due to the relatively low residential density in the area plus high proportion of retired population). The same trend can be seen in the economic inactivity rate.
- 5.2.6 The unemployment rates for a large majority of the wards in Newcastle-under-Lyme are below the England average and significantly below the West Midlands average, except for Holditch and Chesterton ward.
- 5.2.7 Overall, the data reflects diverse economic activity in Newcastle-under-Lyme with certain areas exhibiting characteristics of deprivation, including Holditch and Chesterton (with 3.3% unemployment and 40% economic inactivity) and Town (Newcastle-under-Lyme) (with 2.9% unemployment and 50.6% economic inactivity).

Table 5.2 Economic activity by geographical location (excluding full-time students) (2021)

	Economically active (%)	Economically active In employment (%)	Economically active Unemployed (%)	Economically inactive (%)*
England	58.6	55.7	2.9	39.1
West Midland	56.5	53.3	3.2	41.2
Newcastle-under-Lyme	55.0	52.9	2.1	42.2
Audley	58.6	57.1	1.5	39.8
Bradwell	57.6	55.1	2.5	40.4

	Economically active (%)	Economically active In employment (%)	Economically active Unemployed (%)	Economically inactive (%)*
Clayton	51.7	49.8	1.9	46.4
Crackley & Red Street	62.6	60.8	1.8	35.2
Cross Heath	55.0	52.7	2.3	42.2
Holditch & Chesterton	58.4	55.1	3.3	40.0
Keele	16.7	16.3	0.4	67.9
Kidsgrove & Ravenscliffe	55.8	53.3	2.6	42.5
Knutton	57.2	54.1	3.1	40.5
Loggerheads	54.3	53.5	0.8	44.6
Madeley & Betley	55.2	53.3	1.9	43.2
Maer & Whitmore	57.4	56.7	0.7	40.9
May Bank	59.1	57.2	1.9	38.6
Newchapel & Mow Cop	61.6	59.7	1.8	36.2
Silverdale	56.3	53.7	2.7	40.5
Talke & Butt Lane	56.1	53.6	2.5	42.5
Thistleberry	49.0	47.0	2.0	46.5
Town	41.0	38.2	2.9	50.6
Westbury Park & Northwood	56.2	54.2	2.0	42.3
Westlands	53.3	51.4	1.9	44.1
Wolstanton	61.9	60.1	1.8	35.6

Note: * economically inactive include those who are retired, students, looking after home or family, long-term sick or disabled, and others.

Note: the most recent data published by Nomis as of the time of writing, was from the Census 2021, detailing economic activity and inactivity rates.

Source: Nomis, 2024

5.2.8 Claimant data has been reviewed for the period 2019 to 2024 (focusing on August in each year as this corresponds with the latest available data for 2024). We have included 2019 as a pre-Covid year, noting that data for 2020 and 2021 is likely to have been affected by the pandemic. The data, which is shown in Table 5.3, identifies that Knutton and Town wards have had a historically higher claimant level as a proportion of residents aged 16-64 than is the case for other wards (this is a feature of the deprivation levels experienced by these wards). Claimant rates are also higher for all areas than before the pandemic, but this is a consistent pattern for all wards within NuL and similar to that

experienced by Staffordshire and England as a whole.

Table 5.3 Claimant Data (Claimant Count as a Proportion of Residents aged 16-64) Across NuLBC Wards 2019 to 2024

Ward / Geography	August 2019	August 2020	August 2021	August 2022	August 2023	August 2024
Audley	1.5	4.5	2.8	2.1	2.5	2.2
Bradwell	1.7	4.8	4.3	2.7	2.5	2.4
Clayton	2.1	6.1	4.1	3.2	3.2	3.6
Crackley & Red Street	2.1	4.2	3.2	2.3	2.9	3.2
Cross Heath	3.8	6.9	5.6	3.6	4.5	4.9
Holditch & Chesterton	3.7	7.1	5.8	3.9	4.3	4.8
Keele	#	0.2	0.1	0.1	0.1	0.1
Kidsgrove & Ravenscliffe	2.6	6.0	4.2	2.7	3.3	4.3
Knutton	3.5	6.7	6.2	4.7	4.5	5.8
Loggerheads	1.3	4.0	2.2	1.7	1.7	2.2
Madeley & Betley	1.5	3.7	2.7	2.0	1.7	2.0
Maer & Whitmore	0.6	3.2	1.8	1.1	1.4	1.5
May Bank	2.0	4.5	3.3	2.4	2.5	2.8
Newchapel & Mow Cop	1.2	4.1	2.2	1.4	1.8	1.9
Silverdale	2.6	6.5	5.1	3.5	3.7	4.0
Talke & Butt Lane	2.8	5.4	4.3	3.0	3.8	3.9
Thistleberry	2.1	5.4	3.6	2.6	2.5	3.0
Town	4.3	7.4	5.9	4.9	4.8	5.3
Westbury Park & Northwood	1.2	4.2	2.8	2.7	2.3	2.2
Westlands	1.7	4.0	2.7	2.3	2.2	2.0
Wolstanton	1.7	4.6	3.7	2.7	2.6	2.9
Newcastle-under-Lyme	2.1	4.9	3.9	2.8	3.0	3.3
Staffordshire	1.9	5.0	3.8	2.7	2.8	3.1
England	2.7	6.5	5.2	3.7	3.7	4.4

Source: Nomis, 2024

- 5.2.9 The distribution of employee jobs by industry remained largely consistent between 2021 and 2022. The 'Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles' sector continued to be the dominant industry in Newcastle-under-Lyme, accounting for 20.5% of jobs in 2021 and 20.0% in 2022. This was followed by the 'Education' sector, which represented 13.6% of jobs in 2021 and 13.3% in 2022. This trend aligns closely with the distribution of enterprises by industry, where 'Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles' was also the dominant sector

in Newcastle-under-Lyme. However, this was followed by enterprises in the 'Human Health and Social Work' sector.

5.2.10 Table 5.4 shows enterprise birth and date rates for various spatial areas for 2021 and 2022. In 2021, NuLBC had a lower enterprise birth rate (11.7%) and death rate (9.0%) compared to the county, regional and national averages, indicating relatively stable business conditions. By 2022, the enterprise birth rate increased slightly to 11.6%, while the death rate rose to 11.6%, also in line with national trends. This suggests a balance between new business formations and closures, with Newcastle-under-Lyme experiencing similar enterprise dynamics to broader regions such as the West Midlands and the UK overall.

Table 5.4 Enterprise birth and death rate in 2021 and 2022

	2021 Birth Rate	2021 Death Rate	2022 Birth Rate	2022 Death Rate
United Kingdom	12.4%	11.2%	11.5%	11.8%
England	12.5%	11.2%	11.6%	12.0%
West Midlands	14.2%	13.2%	12.1%	12.7%
Staffordshire County Council	12.2%	9.8%	10.1%	11.1%
Newcastle-under-Lyme BC	11.7%	9.0%	11.6%	11.6%

Source: ONS, 2024

Table 5.5 shows a general downward trend in enterprise birth rate between Q1 2021 and Q2 2024 across the UK, with England, West Midlands and Staffordshire sharing a similar downward trend. The enterprise death rates for the various spatial areas presented in

Table 5.6 mirror this downward trend in general. When reviewing enterprise birth rates for boroughs within Staffordshire as a whole, to explore whether there were differences in terms of how NuLBC specifically was performing, in contrast with Cannock Chase, Lichfield, or South Staffordshire, for example. Quarterly data has also been reviewed, to ascertain whether there are any observable trends at this lower temporal level. The data is set out in Table 5.5 for enterprise birth rate and

Table 5.6 for enterprise death rate. The overall enterprise birth rate for Newcastle-under-Lyme between Q1 2021 and Q2 2024 is below the majority of the boroughs in Staffordshire, except for Stafford Moorlands (located in a relatively rural area) and Tamworth (occupy a relatively smaller area in geographical context). This is likely due to a combination of area size of geographical content and the percentage of urban land within the boroughs, which leads to a higher enterprise birth rate for other boroughs in Staffordshire. The same trend can be seen in the enterprise death rates for boroughs in Staffordshire shown in

5.2.11 Table 5.6.

5.2.12 Newcastle-under-Lyme did not experience significant fluctuations or notable increases or declines in enterprise birth rates during this period. The enterprise death rate for NuLBC also shares a similar stable pattern between Q1 2021 and Q2 2024. This indicates the significant rise in odour complaints (began in Q1 2021) did not have a noticeable impact on enterprise and the economic situation in NuLBC.

Table 5.5 Enterprise birth rate by geographical area by quarter

	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024
United Kingdom	101,845	91,400	81,165	79,870	101,410	87,685	68,460	69,955	80,545	76,140	78,895	71,500	84,275	81,425
England	89,225	79,060	70,735	69,920	88,935	77,105	60,350	61,295	70,465	66,585	68,355	62,055	73,275	70,805
West Midlands	9,510	8,540	8,040	7,050	8,670	7,605	5,925	6,215	6,645	6,205	6,545	6,135	7,210	6,660
Staffordshire	1,160	965	760	875	1,100	840	665	725	840	790	795	755	875	800
Cannock Chase	255	105	80	95	105	110	70	85	90	75	90	90	175	105
East Staffordshire	155	150	115	125	150	145	120	110	150	150	145	120	120	135
Lichfield	155	230	130	100	125	115	95	105	115	130	100	95	95	110
Newcastle- under-Lyme	115	105	85	105	120	120	85	100	105	85	95	100	100	100
South Staffordshire	165	120	130	210	255	100	65	100	110	110	100	80	90	100
Stafford	140	115	110	125	190	120	105	115	130	105	120	135	145	115
Stafford Moorlands	95	75	60	65	65	70	65	55	80	70	75	85	75	70
Tamworth	80	65	50	50	90	60	60	55	60	65	75	60	75	55

Source: ONS, 2024

Table 5.6 Enterprise death rate by geographical area by quarter

	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024
United Kingdom	86,490	88,445	83,040	86,920	114,120	97,955	80,345	83,080	106,840	83,660	68,240	74,395	87,280	75,100
England	73,225	76,680	72,470	74,720	98,230	84,850	69,405	72,315	93,490	73,295	59,075	64,810	75,620	64,920
West Midlands	6,460	7,320	8,050	7,640	10,355	8,655	7,185	7,145	10,850	7,220	5,600	6,855	7,960	6,115
Staffordshire	830	880	965	855	1,340	1,165	790	860	1,265	1,020	690	745	945	780
Cannock Chase	85	95	65	110	235	235	95	140	235	115	70	80	95	100
East Staffordshire	110	145	115	120	205	165	125	135	205	145	115	135	145	135
Lichfield	125	135	115	110	150	190	105	125	190	145	95	90	165	105
Newcastle- under-Lyme	95	90	100	95	120	130	125	100	125	115	85	95	90	100
South Staffordshire	120	130	325	100	255	120	90	90	200	160	80	130	175	100
Stafford	150	120	115	155	170	155	120	125	160	170	115	95	145	105
Stafford Moorlands	75	80	75	95	100	100	75	85	80	90	70	70	80	75
Tamworth	70	85	55	70	105	70	55	60	70	80	60	55	55	60

Source: ONS, 2024

Performance and Image of Newcastle-under-Lyme

- 5.2.13 This section reviews how Newcastle-under-Lyme has performed as a town centre in recent years, for example its inclusion in the former Government's Levelling Up Agenda and the issues the town centre has been facing (as well as the opportunities that may be presented).
- 5.2.14 In 2019, the government announced details of 100 new Town Deals as part of a commitment to ensuring that communities across the UK could benefit from shared prosperity. Newcastle-under-Lyme was included as one of these towns, with investment planned to stimulate economic activity, create employment opportunities and improve residents' quality of life. Newcastle Town Deal received an offer of £23.6m from Central Government to deliver transformational projects in the Newcastle Town Deal area.
- 5.2.15 The Town Investment Plan (TIP) published in January 2021, was centred around three core objectives, namely to:
- open up growth opportunities through enhanced physical and digital connectivity aligned with clean and sustainable economic development.
 - diversify and enhance the town centre experience by encouraging new uses to increase demand, footfall and boost the dwell time of residents and visitors.
 - channel investment into regenerating communities, ensuring these areas are sustainable places to live and providing residents with the infrastructure needed to improve their quality of life.
- 5.2.16 The TIP was published prior to the time of the 'incident' at Walleys Quarry in March 2021 when the emissions became extreme. It highlighted a number of challenges which were facing Newcastle-under-Lyme at that time, including¹¹:
- Newcastle suffers from high vacancy rates in the town centre, which stand at 19%, significantly higher than the national average and equating to 7,230sqm of vacant retail space. Reasons suggested include the move to online shopping and out of town retail in recent decades (for example Trentham Gardens Shopping Village) as well as significant local competition from neighbouring centres such as Hanley
 - the amount of long-term vacant premises and the number of large retail store closures; growth in the retail market was suggested to be 'limited', with coming years likely to see some contraction of retail stock in underperforming areas and units being repurposed for other uses
 - challenges related to systemic deprivation seen in a number of the Town Deal communities, notably former coal mining communities of Knutton, Cross Heath, Chesterton and Silverdale
 - the challenge the town has with retaining students in the town/local economy. The TIP cites that 96% of Keele University graduates were in a job or further study six months following graduation, however anecdotal evidence suggests few are retained in the local labour market, being attracted to larger cities upon graduation
 - the productivity performance of Newcastle-under-Lyme is low and has seen a lower rate of growth when compared to the West Midlands and England. Lower rates of growth have been compounded by low levels of business expenditure in Research and Development (R&D) and company innovation across the Stoke-on-Trent and Staffordshire Local Enterprise Partnership (LEP) area.

¹¹ [newcastle-under-lyme-town-investment-plan \(newcastle-staffs.gov.uk\)](https://newcastle-under-lyme-town-investment-plan.newcastle-staffs.gov.uk)

- 5.2.17 In July 2020, the Town Deal Board approved expenditure on a range of projects in Newcastle town centre and Knutton village, with business cases submitted to government in June 2022 for eight projects including projects focused on key gateway sites, sustainable transport solutions and town centre permeability. Planning permission was also granted for an extension to Newcastle Business Centre in Knutton in June 2023.
- 5.2.18 A report to Cabinet in September 2021¹² reviewed the impacts of the Covid-19 pandemic on various aspects of the Borough, including on health, community and local economy. The report highlighted, in addition to the Town Deal funding, that Newcastle-under-Lyme had been successful in its bid for Future High Streets funding, with an agreement of just over £11m announced in December 2020, again aimed at facilitating the regeneration of the town centre. Growing footfall in the town centre after the pandemic continues to be a priority for NuLBC as is the case with many other towns of this size and nature across the UK.

5.3 Findings from Community and Stakeholder Engagement

- 5.3.1 The online community survey contained a section for completion by business owners or representatives. It is noted that this section was completed by a very small number of respondents (six) and therefore should not be relied upon to draw conclusions for the study (as set out in Section 2.4 Limitations of the Study). However the views provided are of interest from a qualitative perspective and have been included here for completeness. The business representatives who completed the survey included the following types of business:
- Recreation, hospitality and tourism (1no.)
 - Driving school (1no.)
 - Education facility (2no.)
 - Healthcare facility (1no.)
 - Office facility (1no.)
- 5.3.2 The self-reported information gathered from the six respondents highlighted the following:
- A driving school business highlighted that during periods of odour, they were unable to open the car windows, that students found themselves distracted by the smell and consequently unable to focus on driving '*generally a very unpleasant experience for all*'.
 - Staff shortages were identified as being the most relevant barrier to recruitment for the recreation, hospitality and tourism business, over and above environmental or other factors. This suggests that there are wider issues for recruitment beyond odour.
- 5.3.3 Due to the low number of business responses to the online survey, a number of businesses were contacted individually to arrange one-to-one interviews instead. A selection of these have been written as case study interviews.

Case Study: Business A

Business A has their main UK office in one of the wards close to Walleys Quarry and has around 160 employees in total, of which three quarters are based out of their Newcastle-under-Lyme base. The business offered a staggered return to work for employees after Covid and now offers flexible working to employees, with most people coming in to the office on a daily / weekly basis. Proximity to Walleys Quarry and the various issues that have been prevalent does not appear to have affected the bottom line for the business or staff recruitment (public transport is likely to be a more significant impact in relation to this aspect). But workarounds have been required in a number of instances, for example

¹² Review of Covid Impact.pdf (newcastle-staffs.gov.uk)

going to visit clients instead of them coming to the office. Many of the staff working at Business A also live locally, so are already exposed to the smell and disturbance and therefore staff retention is not considered to be significantly different to businesses in any other town or city. However, it has been noticeable that many of our staff have had persistent coughs or headaches when in the office, and we don't feel able to open our windows during the summer months (the business has an internal ventilation system).

- 5.3.4 As a major employer and education / research establishment on the outskirts of Newcastle-under-Lyme, Keele University has been contacted to explore potential impacts on aspects of university life over the last few years as a result of the ongoing incident at Walleys Quarry. The university currently has in the region of 13,000 students in total (around 9,300 undergraduates and 3,700 postgraduate students (taught and research)), in addition to a significant teaching staff. The number of students does tend to fluctuate annually (typically plus / minus 200 students) and has been fairly stable over the last few years. A review of admissions data has shown that there has in fact been an increase in student numbers more recently, with reasons provided including better marketing / student recruitment exercises as well as expansion of the number of courses on offer. The increase in student numbers is across all student types including domestic students (i.e. there has not just been a greater cohort of international students who might not be aware of Walleys Quarry). It is likely that there may be a proportion of prospective university students who potentially choose not to attend Keele University because of what they may read online about the Walleys Quarry issue / perceptions during a site visit or Open Day (*'it is self-evident that people must have read about it...and a proportion formed negative views'*); however, given the performance of the university in terms of expanded student numbers, it can be speculated that this number is likely to be very small and does not appear to have any discernible impact on the performance or status of the university as a whole.
- 5.3.5 It is a rural, self-contained campus, with the edge of the campus located less than 1km from the landfill site as the crow flies, although in an elevated position. The landfill site is very visible from the road network on routes to the university (for example for prospective students travelling from the train station in Stoke-on-Trent, or by car) and so proximity to a landfill site would be a visible aspect on Open Days. Interestingly, a relatively high proportion of students come to Keele University as their insurance offer, or through clearing, rather than as their first choice. A general observation is that, because of the location of the university campus and the elevated position, in the main, the smell does not reach the site (there have been instances, but the extent of the odour has been nothing like that experienced at lower elevations and closer to the landfill site). As an example, between 01 January 2020 and 21 August 2024, the Environment Agency National Incident Communication Service (NICS) received 277 odour reports which were attributed to Keele University¹³.
- 5.3.6 A review of comments made by undergraduates and postgraduates on websites such as 'What Uni' between 2021 and 2024 did not reveal specific comments relating to environmental aspects, odours or other forms of disturbance; adverse comments were, in the main, restricted to matters relating to student social life and public transport.
- 5.3.7 The majority of first-year students live on campus, with a proportion of second and third year students living off-campus in locations such as Knutton and Town wards, which have large student populations. Whilst these locations have been more susceptible to odour emissions from the landfill site, these are more transient populations – *'the smell comes and goes and can pass out of memory'*.
- 5.3.8 Engagement with community representatives have highlighted the relationship between the Stop the Stink movement and university students – for example making reference to attending previous Fresher's Fayre events to share information about the landfill site within students / provide advice

¹³ Data taken from a Freedom of Information request made to the EA by a local resident in September 2024.

about air purifiers and so on.

- 5.3.9 Attention was drawn to the potential impact of the protests, community action and media attention on student numbers. The information played out on regional and national news channels (*'the news stories were repetitive and hyperbolic....big headlines...it kept happening'*) and therefore reached a wide audience. It was referred to as being *'self-evident'* that through the negative press attention, people *'must have read about it and formed negative views'*. The protests are referred to as *'creating something visual which in turn carried the story further and for longer...we get reputational damage through reputational damage'*.
- 5.3.10 A separate aspect relates to the 'brain drain' of students moving away from the area following graduation. This is an issue not specific to Keele University, but a feature of many rural university locations in particular. It is also nothing new – the Town Investment Plan produced in January 2021 for example, already referred to 'brain drain' as an issue that needed to be overcome, even before the particular circumstances associated with the odours from Walleys Quarry came into play. Members of the community, in reference to this point, have made comments along the lines of *'is this a place where graduates want to stay?', 'this would only happen in a place where people don't care'* and *'perceptions of a left-behind community'*.

Case Study: Business B

Business B is a small independent business located in Silverdale, with a manager / owner. Although being located in reasonably close proximity to Walleys Quarry, the owner did not consider that there had been any real loss of business as a result of the smell. The biggest impact on business operations had primarily been from negative press and social media posts about the landfill site and its location, coupled with information in the media about when and where protests were happening, which (in the eyes of the owner) made people not want to visit local businesses. Whilst there was quite an awareness of the smell outside of the business unit, it did not appear to permeate the building itself to any great degree.

- 5.3.11 Anecdotal evidence from members of the community (via Community Steering Committee representatives, members of focus groups and individuals spoken to during the course of this commission) revealed that, amongst businesses, there remain very different levels of interest and understanding in what is happening at Walleys Quarry. One respondent had visited shops in Newcastle-under-Lyme town centre to ask about their perceptions of the odours and whether or not they reported smells to the EA or NuLBC: the consensus was that around a third of businesses did / would report; a third did not know how; and a final third were not concerned either way. This has been borne out in trying to establish business interviews as part of this commission, with businesses not generally being very interested in taking part.

Case Study: Business C

Small hospitality business located approximately a mile from Walleys Quarry. The business has had three tenant landlords in the last three years and the freehold is now for sale. There is anecdotal evidence that the lack of ability to use external space for customers as a result of odour from the landfill site may have contributed to turnover in tenants and to the subsequent choice to sell the business.

Impacts as a Result of Sick Leave

- 5.3.12 Respondents to the online community survey were asked whether the smell from the landfill site had resulted in them or members of their household taking time off from work or school over the past 12 months for reasons of poor health, to which 15% of respondents (81 people) said 'yes'. Of these:
- 14% stated they had taken 1 to 2 days off work

- 20% stated they had taken 3 to 4 days off work
- 54% stated they had taken more than 4 days off work
- A further 9% stated that they didn't know / couldn't say.

5.3.13 Interviews with headteachers at schools in close proximity to the landfill site highlighted further impacts associated with sick leave and school absences (for pupils as well as teachers). Two schools mentioned periods of sick leave required by teachers suffering from vertigo-like symptoms (which GP advice had told them could be caused by strong smells); for one school four teachers were absent with these symptoms in a single month, each requiring an absence period of 1-2 weeks.

Case Study: Secondary School

The school has approximately 1,150 children and around 150 members of staff. Since the Covid pandemic, the school has had CO₂ monitors as per WHO recommendations. However, when the smell in the school buildings is extreme, teachers feel unable to open windows because of the impact the smell has on staff and children. This has led to unintended consequences of greater capacity for children and staff to catch infectious diseases such as colds and viruses due to the more unventilated setting. The headteacher considers that the number of days lost through sickness has increased at the school over the past few years – whilst many schools have seen an increase in unexplained absences, the increase in sickness specifically is thought to be different. Data for absences due to student illness for the period 1st September 2017 to 1st March 2020 related to 15,272 days student absences; equivalent data for the period 1st September 2021 to 14th March 2024 (excluding periods of self-isolation, lockdown and so on) was 26,073 days student absence.

5.4 Impact Summary

5.4.1 The impact of Walleys Quarry landfill site on local businesses and the economy is hard to determine. Whilst there are some inevitable links between the environmental disturbances associated with the landfill site and day-to-day business operations (for example in terms of quality of life for employees) it is hard to disassociate impacts to business operation from other factors that have been prevalent such as changing working practices and approaches as a result of Covid-19, the energy / cost of living crisis and or ongoing changes to how we use and experience our town centres. The following is a summary of the key areas of impact in relation to business and economy:

- **business start-ups and closures ('births' and 'deaths'):** the data shows there was a general downward trend in enterprise birth rate between Q1 2021 and Q2 2024 across the UK, with England, West Midlands and Staffordshire sharing a similar downward trend. Similarly, the enterprise death rates for the various spatial areas mirror this downward trend in general and there are not considered to be any locally specific significant impacts relevant to NuLBC as a whole. The last few years have been economically challenging for many businesses for a variety of reasons (for example recovery from the Covid-19 pandemic, followed by the cost of living and energy crisis which affected many small businesses in particular).
- **ability to recruit and retain staff:** the businesses interviewed as part of this study did not identify any specific impacts relating to the recruitment or retention of staff. Again, potential impacts here may be masked to a degree by changes in working practices following the Covid-19 pandemic, with greater emphasis on home working and more flexible working practices. For offices located near to Walleys Quarry, many staff have the option of not travelling in to the office and working remotely instead. Staff recruitment and retention in certain sections of the economy remains challenging in any event, particularly in the hospitality sector for example.
- **ability to attract students to university / colleges:** the number of students at Keele University has increased over the last few years as a result of factors including improved marketing and expansion of the range of courses on offer. Reviews left by students on websites such as 'What Uni?' do not suggest that the environmental conditions as a result of Walleys Quarry are of

particular concern to students, particularly those who are living on campus. The 'brain drain' issue, whereby graduates move away from the area after completing their courses is a challenge faced in many places across the UK.

- **performance and image of Newcastle-under-Lyme as a town centre:** Newcastle-under-Lyme has struggled with footfall, high vacancy rates and general performance since before Covid-19, as a result of many factors including the increase in online shopping and the presence of out-of-town retail facilities. This is no different to many other UK towns and cities, which have experienced similar issues in recent years. The particular challenges faced by Newcastle-under-Lyme were recognised in its inclusion as one of the 100 towns in the UK allocated Town Deal funding and work to deliver projects within the town centre and in wards such as Knutton, is underway. The image of Newcastle-under-Lyme has not been helped by national and local media coverage of Walleys Quarry (covered further in section 8 of this report), however it is not considered that the odour emissions from the landfill site have had a significant adverse effect on town centre footfall and experience. Some residents have highlighted that they choose to shop in other towns rather than Newcastle-under-Lyme (for example Nantwich) because of the variety of shops and general retail experience.
- **other business impacts:** the impacts on businesses directly as a result of odour emissions from Walleys Quarry are likely to be relatively small, and are confounded by a multitude of other factors as suggested above. However, at a very local level, there are particular aspects that can be associated with what has happened at the landfill site that may have had some impact – for example the impact of protests or disturbance on businesses in the immediate vicinity, impact on employees quality of life at work for those businesses where home working is not possible and for whom ventilation systems are not appropriate, absence rates as a result of sickness when the smell has been particularly bad, and an impact on people's shopping habits depending on what the environmental conditions might be like.

6 Housing

6.1 Introduction

- 6.1.1 This section explores the impacts that Walleys Quarry landfill site has had on the housing market, for example the pattern of house purchases and prices. This has been appraised through analysis of a range of data sources including ONS data on ward-level median sold house prices over time, volume of sales over time, feedback from representatives of the community captured in the online community survey, Community Steering Committee and focus groups, and telephone interviews with local estate agents.

6.2 Data Overview

Overview of the Housing Stock in Newcastle-under-Lyme

- 6.2.1 The Final Draft Newcastle-under-Lyme Borough Council Local Plan (Regulation 19)¹⁴ identifies that the most common housing type in the Borough is a semi-detached house (45% of households), followed by detached properties (26%) and terraced properties (19%). Around 9% of households are noted as living in a purpose-built block of flats or tenement. Data from the 2021 Census shows that 38% of households were owned outright, with 30% of households owning property with a mortgage, 17% being social renters and 15% either private renters or occupying their property rent free.

Median House Price Paid

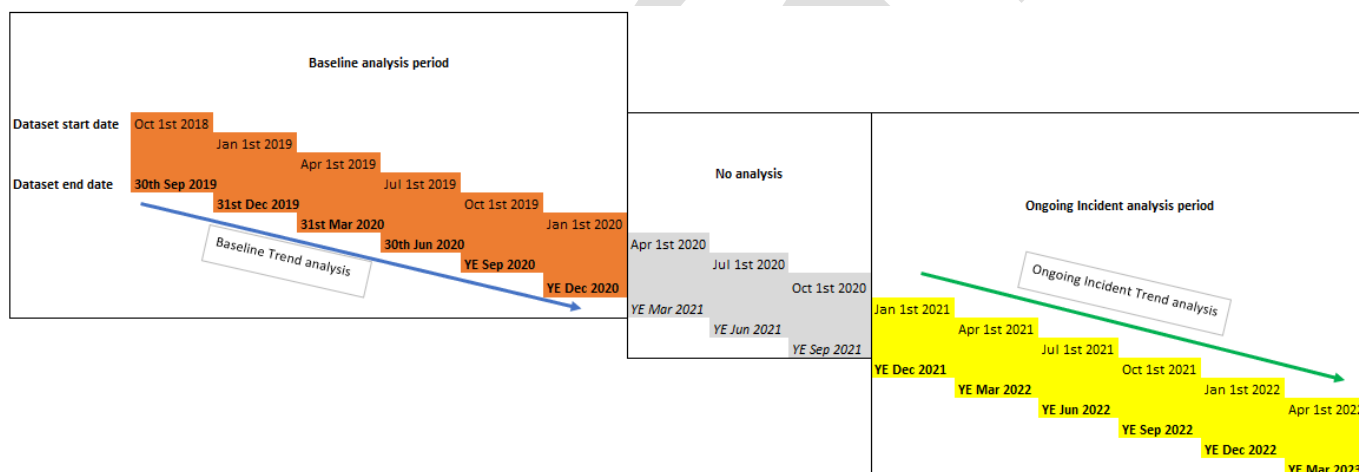
Basis of Data

- 6.2.2 The most reliable indicator of house prices in an area is considered to be median value of sale price. This is because average price can be heavily skewed by the sale of a relatively low number of expensive (or very cheap) homes. Median price reflects the point at which half of sales are above the median value and half of sales are below the median value. The ONS create and periodically publish datasets on median house prices at varying scales. To establish the trend in house prices during the ongoing incident, ward-level data has been used for analysis, for reasons including that:
- ward names are related to known geographical areas and are therefore easier to understand (as opposed to coded Lower Super Output Areas (LSOAs) or Output Areas)
 - Output Areas and LSOAs are sufficiently small that the sample size of sales would not be sufficiently large enough to ensure reliability and could be heavily skewed.
- 6.2.3 The analysis was limited to sales of existing housing stock only (i.e. not sales of previously unoccupied new builds). The sale of new builds were excluded from the analysis as these can also skew median sale prices when trying to analyse medium-term trends in price, especially in areas where the number of sales is relatively low. Prices can be further skewed by new builds if a greater number of new builds hit the market at the same time or where the size or quality of the residences are very different from existing residences in the area, for example where a new larger scale housing estate is built and occupied. Therefore, it was considered that sales of existing residences would provide a more reliable indication of the influence of an environmental factor on median house prices as the housing stock would be more consistent between two periods of comparison.

¹⁴ [final-draft-local-plan \(newcastle-staffs.gov.uk\)](#)

- 6.2.4 The ONS released annual datasets of ward-level median house price every quarter year (i.e. every three months). These datasets cover the median house price in the preceding 12 months from issue. The final release of this dataset was in the first quarter of 2023 (March 2023) when the ONS discontinued the dataset. **The duration of analysis of median house prices is constrained by the discontinuation of this dataset and therefore covers the six quarterly issued datasets prior to Jan 1st 2021 (referred to as the ‘baseline period’) and the six quarterly issued datasets beginning 31st December 2021 (referred to as the ‘ongoing incident period’) as this was the nearest approximation to a housing market before and after the escalation of the incident in early 2021 and that thereafter.**
- 6.2.5 It should be noted that as each of the datasets summarises the previous 12 months of median sold house prices, the baseline period studied encompasses sales data recorded between October 2018 to December 2020, and the ongoing incident period encompasses sales data recorded between Jan 2021 to March 2023. **Therefore when the commentary refers to the ‘per quarter change’ it is referring to the change in median house price across six consecutive quarterly issued annual datasets detailed in Figure 6.1, in either the baseline or ongoing incident period.**
- 6.2.6 Figure 6.1 summarises the analysis periods and datasets used, the bold text in the shaded boxes indicates the end date/release date of each dataset.

Figure 6.1 Quarterly Rolling Annual Datasets Studied in each Period for Median House Price Paid



- 6.2.7 The datasets released in March 2021, June 2021 and September 2021 were not utilised in the analysis, as the data covered by these datasets would overlap with both the baseline period and the ongoing incident period. It was decided that basing the analysis on two segregated periods would provide a clearer reflection of median house prices across the baseline and ongoing incident periods.

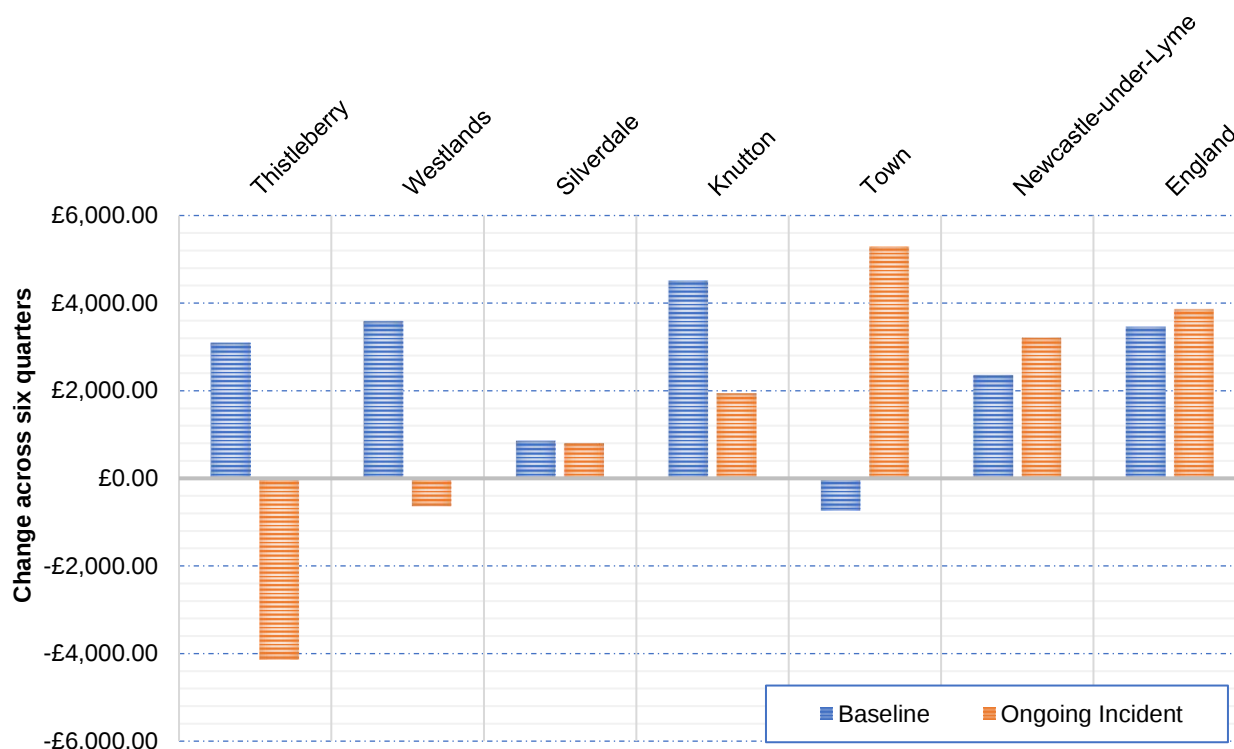
Analysis

Median house prices (informed by sale price) were analysed by studying those wards adjacent to Walleys Quarry where the most reports per 1000 population were made in the 2021-2023 symptom tracker (as shown in Section 4 of this report (

- 6.2.8 Table 4.1)). These were Thistleberry, Westlands, Silverdale, Knutton and Town wards.
- 6.2.9 This analysis was repeated across all wards within NuLBC to provide a context to the local analysis. Trends in median house price in England were also analysed to provide a wider context to compare local trends to, as the local authority and national datasets would demonstrate the effect of wide-scale systemic influences on housing such as the Covid-19 pandemic, housing policy, economy and so on.

6.2.10 The trend in median house prices in each ward was studied across six quarters in the baseline period and in six quarters in the ongoing incident period Figure 6.2 summarises the trend in the five ward areas identified for analysis, with further context across the remainder of the wards in NuLBC provided by Figure 6.3.

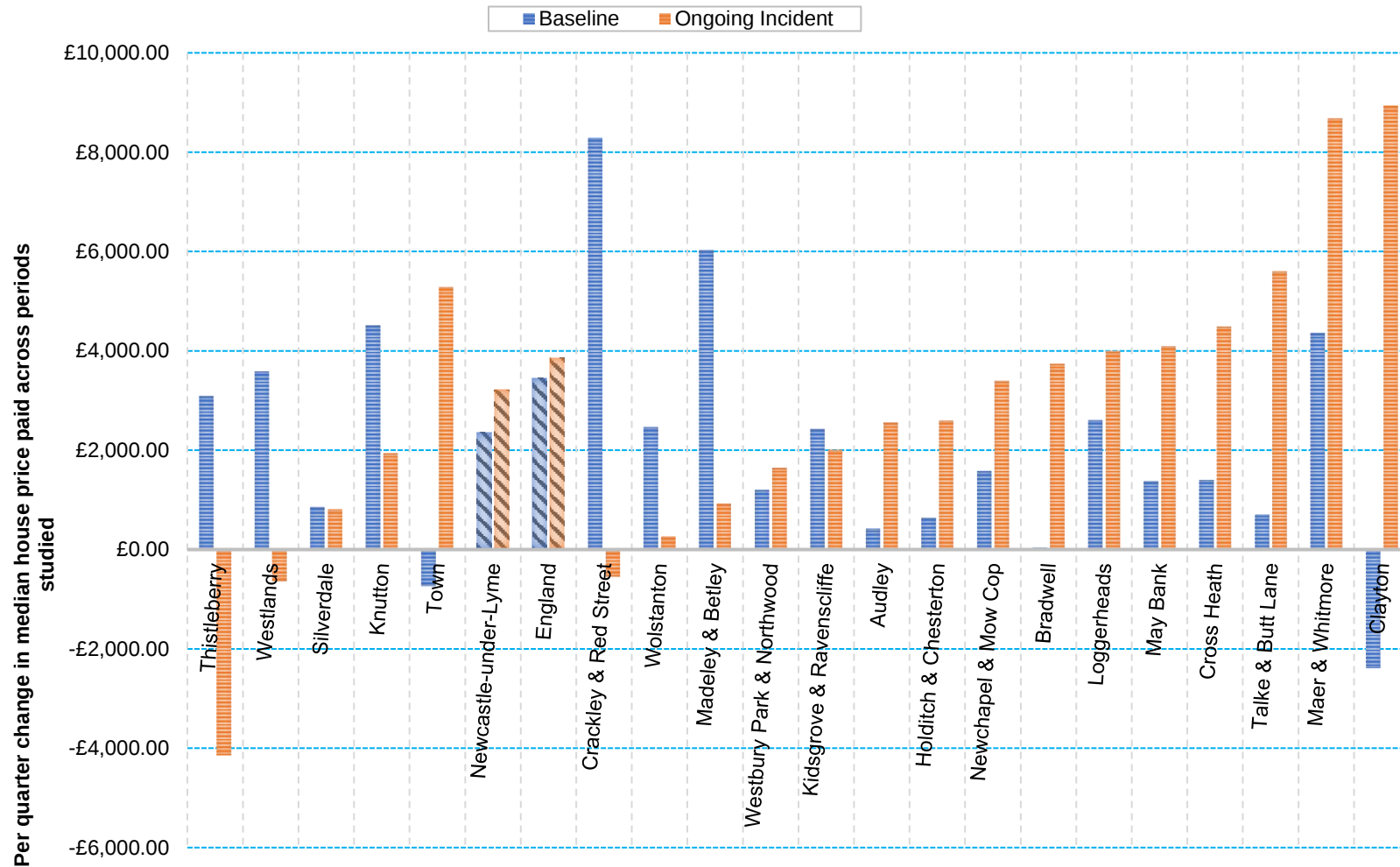
Figure 6.2 House Price Analysis: per Quarter Growth in Median House Prices



6.2.11 With reference to the analysis in Figure 6.2 and Figure 6.3, the following observations can be made:

- median house prices increased in NuLBC and England in both analysis periods. The per quarter increase in median house prices in NuLBC at local authority level was approximately £900 higher in the ongoing incident period than the baseline period across Newcastle under Lyme at local authority level – this trend was also observed at national level in England suggesting a general acceleration of growth in median sale price during the ongoing incident period studied.
- at ward level, more variability in trend could be observed; during the baseline study period, median sale prices in Thistleberry increased by approx. £3k per quarter, however in the ongoing incident period median prices decreased by approx. £4k per quarter.
- median sales prices in Westlands increased by approx. £3.5k per quarter in the baseline period. In the ongoing incident period median prices decreased approx. £600 per quarter.
- in Silverdale, the increase in median house price was consistent between the two analysis periods; but marginally lower in the ongoing incident period.
- in Knutton, per quarter growth in house prices slowed in the ongoing incident period, with the rate of quarterly growth decreasing from £4.5k/quarter in the baseline period to £1.9k/quarter (approximately a 55% reduction).
- in Town, the baseline period trend of decrease in house prices ended and there was an acceleration of growth in median house price in the ongoing incident period to approx. £5.2k per quarter.

Figure 6.3 House Prices Analysis: Per Quarter Change in Median House Prices across each study period (All NULBC Wards)



¹⁵ Keele was identified as a ward relatively close to Walleys Quarry which had very low transaction numbers (approx. five sales per annum, (with the average in Wards across NuL being 80)) which means the sample size was too small to be considered reliable. Additionally, a new housing estate in Keele village (occupied from 2019) has replaced student accommodation and therefore caused a spike in house price increases when these houses are resold which would most certainly mask any effect of any other variables. For these reasons Keele was excluded from the analysis.

6.2.12 Table 6.1 shows that when the NuLBC wards were ranked by rate of growth in the baseline period, Knutton, Westlands, and Thistleberry were some of the fastest growing wards in NuLBC for quarterly change in median house prices across the periods studied. In the ongoing incident period, these same wards were observed to be some of the slowest growing wards (with Thistleberry and Westlands showing per quarter decreases in median house price, as observed previously).

Table 6.1 - Ranking of rate of median house price growth across periods studied

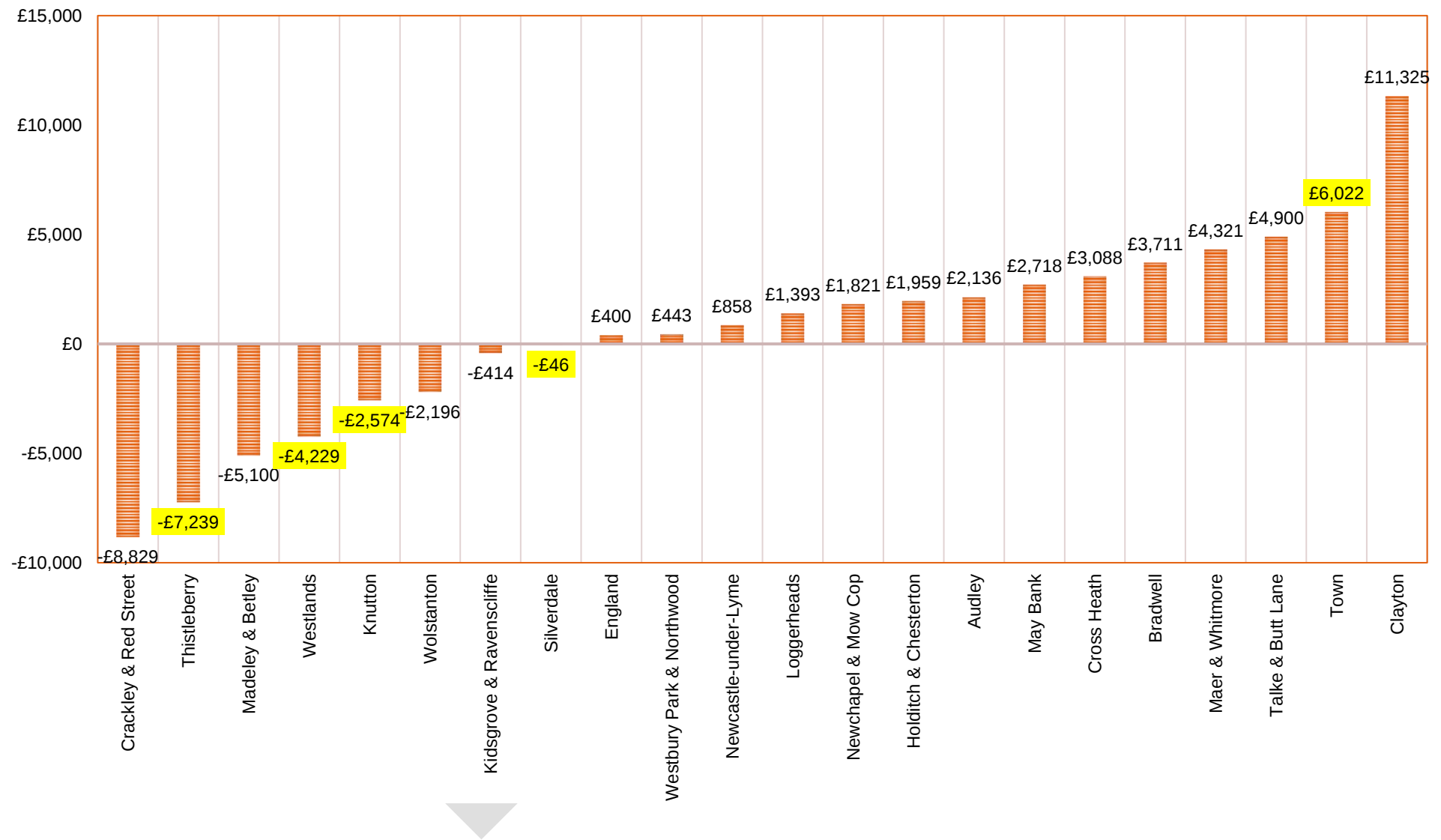
Ward	Per quarter house price growth ranking (out of 20 NuLBC Wards) (Keele excluded as per footnote 15)	
	Baseline Period	Ongoing Incident Period
Thistleberry	6	20
Westlands	5	19
Silverdale	14	17
Knutton	3	14
Town	19	5

6.2.13 For further context, the change in the quarterly growth of median price values between the baseline and the ongoing incident periods studied (described here as 'swing') was plotted (Figure 6.4). A minus value indicates that per quarter growth is lower in the ongoing incident period as compared to the baseline period. Positive values indicate that per quarter growth in median house prices are higher in the ongoing incident period as compared to the baseline period.

6.2.14 For example, the per quarter growth in median house prices in Knutton in the baseline period was £4,514.29, and £1,940.00 in the ongoing incident period. Therefore, the quarterly growth value decreased by £2,574.29. With reference to Figure 6.4 the following conclusions can be drawn:

- swing in house price growth was positive at national level and at local authority level for NuL indicating that the per quarter house price growth generally accelerated in the ongoing incident period. However, there were variations at ward level.
- the largest negative swing (slowing of growth, or in some cases depreciation in prices) in house price growth was observed in the Crackley and Red Street ward.
- four of the closest wards to Walley's Quarry showed a negative swing, out of a total of eight wards in total where the swing was negative. The swing in Silverdale was marginal.
- 12 wards in NuLBC showed a positive swing, with the Town ward being one of these locations.

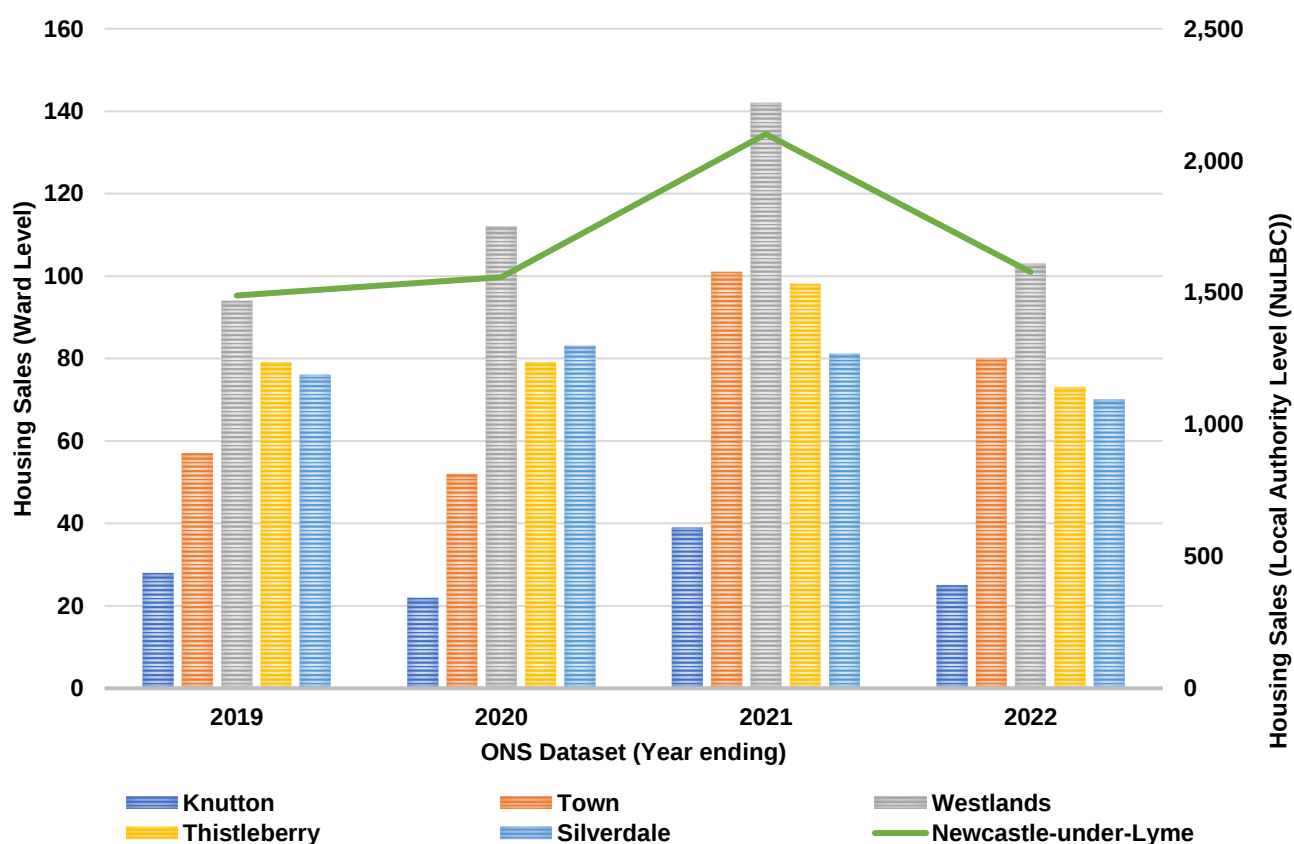
Figure 6.4 House Price Analysis: Change in Quarterly Median House Price Growth from Baseline Study Period to Ongoing Incident Study Period



Volume of House Sales

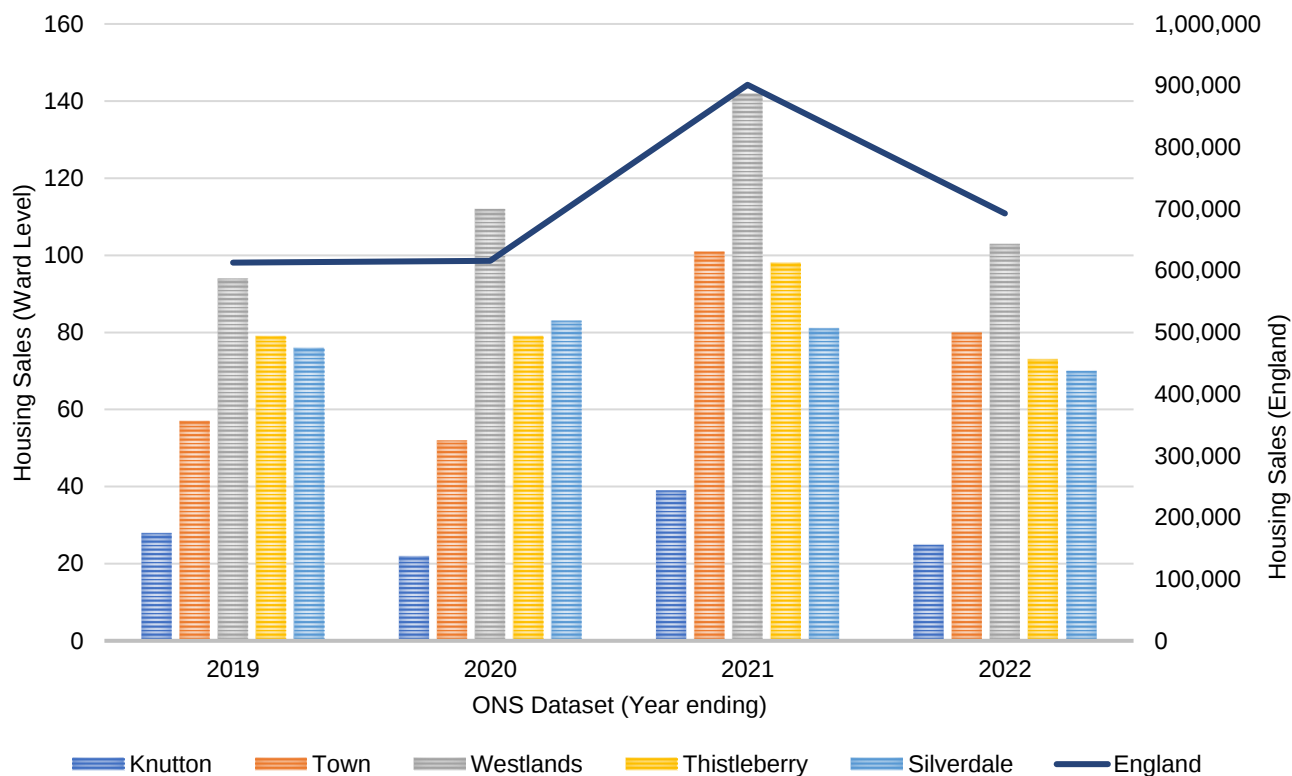
- 6.2.15 Another indicator of housing trends in an area or region are the number of housing transactions (i.e. volume of sales). This metric is used to establish if a housing market is slowing or accelerating and can easily be compared to regional or national rates. The ONS produce quarterly ward level datasets which summarise the number of sales in the preceding 12 months. As with the median house price data, ward-level housing datasets were discontinued by the ONS in March 2023.
- 6.2.16 Annual ONS data was acquired for the year ending 31/12/2019 and 31/12/2020 as the baseline period, and 31/12/2021 and 31/12/2022 as the ongoing incident period. The analysis was limited to sales of existing residences, as the opening and sale of a new build housing estate or apartment block would serve to significantly skew the data at ward level as discussed previously.
- 6.2.17 Those wards closest to Walleys Quarry with the most Smell and Symptom Tracker reports per 1000 residents¹⁶ were included, and compared to the total number of transactions in both NuLBC and England to establish whether local trends were different from those observed over a wider geographical area. Figure 6.5 and Figure 6.6 summarise the changes in house transactions over time contrasted against the trend in Newcastle under Lyme, and against the trend for England.

Figure 6.5 Annual Housing sales Year Ending Dec 2019 - Dec 2022 with Newcastle-under-Lyme comparison (all wards)



¹⁶ As per the 2021-2023 Symptom Tracker report analysis presented in Table 4.1.

Figure 6.6: Annual Housing Sales Year Ending Dec 2019 - Dec 2022 with England comparison



6.2.18 The following conclusions can be drawn from Figure 6.5 and Figure 6.6:

- the number of sales during 2020 and 2021 are likely to be a function of the Covid-19 pandemic, with pent up demand from 2020 released during 2021. The peak in 2021 was almost certainly influenced by the reduced rates of Stamp Duty Land Tax which applied to sales between 8th July 2020 and 30th September 2021.
- sales in the wards closest to Walleys Quarry appeared to follow wider trends in NuLBC and England.
- Silverdale showed the most consistent rate of sales throughout the analysis periods.

6.3 Findings from Community and Stakeholder Engagement

6.3.1 The online community survey asked respondents whether they had tried to sell their house in the last three years and, if so, whether they considered that the smell from the landfill site had affected either the value or the length of time it took to sell their property. A total of 34 respondents (6.5% of the total number who completed the survey) stated that they had tried to sell their property in the last three years. Of these:

- over half (65%) considered that the smell from the landfill had affected the value of their property
- 35% of respondents considered that the smell had affected the length of time it took to sell their property

- five respondents (20%) stated that they believed the reason they could not sell their property was because of the smell from the landfill site.

6.3.2 Comments made by residents include that negative press coverage led to reduction in property values *'....it took over 18 months to sell my property in Silverdale and every buyer brought up Walleys Quarry as an issue. The constant smell and the negative media attention on the village definitely affected the sale price and ease of sale. I had buyers pull out and sales fall through'*; that potential buyers would regularly ask about *'if the smell was bad'* and that estate agents reported to buyers when trying to sell property that *'the smell and proximity to the landfill were a concern'*.

6.3.3 A sample of local estate agents were contacted to ask about their perceptions of the impact the odour emissions from the landfill site had on property sales in the local area. A total of 18 estate agents were contacted, of which eight (44%) were willing to be interviewed and provide information. Key findings from these interviews suggested that:

- people generally ask about Walleys Quarry when enquiring about properties in the area, but in terms of *selling* properties the presence of the landfill site does not seem to have affected sales at all. *'The smell comes and goes....it is most obvious in viewings in the Galingale Estate. However, this does not deter people from purchasing properties in the area'*.
- the situation is definitely better, and the odour is getting less. *'The situation is improving and we have less days of odour compared to the past'*.
- the odour does not seem to make a difference to the selling and purchasing of the properties in the area. The properties sell fairly quickly *'if anything we can't keep up with the demand'*. Buyers are still very much interested in purchasing properties in the area. *'The property market is booming, and we have no problems selling houses even in Galingale and Silverdale'*.
- in the past when the odour has been bad, viewing the properties could be awkward. The situation is noted to be improved now and the smell has reduced. The most affected areas have been Silverdale and the new development at Thistleberry. However, the houses are still being sold and bought within good timing.
- people that come from outside the area do mention the landfill site and/or the smell, but it does not seem to put people off from purchasing properties. *'I think we have become immune to the smell'*.
- *'You can hardly smell anything now. The situation is much better now. Viewers barely mention the quarry, it has not affected the property market at all'*.

6.4 Impact Summary

6.4.1 This section has outlined the nature of the impact of Walleys Quarry landfill site on the local housing market in terms of house prices and volume of house sales. The data does show localised areas of impact when comparing change over time between the period prior to and since the ongoing odour incident period. The following is a summary of the key areas of impact in relation to housing:

- **House prices:** median house prices have decreased in some of the wards closest to Walleys Quarry during the ongoing incident period, notably in Westlands and Thistleberry wards. The median house price growth slowed in a number of wards closest to Walleys Quarry (notably Westlands, Thistleberry and Knutton) as compared to the rate of change in the baseline period, although it increased within one ward also considered to be in close proximity (Town). House prices in Silverdale ward showed little difference in median house price sales across the two analysis periods.
- **Volume of house sales:** the number of house sales during 2020 and 2021 are likely to be a function of the Covid-19 pandemic, with pent up demand from 2020 released during 2021. The peak in house sales during 2021 was almost certainly influenced by the reduced rates of Stamp Duty Land Tax which applied to sales between 8th July 2020 and 30th September 2021. Sales in

the wards closest to Walleys Quarry appeared to follow wider trends in NuLBC and England, with Silverdale ward showing the most consistent rate of sales throughout the analysis periods.

7 Community Cohesion and Safety

7.1 Introduction

- 7.1.1 This section considers the impact that the environmental disturbance created by the Walleys Quarry landfill site has had on community cohesion and safety, focusing on aspects such as how the community has developed / changed as a result of the ongoing incident, the role that community action has played (for example the impacts, and unintended consequences, of the various protests that have taken place), and community safety (for example crime data / levels of criminality).

7.2 Overview

Community Cohesion

- 7.2.1 Communities – whether based on geography or communities of interest – are all very different. The social fabric of a community, for example the networks that exist, levels of deprivation or need, or the role of community leaders, all affect how a community operates and its resilience in times of adversity. This was particularly apparent during the Covid-19 pandemic, with communities across the UK showing very different levels and types of community spirit, reacting very differently in terms of how they came together to support vulnerable communities. The cohesiveness of a community – whether it is ‘close-knit’ or more insular in nature – can be a contributing factor in differentiating how communities respond in times of adversity. Cohesive communities are those where there is a common vision and a sense of belonging for all, where strong and positive relationships are developed between people from different backgrounds and circumstances, and where there is a shared sense of responsibility.
- 7.2.2 In Staffordshire, a review of the impacts and opportunities resulting from the pandemic highlighted ‘a growth in community action, with individuals and groups supporting those most vulnerablethere was a whole range of spontaneous and unstructured activity with residents and businesses reaching out to vulnerable people to offer a whole range of support. The County Council’s survey of residents found that over half of respondents had provided support to others with more than 90% of these willing to do so again¹⁷’. This community spirit has been visible at a more local level as part of this commission, with various individuals talking about the depth of community spirit and extensive community networks.
- 7.2.3 Engagement took place within Staffordshire between November 2023 and February 2024 as part of the preparation of SCC’s Community Strategy. A total of 212 responses were received relating to Newcastle-under-Lyme. The engagement asked residents a range of questions including specifically what made them proud of their local community, what could improve their local community in the future and what would help them get involved (or more involved) in supporting and improving their local community. Responses revealed that residents in Newcastle-under-Lyme considered that community pride was strongly associated with people in the area, specifically in relation to people ‘looking out for each other’, neighbourliness, friendliness and sense of community spirit.

¹⁷ [Annual-Report-of-the-Director-of-Public-Health-2021.pdf \(staffordshire.gov.uk\)](#)

7.2.4 The engagement also highlighted the importance of community cohesion, with residents expressing a desire for more opportunities to connect and foster a sense of belonging. Suggestions put forward by respondents included hosting regular community events, creating volunteer opportunities, and developing spaces where neighbours can gather and socialise, such as youth clubs and community gardens; improved communication channels, like newsletters or local notice boards, are also recommended to keep residents informed and engaged, especially those who may not be used to modern technology. Overall, the engagement emphasised a shared will to build a more inclusive, supportive community where everyone feels connected and safe in Newcastle-under-Lyme. Seven of the 212 respondents from Newcastle-under-Lyme highlighted that resolving odour issues from Walleys Quarry landfill site would help improve their local community.

7.2.5 The response of the local community to the odour issues at Walleys Quarry has been equally visible, whether this has been through the creation of various Stop the Stink groups, turnout of local residents to attend community meetings, contribution to community surveys or reporting of odours, complaints and symptoms through various mechanisms, or through direct community action as part of protests:

'it has harnessed the time and capacity of some very creative local people'

'the odour issue has galvanised the local area'

'it is interesting how people banded together, the psychology of adversity'

'look at what the community is prepared to do to come together, speak up, in relation to injustice'

7.2.6 The community came together to draw attention to an issue that needs resolving. A Stop the Stink 'movement' was created. The actions of the community reached local, regional and national media. Questions were asked in the Houses of Parliament and the (then) Prime Minister was made aware of the situation. But the protracted nature of the incident, and the fact that it has still not been resolved, has led to a deterioration in the relationship between community and those in positions of responsibility (for example the EA as regulator, but also over time, with other public sector organisations by default and with the lack of any obvious (to the community), tangible action). The hydrogen sulphide analyser calibration issue has led to further cause for community mistrust, and this now extends into plans for Walleys Quarry (for example site restoration). Illustrative quotes from members of the community include:

'no-one in responsibility has taken control for impacts on the community'

'people who were voiceless had found a voice over something that mattered to them'

'there was a missed opportunity....they could have had the whole town protesting together, led by people in responsibility'

'action to stop something is time consuming...it is dominating and eats you up...you can only do it for so long'

'the perception is that it's big business against local government....and big business has won'

'the community has been powerless to do anything about it...and the damage that has done...'

'it has devastated this community'

'there has been a lack of joined-up thinking or approach across multiple organisations'

'there is community mistrust in authority now'

'those agencies the taxpayers fund to protect...have failed'

'its very distressing as despite all the canvassing and protesting it seems that the problem is not wholly resolved and as locals we feel a bit powerless'

'if all the partners had got together, they could have caused utter chaos and shut it down....but they didn't because of money'.

7.2.7 A number of the respondents to the online community survey had either moved further away or were considering it; this was also reflected in comments made by the CSC and focus group attendees. One respondent noted that there had been a *'loss of cohesion now – people have moved away'*. Others have noted that *'if I had a choice...I would leave'*.

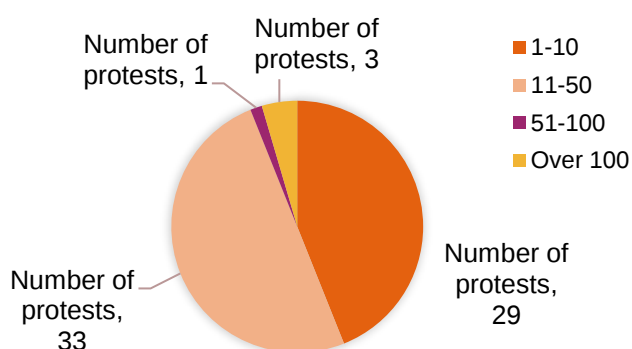
7.2.8 The sense of community injustice is palpable. Resident have summed it up with comments like *'we're like the quarry...we're just rubbish'* and *'it has blighted the lives of many and myself by making us feel uncared for by the authorities. The injustice of it is contemptable. It makes me feel worthless and fearful'*. There is undoubtedly a negative impact on community pride *'we are Silverdale: Britain's smelliest village'*.

Community Protests

7.2.9 The more visible community concern began around January / February 2021. According to the policing data gathered, there were a total of 66 protests related to Walleys Quarry between January 2021 and February 2024. Data relating to the number and size of individual protests is shown in Figure 7.1. The three largest protests, which each involved approximately 200 to 450 protesters, all took place in 2021. The vast majority of protests have been relatively small-scale in nature (involving fewer than fifty protestors). Protests have primarily taken place on Cemetery Road in the vicinity of the entrance to Walleys Quarry, with other protests happening outside the offices of Red Industries in Borough Road closer to the centre of Newcastle-under-Lyme and through the town centre itself. The nature of the protests has primarily been peaceful (described as 'placard waving'), however there have also been occasions, particularly during some of the protests that took place in 2021 (for example August 2021 and September 2021) which saw arrests by Staffordshire Police for individuals 'obstructing the highway' and 'preventing the lawful activity of a business'.

7.2.10 This was at a time when the nation was coming out of the Covid-19 pandemic and when there was also considerable change and uncertainty in terms of, for example, rules about gatherings of people in public, particularly from a policing / public safety perspective. In the early stages, the police were possibly more heavily involved with managing protests as they occurred, particularly in view of some of the larger events. Police reports at the time have emphasised their role in both *'balancing the rights of individuals to protest against the rights of those whose activities are impacted upon by the protests, which includes businesses, other members of the public in the area and those who hold opposing views'* (Staffordshire Police report, August 2021). As time has moved on, police involvement has reduced somewhat.

Figure 7.1 Size of Protests Related to Walleys Quarry Landfill Site (January 2021 to February 2024)



7.2.11 The protests have had both **positive** and **unintended consequences**. Protesting was a mechanism by which people could express their sense of injustice or moral indignation about the environmental conditions which odours from the landfill site created and the perceived inability of anyone in positions of responsibility to do anything about it. The expectation (or hope) was that through the collective effort of protesting, it might be possible to alter and ultimately improve the situation. The protests were joined by a cross-section of the community – children, older people, people from different backgrounds and socio-economic status – driven by the hope that visible participation could lead to a positive outcome and direct action. The size and frequency of the protests helped increase the likelihood of reaching regional and national media, which then played an important role in helping to amplify the impact of the protests. One resident commented that *'there is a bigger voice now talking about landfill sites across the UK...let's hope it stops landfills being put near housing'*. One of the protests, in February 2022, was described as a 'Children's Protest' and resulted in over 130 comments about the landfill site being added to teddy bears by children and their parents. Some of the comments made included *'please stop the stink so I can play football in the garden'*; *'I just want not to have it always on my mind. Just get rid of it!'* (aged 15); *'The Stink smells at home and when I open the door to walk to school it's the first thing I smell and it lingers when we are walking. It's disgusting!'*.

7.2.12 The protests have also had unintended consequences, for example:

- a local primary school has used the situation as a way to discuss community action with some of their older year groups. Teachers have discussed the role of community protests, the positives and negatives associated with it, and what other choices people have when it comes to making a stand / getting your voice heard. It was felt that this was a way to tackle a situation happening locally that children might hear a lot about at home and address some of these issues directly – for example children learning about monitoring stations not operating correctly and feeling cross about it. The school has added it to their Personal, Health and Social Education (PHSE) curriculum so that children can share information and thoughts about what is happening in their community.
- a number of local schools reported that the protests (when at their height in 2021/22) had *'made some children unsettled..getting to school late and causing a bit of a ripple effect..but they understood that people were standing up for their rights'*.
- one local business reported concerns about road closures / disturbance near their business entrance as a result of the protests – for example creating a 30-minute diversion for members of staff in terms of travel time to work. The same business reported days when suppliers had wanted to access the building for maintenance or in one instance to fix CCTV equipment, but had felt unable to, as a result of perceived disturbances, potentially leaving their premises exposed.
- as the number, frequency and size of protests changed, so too did how some of the community felt about them *'people were feeling impotent by the protests not achieving anything....this led to things getting more aggressive....which led to people not wanting to be involved any more'*. Other people reported that *'the community kind of imploded....people were cross and it was all too emotive'* or stated *'when they started parading through the town and disturbed things, it made it an unwelcome place to go'*.
- there were perceived impacts of the protests on emergency services *'the situation was getting out of hand'*.

Communication

7.2.13 Communication remains a particular sticking point for many people. Multiple agencies have obviously been involved with the situation from the start. There seems to be a lack of clarity from members of the public about any clear approach to community engagement – although community meetings have been held, webinars and door-knocking has also taken place (discussed in more detail in section 9 relating to cost of the incident), individual members of the public still do not feel that they have been informed in a consistent manner between early 2021 and today. Whilst it is acknowledged that a proportion of people are inevitably not going to be aware of, or connect with, communications from those in authority or will express views that communication could have been better; on the whole however, it does feel as though more could have been done. Some mechanisms which, in other locations and circumstances, could have been useful and productive, such as the Liaison Committee set up by Walleys Quarry to act as an interface with the community, have been generally viewed with scepticism by the community.

7.2.14 Examples of comments made by individuals include:

'the only people who were doing leaflets were doing it from their own pocket...where was the mass communication'

'there is a sense that we don't matter / don't count'

'the EA's summaries felt very dismissive at the start'

'there were missed opportunities to do more and sooner'

'the EA have lacked any empathy with the community'

'there were no signs or posters or information in the library....at one stage the only way to get the EA's number was via a leaflet'

'there was no formal communication trail to inform people about the smell'

'people don't have a good understanding of processes...it is only the EA and the Secretary of State who can stop it...but the local authority gets the blame'

7.2.15 It has been particularly noted that some groups of people, for example the travellers at the Cemetery Road Caravan Park or children / young people have *'less access to advice or resources than others'*.

Community Safety – Recorded Crime and Incident Data

Newcastle North, Newcastle West, and Madeley, Keele and Loggerheads represent the three policing boundaries within 1km of the Walleys Quarry landfill site (boundaries are shown in Figure 7.2). A review of crime data for each of these three areas shows fluctuations in crime levels across the three policing boundaries between Q4 2021 and Q2 2024, with data shown in Table 7.1 Crime Levels for each Police Boundary Area (October 2021 to June 2024)

7.2.16 (note that the earliest data available on Police.UK for individual crime areas is from Oct 2021) and Figure 7.3. The Staffordshire crime levels data is also presented in Table 7.1 for comparative purpose.

7.2.17 Crime levels in Newcastle North, and Madeley Keele and Loggerheads have remained largely consistent over the past three years and largely in line with the wider crime level in Staffordshire. Whilst Newcastle West sees a slight difference in crime levels. Crime levels at the three police boundaries peaked in Q2 2022.

Figure 7.2 Police Boundary Areas in the Vicinity of Walleys Quarry, Newcastle-under-Lyme

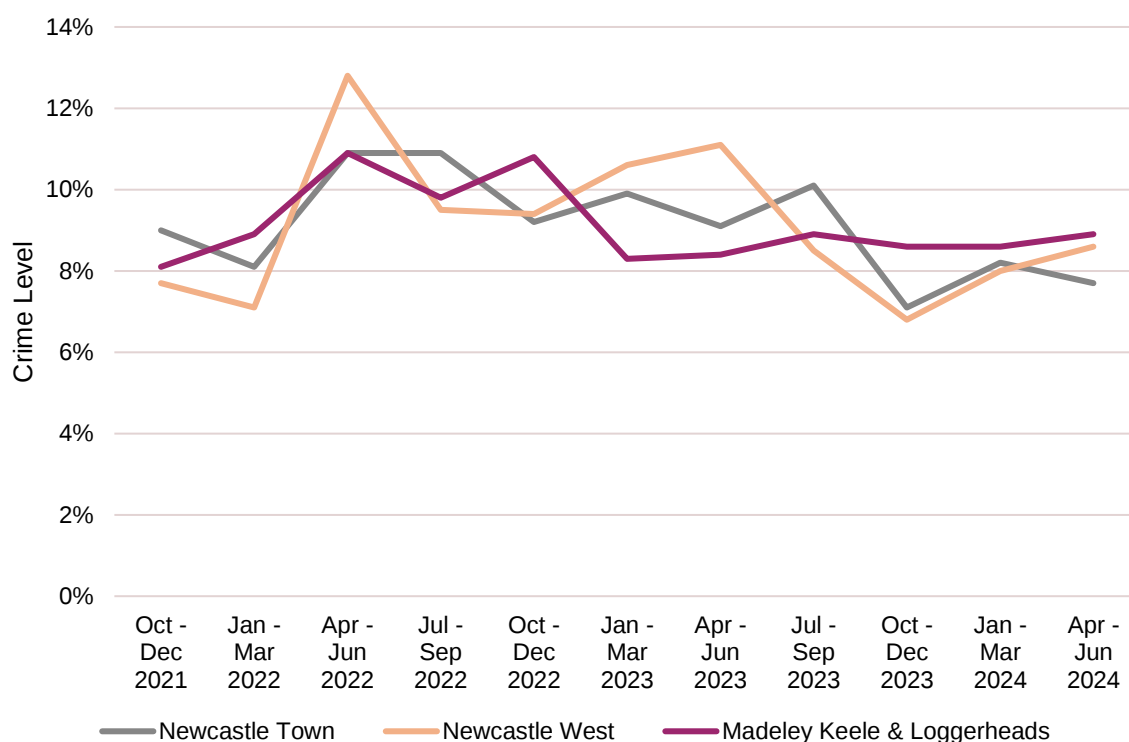


Table 7.1 Crime Levels for each Police Boundary Area (October 2021 to June 2024)

Quarter	Newcastle Town	Newcastle West	Madeley Keele & Loggerheads	Staffordshire (comparative)
Oct - Dec 2021	9.0%	7.7%	8.1%	8.6%
Jan - Mar 2022	8.1%	7.1%	8.9%	7.3%
Apr - Jun 2022	10.9%	12.8%	10.9%	11.1%
Jul - Sep 2022	10.9%	9.5%	9.8%	10.9%
Oct - Dec 2022	9.2%	9.4%	10.8%	9.1%
Jan - Mar 2023	9.9%	10.6%	8.3%	9.4%
Apr - Jun 2023	9.1%	11.1%	8.4%	9.5%
Jul - Sep 2023	10.1%	8.5%	8.9%	8.8%
Oct - Dec 2023	7.1%	6.8%	8.6%	8.0%
Jan - Mar 2024	8.2%	8.0%	8.6%	8.3%
Apr - Jun 2024	7.7%	8.6%	8.9%	9.0%

Source: Police.UK, 2024

Figure 7.3 Crime Levels by Police Boundary Area



7.2.18 The crime data also shows that anti-social behaviour is notably higher in all areas, particularly in Newcastle North (20.1%) and Newcastle West (19.6%). Madeley Keele and Loggerheads reports a significantly higher rate of violence and sexual offences (42.2%), while Newcastle West has an unusually high robbery rate (43.2%). In contrast, burglary and vehicle crime rates are higher in Madeley Keele and Loggerheads. 'Theft from the person' is most prevalent in Newcastle North (34.2%), indicating localised crime trends, with certain areas experiencing concentrated incidents of specific crime types.

Table 7.2 Crime Types per Police Boundary (September 2021 to July 2024)

Crime Type	Newcastle North		Newcastle West		Madeley Keele & Loggerheads	
Anti-social behaviour	1,508	20.1%	975	19.6%	261	14.9%
Burglary	117	1.6%	49	1.0%	83	4.7%
Criminal damage and arson	264	3.5%	139	2.8%	140	8.0%
Other theft	582	7.8%	425	8.6%	144	8.2%
Public order	157	2.1%	55	1.1%	125	7.1%
Shoplifting	533	7.1%	254	5.1%	34	1.9%
Vehicle crime	69	0.9%	41	0.8%	129	7.4%

Crime Type	Newcastle North		Newcastle West		Madeley Keele & Loggerheads	
Violence & sexual offences	692	9.2%	353	7.1%	740	42.2%
Other crime	75	1.0%	23	0.5%	41	2.3%
Drugs	602	8.0%	304	6.1%	23	1.3%
Possession of weapons	85	1.1%	109	2.2%	10	0.6%
Robbery	185	2.5%	2,145	43.2%	8	0.5%
Theft from the person	2,564	34.2%	80	1.6%	7	0.4%
Bicycle theft	64	0.9%	13	0.3%	7	0.4%

Source: Police.UK, 2024

7.3 Impact Summary

7.3.1 The ongoing incident at Walleys Quarry has had, and continues to have, a significant impact on the local community, whether this is from the perspective of impact on daily lives, how the community has come together to try and overcome the situation, the sense of injustice and outrage that something like this should be allowed to happen, the impact on community pride, or the impacts of the protests (both positive and unintended). The following is a summary of the key areas of impact in relation to community cohesion and safety:

- community cohesion:** the community were galvanised into action during early 2021 as a result of the concern relating to odour emissions. Membership of the various Stop the Stink groups that emerged and attendance at the numerous community protests were testament to the level of feeling amongst local people about what was happening and the need for a resolution. There was anger at the Environment Agency for not effectively regulating the site, at other public sector organisations for not being able to improve matters, and ultimately at the operator for breaching permit conditions. Over time, this anger has turned into moral outrage and sense of injustice, about the perceived failure across multiple organisations to improve the outcome. The protests have had both positive and unintended consequences – they allowed people from all ages and all walks of life to come together and express community sentiment; equally over time they (and the media interest they created) have amplified some of the negative aspects, particularly with a perception that some of the protests were less peaceful in nature, with police involvement and in terms of the disturbance they caused locally either in the town centre, along Cemetery Road, or for children getting to school.
- communications:** many people have highlighted that communication about what is happening / why it has happened / what is being done about it has been lacking, and has not necessarily reached all sections of the community (particularly those who may have less resources or ability to be online). Engagement may have improved more recently, but a clear lesson learnt would be around early and comprehensive engagement with the community.
- community safety:** there is no evidence that criminality has increased over the past four years within the areas closest to the landfill site.

8 Reputational Impact

8.1 Introduction

8.1.1 This section assesses the reputational impact of Walleys Quarry from three perspectives: national, local, and visitor. It provides a detailed review of media coverage related to Walleys Quarry, social media comments from residents, and feedback from visitors to Newcastle-under-Lyme.

8.2 Data Overview

Media Coverage of Walleys Quarry

8.2.1 A comprehensive review of media coverage related to Walleys Quarry has been conducted, identifying news reports dating back to 2020. A total of 270 news reports have been gathered where all of the reports are related to odour issues with common keywords including landfill, smell, stink, protest, complaints and odours. The common themes of media coverage between 2020 and 2024 (as of October 2024) are detailed in Table 8.1

Table 8.1 Key theme of media coverage between 2020 and 2024

Theme	Details
Odour Complaints	Repeated reports of foul odours, particularly "rotten egg" smells, affecting local communities and causing significant public distress.
Health Concerns	Multiple claims linking landfill emissions to health issues, including respiratory problems, headaches, and other symptoms, especially in children.
Community Impact	Descriptions of the psychological and social toll on residents, with local communities feeling "gassed" and under constant strain from the landfill's presence.
Investigations and Inquiries	Multiple investigations and inquiries into the landfill's environmental impact, odour management, and regulatory oversight failures.
Legal Actions	Ongoing legal cases, including high-profile court cases involving residents, local councils, and regulatory bodies over the site's environmental and health impacts.
Protests and Activism	Continuous protests by local residents and activists demanding action to address the odour and emissions from the landfill.
Government and Regulatory Responses	Calls for investigations and actions from MPs, councils, and the Environment Agency to regulate or close the landfill, alongside criticism of regulatory failures.
Environmental Violations	Reports of permit breaches, illegal waste dumping, and emission control failures by the landfill operator.
Operational Changes	Efforts by Walleys Quarry to cap waste, suspend operations temporarily, and address environmental concerns, albeit with mixed public reception.

Theme	Details
Fires and Accidents	Incidents which have occurred at the site, raising further concerns about safety and pollution.

- 8.2.2 Table 8.2 shows that the media coverage data in 2021 saw a high level of reporting, with 71 news reports in total in the year from various media, followed by a noticeable dip in 2022 and 2023, and followed by a significant increase in 2024, with 136 news reports.
- 8.2.3 The data shows a significant increase in news reporting activity across the five years, with the BBC and Stoke-on-Trent Live being prominent reporting outlets, with 62 and 69 mentions respectively. Other outlets reporting news about Walleys Quarry include ENDS Report (19 reports) and Materials Recycling World (14 reports), indicating the landfill site and associated odour issues are also of interest in the wider environmental and waste industry.
- 8.2.4 There appears to have been growing media interest in 2024, not only from major national and local new media but also particularly in local authority and industry reports, in recent years. However it is also worth highlighting how the media landscape has evolved, even over the last few years, with the move away from traditional media, the rise in digital and social media platforms, and changes in audience behaviour. AI generated stories are more widespread now than was the case in 2021. The table notes numbers of news reports, but it is important to emphasise that there may be inherent double counting within this, as individual stories or reports are shared / re-shared numerous times.

Table 8.2 News report between 2020 and 2024

Media/Institution	2020	2021	2022	2023	2024	Total
BBC	-	17	9	11	25	62
Birmingham Live	-	-	-	-	1	1
Business Live	-	1	-	-	-	1
Circular Online	-	-	1	-	8	9
Daily Mail	-	3	-	-	1	4
ENDS Report	-	4	2	-	13	19
Evening Standard	-	1	-	-	-	1
Free Radio	-	-	-	-	3	3
Guernsey Press	-	1	-	-	-	1
hellorayo.co.uk	-	-	-	1	5	6
ITVX	-	2	-	1	-	3
Jersey Evening Post	-	1	-	-	-	1
Leigh Day	-	1	2	-	-	3
letsrecycle.com	-	1	1	2	-	4

Media/Institution	2020	2021	2022	2023	2024	Total
Local Government Chronicle	-	-	-	-	1	1
Materials Recycling World	1	3	2	1	7	14
Metro.co.uk	-	-	1	-	1	2
Monckton Chambers	-	1	-	-	-	1
MSN	-	-	-	-	5	5
Newcastle-under-Lyme Borough Council	6	31	5	4	15	61
NW Mail	-	1	-	-	-	1
Politics Home	1	-	-	-	-	1
Sky News	-	1	-	-	-	1
Staffordshire County Council	-	4	-	-	3	7
Staffordshire Fire & Rescue Service	-	-	-	-	2	2
Stoke Nub News	-	-	-	2	6	8
Stoke on Trent Live	-	17	13	6	33	69
The Guardian	-	5	-	-	1	6
The Independent	-	5	-	-	-	5
The Mercury	-	-	-	-	1	1
The Mirror	-	-	1	-	1	2
The Sun	-	1	1	-	2	4
Workplace Insight	-	1	-	-	-	1
Yahoo News UK	1	-	-	-	2	3
Total	3	71	35	25	136	270

Newcastle-under-Lyme as a place to live

8.2.5 Reddit is an online forum and social platform. A review of discussions on Reddit related to the Walleys Quarry landfill site reveals two key themes:

- reposting of news regarding odour issues and non-compliance at the landfill
- general discussions of the odour issue.

- 8.2.6 Comments indicate that the odour has been experienced in several locations, including the town centre, Silverdale, Cross Heath, Clayton, Keele University, and Royal Stoke Hospital. Some users reported relocating due to the persistent odour, while others mentioned that the odour in Silverdale is minimal.
- 8.2.7 Research conducted by a UK consumer organisation in 2023 suggested that Newcastle-under-Lyme was the best place to retire in the West Midlands, citing positive data relating to the comparison of healthcare with an average distance to the nearest GP and the average distance to the nearest pharmacy; happiness scores out of 10; average number of parks and playing fields within 1km; and average house prices¹⁸.

Newcastle-under-Lyme as a place to visit

- 8.2.8 A review of the Expedia Newcastle-under-Lyme Travel Guide webpage¹⁹ showed four negative comments relating to Newcastle-under-Lyme. Three of these reviews related to tourist accommodation, while one specifically addressed a negative impression of the market town. In contrast, there are four positive reviews of Newcastle-under-Lyme. Two of these comments provided a general positive review of the market town, while two others were related to accommodation.
- 8.2.9 Although Tripadvisor has a forum for Newcastle-under-Lyme, there do not appear to have been any discussion or comments of relevance to the market town as a place to visit in recent years.
- 8.2.10 There are two hotels located within 1.5km of Walleys Quarry – the Courtyard by Marriott Keele Staffordshire (located approximately 560m south west) and Travelodge Newcastle-under-Lyme (approximately 1.2km east). One report from a guest staying at the Courtyard by Marriott reported experiencing an odour smell from the landfill on a few occasions during their stay, although the review also suggested the odour level was not severe enough to deter them from a repeat visit. No comments in relation to the landfill site or odour can be seen in reviews left by guests staying at the Travelodge Newcastle-under-Lyme.
- 8.2.11 Reviews from guests staying at privately rented tourist accommodation located in the immediate vicinity of Walleys Quarry were considered. Although the large majority of the reviews did not mention the smell of odour, four reviews out of a total of 123 related to guests reporting experiencing a smell from the landfill or 'gas like smell' during their stay.
- 8.2.12 A Google review of major tourist attractions located up to 4km from Walleys Quarry has been undertaken. No comments related to odour or specifically highlighting the landfill site have been identified. These tourist attractions include:
- Silverdale Country Park (approximately 1.7km north west of the site)
 - Apedale Community Country Park (approximately 1.8km north west of the site)
 - Brampton Park (approximately 2.1km north east of the site)
 - The Brampton Museum (approximately 2.2km north east of the site)
 - Apedale Heritage Centre (approximately 2.2km north west of the site)
 - Apedale Valley Light Railway (approximately 2.2km north west of the site)
 - Bateswood Nature Reserve (approximately 3.8km north west of the site).

¹⁸ Which? (2023). Best places to retire in the UK revealed.

¹⁹ Expedia (2024). Newcastle-under-Lyme Travel Guide.

8.3 Findings from Community and Stakeholder Engagement

- 8.3.1 Online survey findings included that 214 respondents (41%) indicated that the landfill smell affected their willingness to invite friends to visit their homes. Comments made related to the sense of frustration, embarrassment and feeling ashamed:

'Not feeling comfortable inviting friends and family round when the smell is bad, or because I'm worried it will smell on that day'

'If I tell people I live in Silverdale more often than not they will make a comment about the landfill, and how to we put up with it. Its quite embarrassing really'

'A constant worry...we stopped inviting people into our home'

'We've had friends come to visit and not gone outside or been extremely embarrassed explaining the smell'

'I am ashamed to have friends and family from out of the area to visit'

8.4 Summary of Impacts

- 8.4.1 The Walleys Quarry landfill site has had some degree of visible reputational impact on Newcastle-under-Lyme. The following is a summary of the key areas of impact in relation to reputation:

- **public perception:** Despite the odour issues, a 2023 consumer organisation ranked Newcastle-under-Lyme as the best place to retire in the West Midlands based on healthcare access, happiness scores, recreational spaces, and housing prices. However, the data shows that there has been a sustained media interest in the odour issue from Walleys Quarry over the last few years and that this continues to be the case. Although it is acknowledged that the media landscape has shifted and that media content is generated and used in different ways today than was the case in 2021, the ongoing proliferation of media content has the potential to be damaging to Newcastle-under-Lyme in reputational terms.
- **local perception:** Reddit discussions reported experience of the odour across various locations, including town centres and key institutions. Some users mentioned moving homes due to persistent odour. An online survey revealed that 214 out of 527 respondents reported the odour from the landfill negatively impacts their willingness to invite friends to their homes.
- **visitor reviews:** Although no odour-related comments were found in Google reviews of major tourist attractions within a 4km radius of the landfill, a review of privately rented tourist accommodation webpages reported a minority of guests noticing an odour during their stay. A review of Expedia found a mix of positive and negative reviews about Newcastle-under-Lyme, with some comments focused on tourist accommodations and general impressions of the market town. Overall, there is some potential negative reputational impact on Newcastle-under-Lyme from the odour, but it is small scale and not likely to affect the town as a tourist destination overall.

9 Incident Cost

9.1 Introduction

- 9.1.1 The ongoing incident at Walleys Quarry has been resource intensive for a number of public sector organisations over the past four years (including the EA, NuLB, SCC, UKHSA, Staffordshire Police and members of the Local Resilience Forum). Requirements have included not only the physical costs of monitoring equipment and resources, but also staff time and effort to undertake day to day regulatory activities, community engagement, and deal with the indirect impacts. It is difficult to estimate the costs of the incident in any meaningful way, rather this section reviews where the main areas of staff time and involvement have been, together with cost aspects of relevance to other stakeholders (for example costs to the community, or to businesses).

9.2 Data Overview

Staff Time and Activities

- 9.2.1 Perhaps the biggest element of incident cost relates to the ongoing cost of staff time across organisations. Table 9.1 lists many of the engagement activities and public sector meetings that have taken place over the past four years for individual organisations. These include NuLBC and SCC Cabinet meetings, EA and UKHSA public engagement activities and activities associated with preparing reports, letters or briefing notes in readiness for meetings.

Table 9.1 Staff Activities Across Public Sector Organisations

Organisation	Engagement Activities
Environment Agency	2021: drop-in sessions and door knocking, meeting with the three main local action groups in October. Citizen Space information page established. July 2021: a Strategic Coordinating Group (SCG) of Staffordshire Resilience Forum agencies was established, initially chaired by Staffordshire Police. Virtual engagement sessions held for residents. Multi-agency virtual engagement sessions held on 23 June 2021 and 3 August 2021. Environment Agency virtual engagement sessions held on 26 May 2021 and 9 June 2021. Weekly updates – between March 2021 and July 2023. These were then reduced to update the community as and when there was news (increased around Autumn 2023 when MMF issue). These were placed on the website and emailed out. Air Quality data shared with stakeholders weekly. Facebook group established and used as preferred method of communication with local residents (currently this has around 1,000 members).

	Monthly Q&A sessions on Facebook where community members would submit questions and they would be answered by our Project Executive Team. May 2022 – June 2023. March 2023 – New Engagement HQ website set up giving more information than ever before including permit compliance section. April 2023 – newsletter distributed to all residential addresses within 3 miles of WQ. June 2023 – Drop-in session at Newcastle Fire Station Virtual public meeting for the community held in October 2023. Updates via Engagement HQ webpage. Transcripts of Facebook Q&A sessions posted on Engagement HQ webpage. Virtual public meeting held 28th August 2024 to discuss readjusted historic data. Since September 2020 the EA has answered 321 Freedom of Information requests and Environmental Information Regulation requests (including seven subject access requests), and 295 general enquiries from stakeholders.
UKHSA	Preparation and attendance at virtual and in-person public engagement events arranged by various partners between March 2021 and 2024 Preparation of Health Risk Assessments Health and Wellbeing and Partnerships Scrutiny Committee meeting Elected members meeting MP meetings Staffordshire Health and Care Overview and Scrutiny Committee Attendance at, and involvement in, the Member-led Committee of Inquiry in August 2024
NuLBC / SCC	March 2021: Extraordinary Council Meeting held to discuss the odour emissions. Letters written from the Leader and Chief Executive of NuLBC to the Prime Minister, EA, PHE and North Staffordshire Clinical Commissioning Group April 2021: Cabinet update provided June 2021: budget of 50k approved to enable specialist advice to be secured and targeted work to take place Health and Wellbeing and Partnerships Scrutiny Committee meeting to discuss health issues July 2021: NuLBC Special Cabinet meeting held; Full Council meeting July 2021: Matter discussed at Staffordshire Health and Care Overview and Scrutiny Committee Partners hold community engagement meeting online

	September 2021: NuLBC respond to High Court ruling October 2021: Matter discussed at Staffordshire Health and Care Overview and Scrutiny Committee March 2022: Letters written to EA, Aaron Bell MP. Matter discussed at Staffordshire Health and Care Overview and Scrutiny Committee October 2022: Involvement with mediation process prior to the Abatement Notice appeal being settled October 2023: Letter from Leaders of SCC and NuLBC to Rt Hon Therese Coffey MP, Secretary of State for Environment, Food and Rural Affairs November 2023: Matter discussed at Staffordshire Health and Care Overview and Scrutiny Committee December 2023: Letter from NuLBC to Prime Minister calling for reconsideration of need for a public inquiry August 2024: Member-led Committee of Inquiry to look into problems impacting the local community from the Walleys Quarry landfill operation
Staffordshire Fire and Rescue Service	Minimal impact on their services, with the main emphasis being local crews going out and doing surveys and contributing to the Local Response Plan / nothing 'out of the ordinary'.
Local Resilience Forum	Role of the Civil Contingencies Unit / Local Resilience Forum to act as a team that will support bringing multi-agency support together for dealing with a major incident or a slower-burn incident.

- 9.2.2 In order to facilitate the various activities set out in the table, the level of staff time involvement from across the various organisations has been considerable.

Other Costs

- 9.2.3 Other costs associated with Walleys Quarry to date have included:
- capital costs associated with equipment. These include, for example, costs relating to the MMFs and recalibrated MMFs installed by the EA
 - cost of establishing and running the Mental Health Clinic over the period 2021 to 2022
 - the Borough Growth Fund was established in 2020 for the purpose of enabling investment in corporate priorities. The Borough Growth Fund is required to be used to invest in initiatives that are forecast to generate on-going revenue savings through reducing the costs of service delivery or through the generation of additional income. Since the establishment of the Borough Growth Fund, 75k had been committed to addressing community concerns regarding the quarry's unpleasant odour omissions.

- 9.2.4 At its meeting of the Full Council in February 2022, Newcastle-under-Lyme Borough Council allocated £1million to a ring fenced reserve to fund legal action and secure agreement of the Abatement Notice with Walleys Quarry following mediation. The Council spent circa £850k on legal action and monitoring of the site prior to the agreement of the Abatement Notice. Due to the on-going odour and gas emissions at the site, the Council has allocated further funding to the reserve, providing a funding allocation of up to £600k as at 1st April 2024 to fund further legal action.

9.3 Findings from Community and Stakeholder Engagement

- 9.3.1 Below are a series of quotes from partner organisations primarily relating to what the ongoing incident has meant in terms of staff time and resourcing. One individual, for whom Walleys Quarry is not a primary area of work, still stated that they *'must have attended more than 50 meetings'* in relation to the incident.

'I have never come across a case that has involved so many people before'

'agencies have been annoyed with each other and it has been hard to pull people together to get consensus'

'it has utterly dominated the work of the Council for the past three years'

'unprecedented, relentless'

'how these rogue operators have hijacked the work and resources of the Council'

'this dominates every Committee'

'there is a lack of multi-agency working...they are working in silos'

- 9.3.2 There is also the added time impact for elected members, a number of whom have spent significant amounts of their time dealing with local residents comments and concerns about Walleys Quarry and ongoing anxieties. For example:

'this issue is one Councillor's workload on its own'

'my biggest frustration is that it (WQ) has taken up so much of my time as a Ward Councillor...when I should have been helping residents with other issues too'

'people are constantly asking me what I am going to do about it...but nothing has made a scrap of difference'

- 9.3.3 Other areas of spend reported have related to that from businesses, schools or members of the community in relation to equipment / interventions in their properties. For example the cost associated with ventilation systems or air purifiers – one school purchased an air conditioning unit out of school funds (at a cost of £12k for four classrooms).

10 Conclusions and Recommendations

- 10.1.1 This report has considered the health, social and economic impacts of the air pollution and associated disruption that has resulted from the operation of the Walleys Quarry landfill site. The study will hopefully act as a shared evidence base for partners across Staffordshire, enabling greater understanding of the many and various ways in which the landfill site has impacted on the local population. Through our investigations, we have identified missed opportunities and lessons learnt which should help to understand and inform management of future incidents, either here or elsewhere in the UK. The report is a body of evidence that can be used to inform engagement with Central Government in terms of highlighting issues and as a basis to lobby for resolution.
- 10.1.2 At the end of the day, the ongoing issues associated with Walleys Quarry have, whether directly or indirectly, affected the daily lives of many people living in and around the area. People feel let down, angry and continue to worry about what might happen next – whether this could be another fire, another environmental incident or what might happen when tipping at the landfill ends and how responsibilities for the next stage play out. The smell (and so many people have been at pains to emphasise that it is so much more than a smell – but air pollution, toxins, a disgusting stench, a malodour) has been described as a living thing, something people continue to battle and endure.
- 10.1.3 As with most things, there are other factors involved and certainly which appear to have masked some of the direct and indirect impacts associated with Walleys Quarry – for example impacts associated with the Covid-19 pandemic have impacted on deprived and vulnerable communities in an unequal way, there has been a cost of living crisis which may have impacted house prices or business performance. The fundamental, take-home impacts to arise from the incident, however, relate to ongoing short-term health worries and impacts, concerns about long-term health impacts (both physical and the impacts associated with long-term stress and anxiety) and the huge amount of public mistrust in organisations purportedly responsible for looking after the environment, the community and vulnerable individuals.

10.2 Missed Opportunities and Lessons Learnt

- 10.2.1 This section identifies where there may have been missed opportunities and lessons-learnt from the preceding four years. These include:



They primarily relate to the need for **better communication** – across a variety of groups, topics and spectrums, for example whether this be with local residents, businesses, or on-the-ground healthcare professionals. Information for residents has typically been challenging to understand due to its technical nature; better attempts could be made to translate some of the more technical language into a digestible format that relates to ordinary people. Ensuring that information is provided in a variety of formats to meet the needs of different groups (for example those who are not able to read or write, or who are not able to view online information) could have been better – for example updates posted in the local library, importance of face to face engagement. Although there were communications and briefings with, for example, GP surgeries, could these have been managed better / taken place sooner / more regularly in order to provide a better two-way channel of information. *‘We had no idea of who to complain to for months’.*



An **earlier and swifter response** to the incident – putting monitoring equipment in place earlier would not have solved the problem, but it would have shown an understanding of, and empathy with, the very real community concern.

10.3 Recommendations



Recommendation 1: the importance of a **continued coherent community voice** should not be underestimated. We would recommend continuation of the Community Steering Committee established as part of this commission over an initial six month period, with a view to reviewing and extending further as necessary. The benefit of this would be to act as a conduit between the community and those in authority and could assist with the design and implementation of engagement activities to support future areas of action.



Recommendation 2: long-term health impacts is a significant area of concern for the local community. We would recommend establishing an approach whereby physical and mental wellbeing could be monitored annually from 2025. The design of the **longitudinal health study** would need to be established (for example it could include face to face interviews with residents rather than online aspects), but could include use of the Warwick-Edinburgh Mental Wellbeing Scale to ascertain potential long-term impacts of stress and anxiety.



Recommendation 3: review opportunities for **recording interactions with healthcare professionals**. This is a direct reference to how one GP surgery has coded interactions with patients over time; although there are noted limitations with this approach (for example it could be perceived as an extension of self-reporting and therefore not reliable due to the various confounding factors that may at play), it might help better to understand the scale of the situation and the areas / populations potentially impacted.



Recommendation 4: it is very hard to know how public trust in public sector organisations can be re-established. One opportunity is through **action – listening to community concerns, acting upon them and taking appropriate enforcement action**. This could relate to various aspects of landfill site operation, which are the responsibility of multiple individual partners, but important components include then providing a narrative back to the community about what action has been undertaken, in what timescale and with what outcome – *‘the community is trying to find the answers themselves because no-one will help them / tell them’*.



Recommendation 5: young people have been highlighted as a group which has been affected adversely by multiple situations over the last few years, including the Covid-19 pandemic but then with evidence that the odour emissions from the landfill site have continued to affect their daily lives. The potential impact on children and young people as a result of disrupted education should not be overlooked. The report cites interview evidence with individual schools in the vicinity of the landfill site which suggests this has been the case. **Further interrogation of data** in this regard is therefore recommended (for example follow-up analysis of attendance rates / attainment data) and further interviews with affected schools and pupils. Consideration of **provision of mental wellbeing support** within schools is an area of potential interest, and ensuring that young people also have a voice and that their concerns are listened to.



Recommendation 6: ensure there is a **transparent and comprehensive approach to plans for restoration of the landfill site**, and that this is communicated effectively to the community such that there is understanding about what the plans are and over what indicative timescale.



Recommendation 7: review how information is disseminated to the community – consider a more varied approach to engagement, for example posting regular updates in local libraries, engaging with local schools, and face to face engagement with groups who may be more vulnerable / unable to access online resources.

Draft

Appendix A

Literature Review_Bibliography

Literature Review_Bibliography

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Appendix B

Online Survey Questions

Online Survey Questions

General Section of Online Survey

Please tick the description that best applies to you:

- I live in the Newcastle-under-Lyme area (e.g. includes Keele, Silverdale, Knutton, Madeley Heath)
- I work in the Newcastle-under-Lyme area (e.g. includes Keele, Silverdale, Knutton, Madeley Heath)
- I live AND work in the Newcastle-under-Lyme area (e.g. includes Keele, Silverdale, Knutton, Madeley Heath)
- I live outside of the Newcastle-under-Lyme area but visit for leisure or social reasons
- I am a student in the Newcastle-under-Lyme area (e.g. includes Keele, Silverdale, Knutton, Madeley Heath)
- None of the above (please specify)

Please tell us your full postcode.

How many years have you lived / worked / studied in the area for?

- Less than 3 years
- 3 to 10 years
- More than 10 years

Please state which of the following statements best applies to you:

- I can smell odour from the landfill site every day
- I can smell odour from the landfill site occasionally (1 to 2 days per week)
- I can smell odour from the landfill site regularly (3 to 4 days per week)
- I rarely smell odour from the landfill site

Have you noticed any improvements in odour from the landfill site over time?

- It varies
- No noticeable change / improvement
- Odour has worsened over time
- Yes, significant improvements
- Yes, slight improvements

Please explain in more detail if you wish to do so.

Do you consider that the ongoing odour issue has affected your physical health / that of people in your household or place of work?

Yes/No

If you wish to do so, can you briefly explain how?

Do you consider that the ongoing odour issue has affected your mental health / that of people in your household or place of work?

Yes/No

If you wish to do so, can you briefly explain how?

Do you feel that health conditions of you / other household members have worsened over time?

Yes/No

If you wish to do so, can you briefly explain how?

Has the smell from the landfill site resulted in you or members of your household taking time off from work or school over the past 12 months for reasons of poor health?

No/Not applicable/Yes

If you answered yes to this question, can you estimate the number of days taken off as a result of poor health over the last 12 months?

Would you say that smell from the landfill site affects your daily life:

Not at all / a little / alot

In what ways does the smell from the landfill site affect your day to day activities? (select all that apply):

- Opening windows in my home
- Using my garden
- Letting my children play outside
- Having friends to visit my home
- Going for a walk / run / cycle / other form of outdoor exercise
- Other (please specify)

If you wish to do so, please use the space below to explain more about how the landfill site may affect your daily life.

Have you tried to sell your house at any point in the last three years?

No/Not applicable/Yes

Do you consider that the smell from the quarry affected:

- The value of your property
- The length of time it took to sell my property
- I could not sell my property

If you wish to do so, please use the space below to provide further details / explanation.

On a scale of 1 to 10 (where 1=not informed at all and 10=well informed), how informed do you feel about ongoing management and monitoring of the Walleys Quarry site?

Select from 1-10

From which of the following information sources do you primarily obtain information about Walleys Quarry? Select all that apply:

- Local or national television
- Local or national radio
- Local newspaper
- Local authority website (e.g. Staffordshire County Council or Newcastle-under-Lyme Borough Council)
- Environment Agency website
- UK Health Security Agency website
- Walleys Quarry operator website
- Social media e.g. Facebook, X
- Friends or colleagues
- Other website or social media to those listed above (please specify which)

Thinking about each of these information sources, how reliable do you consider each of them to be?

Quite reliable / Not reliable / Don't know / no opinion

Please let us know your age:

What is your gender?

What is your highest qualification?

Please select one of the following if you would like to be involved in the next stages of the study:

- I do not want to be involved if further stages of the study

- I would like to be considered to be part of the Community Steering Committee
- I would like to be considered to attend one of the Focus Groups

Businesses Section of Online Survey

Where is your business located? Please provide a postcode in the space below.

Which of the following categories best describes your business?

- Office activities
- Other (please specify)
- Recreation hospitality and tourism
- Retail

For approximately how many years has your business been at this location?

- Between 1 and 3 years
- Between 4 and 9 years
- Over 9 years

Approximately how many employees do you have based in Newcastle-under-Lyme?

- Fewer than 10
- Between 10 and 50
- Between 51 and 250
- More than 250

Do you know approximately what percentage of your employees live in Newcastle-under-Lyme?

Yes/No

If yes, please provide an estimate in the space below.

On a scale from 1 to 10, where 1 is very easy and 10 is very difficult, how easy do you find it to recruit new staff?

1-10 response

For each of the potential barriers to recruitment listed below, can you identify how relevant each statement is for your business / experience (from very relevant to not relevant at all).

- Current economic climate
- Lack of people with the right skills or experience
- Staff shortages
- Environmental factors
- House prices
- Have you experienced any other barriers to recruitment? Please specify.

Do you think the Walleys Quarry landfill site has affected the operation of your business in any way (this may be either positively or negatively)?

Yes / Don't know or can't say

Is there anything else you would like to let us know?

Please select one of the following if you would like to be involved in the next stages of the study:

- I do not want to be involved if further stages of the study
- I would like to be considered to be part of the Community Steering Committee
- I would like to be considered to attend one of the Focus Groups

Appendix C

Community Steering Committee_Terms of Reference

Community Steering Committee – Terms of Reference

Background

For many years and particularly since 2020, odours and gaseous emissions from the Walleys Quarry landfill site have affected residents and businesses in the local area. Staffordshire County Council (SCC) and partner organisations including Newcastle under Lyme Borough Council, the Environment Agency and the UK Health Security Agency have commissioned an independent Community Impact Study for Walleys Quarry, the purpose of which is to gain insights into the health, social, and economic consequences caused by the landfill site. SCC, on behalf of the Strategic Coordinating Group (SCG), has commissioned Arcadis to undertake this work, which aims to:

- understand the impact of Walleys Quarry on the local population and inform potential mitigation
- inform ongoing monitoring, management and remediation of the site
- inform engagement with Central Government to highlight the issues and lobby for resolution
- understand lessons learned to inform management of future incidents.

The study will necessitate extensive engagement with residents and local business representatives. A key element of this engagement is the creation of a Community Steering Committee (CSC), membership of which will be drawn from the local community.

Purpose

The CSC will play a role in the development of the Community Impact Study, providing input to key stages of the project including the research process and validation of key findings. In addition, the CSC will be a consultative forum that will provide Staffordshire County Council and their partner organisations with community feedback on planned community engagement activities. The CSC will comprise a cross-section of community representatives, will work to build trust with partner organisations, develop consensus where possible and help to inform ongoing monitoring and mitigation associated with the Walleys Quarry site.

Structure and Operation

The CSC will aim to be representative of the local resident and business population in terms of age, diversity and geography. Representation will include residents / businesses from streets and areas within the immediate vicinity of the landfill site. The CSC will be chaired by a representative from Arcadis Consulting (UK) Limited. The CSC may also be attended in an observational capacity by representatives of local partner organisations including (but not limited to) Staffordshire County Council, Newcastle-under-Lyme Borough Council, the Environment Agency and the UK Health Security Agency.

Conduct

- The Committee will be quorate when five Committee members are present. Meetings will not be open to the public, either in whole or in part.
- The Chair will schedule the dates / timings of meetings.
- The Chair will prepare the agenda in advance for each meeting, seek input from CSC members to the agenda, and confirm individual agenda items at the start of each meeting.
- The agenda and any relevant papers for the meetings will be sent out to attendees a minimum of one week in advance. Notes of any action points shall be taken at all meetings and will be circulated to those present for agreement.
- The Committee will operate solely in an advisory and consultative capacity, to enhance knowledge and understanding. For the avoidance of doubt the Committee has no power to make decisions on behalf of partner organisations.
- It is expected that positive participation and a collaborative approach is taken to meetings.
- There is no intention for the Committee to keep personal data, but the Chair will ensure that the requirements of the Data Protection Act 2018 are met.

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