

Neutral Citation Number: [2021] EWHC 2501 (Admin)

Case No: CO/2453/2021

**IN THE HIGH COURT OF JUSTICE**  
**QUEEN'S BENCH DIVISION**  
**ADMINISTRATIVE COURT**

Royal Courts of Justice  
Strand, London, WC2A 2LL

16<sup>th</sup> September 2021

**Before:**

**MR JUSTICE FORDHAM**

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**Between:**

**THE QUEEN**  
**(on the application of Mathew Richards)**

**Claimant**

**- and -**

**THE ENVIRONMENT AGENCY**

**Defendant**

**-and-**

**WALLEYS QUARRY LIMITED**

**Interested**  
**Party**

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**Ian Wise QC & Will Perry**

(instructed by Hopkin Murray Beskine Ltd) for the **Claimant**

**Timothy Mould QC & Jacqueline Lean**

(instructed by The Environment Agency) for the **Defendant**

**David Hart QC & Thomas Beamont**

(instructed by CMS Cameron McKenna Nabarro Olswang LLP) for the **Interested Party**

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Hearing dates: 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup> August 2021

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**Approved Judgment**

## **MR JUSTICE FORDHAM:**

### **I. Introduction**

1. This case is about a 5½ year old boy – Mathew – his community in the Staffordshire former mining village of Silverdale, and the Walleys Quarry Landfill Site (“WQLS”) in close proximity to which they live. Mathew is the Claimant. WQLS is operated by the Interested Party (“the IP”), a company previously called Red Industries RM Ltd. It is operated pursuant to an environmental permit (“the Permit”) issued by the Defendant, the Environment Agency (“the EA”) on 9 June 2005, transferred to the IP on 3 November 2016 and most recently varied on 30 October 2020. In legal terms, the case is about whether the EA is discharging (a) its statutory duty under section 6 of the Human Rights Act 1998 (“the HRA”) to protect Mathew’s Article 2 right to life and his Article 8 right to respect for private and family life and (b) its public law duties at common law to act reasonably and take reasonable steps to acquaint itself with relevant information. In this judgment I will need to address key aspects of the context (§§6-35), the case-law (§§36-43) and the regulatory framework (§45). In the light of all that, I will describe Mathew’s claim (§§45-47) before turning to analyse some discrete topics (§§48-54) and finally discuss the two critical questions: whether positive operational duties are triggered (§§55-57) and the content of those positive operational obligations in this case (§§58-63).

#### *The hearing*

2. The hearing took place over the course of 3 days on 18-20 August 2021. It was an expedited rolled up hearing pursuant to directions which I made on 23 July 2021: see [2021] EWHC 2090 (Admin). The parties and their legal teams prepared for the hearing with industry and focus, and a high degree of cooperation. I express the Court’s gratitude to each team member in each team. The hearing was in-person in Court 1 at the Royal Courts of Justice. I agreed with the parties that it was appropriate, in the context of the Covid-19 pandemic, to adopt a degree of social distancing and devise a seating plan for the court room. All those with a speaking role were in the court room, together with some members of the legal teams and their clients, and there was space for some members of the public and press. On 16 August 2021 I made directions for a “hybrid hearing”, so that the proceedings in the courtroom could be viewed by observers remotely, using the platform CVP. The arrangements enabled additional persons – whether associated with the parties or members of the public or press – to observe from specified addresses in England and Wales (which my order designated as an extension of the Court for the purposes of the hearing). Steps were taken to publish in the cause list on the four days 17-20 August 2021 a notice describing the case and hearing dates, explaining that there was likely to be no additional capacity for observers in the court room, and giving my clerk’s email address for any person who wished to observe remotely. My order regarding the hybrid hearing repeated the relevant prohibitions on making any visual or audio record and was sent to all persons observing remotely. I am satisfied that open justice was secured and indeed promoted. Anonymity was consciously not sought in this case because Mathew’s mum had already spoken openly of her concerns to journalists and on TV.

### *The claim*

3. I will describe in more detail below (§§45-47) the essence of the claim advanced by Mr Ian Wise QC, who appeared (with Will Perry) on behalf of Mathew, as I saw it. I give the following outline at the outset. Mathew is a vulnerable child who is particularly badly affected by hydrogen sulphide (H<sub>2</sub>S) emissions from WQLS. Those emissions have been described by Mathew's consultant paediatrician Dr Sinha as a public health emergency. They have placed the local community in crisis and living in unbearable conditions. For Mathew, 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 Disease ("COPD") which would dramatically shorten his life expectancy (meaning earlier death in adulthood). In all the circumstances there is an ongoing failure by the EA to comply with its HRA and common law obligations. This Court should make declarations that the EA's failure to take measures necessary to protect Mathew is a violation of his Article 2 and/or his Article 8 rights. The Court is not – as was clarified in Mr Wise QC's oral submissions – being asked to make a mandatory order requiring any particular operational step or steps. However, the Court must not proceed on the basis that there is some 'safe level' of hydrogen sulphide emissions which the EA should be requiring the IP to achieve. What is necessary, sufficient and appropriate is for the Court to recognise current breach by the EA, with the appropriate consequence being that the EA can and must then act so as no longer to be in breach. That encapsulates the claim in outline. I say now that I am satisfied that all grounds are arguable, and I grant permission for judicial review.

### *The evidence*

4. The parties relied on the following written evidence. For Mathew there were the following: witness statements from his mum Rebecca Currie (dated 13.7.21 and 11.8.21); a witness statement from Dr Michael Salt, a local resident and nuclear physicist (13.7.21); a witness statement from Sian Rooney (10.8.21), a local resident and pharmacy technician; and five reports from Dr Ian Sinha, a consultant respiratory paediatrician (4.7.21, 22.7.21, 10.8.21 x 2 and 16.8.21). For the EA there were the following: a witness statement from Sarah Dennis, an installations technical leader who works at the EA in the team responsible for the environmental regulation of industrial and waste installation (6.8.21); a witness statement from David Browell, a senior adviser on landfill gas and technical lead on landfill gas issues at the EA (6.8.21); a witness statement from Christopher Lowe, senior air-quality adviser and team leader to the national odour team at the EA (6.8.21); and a witness statement (6.8.21) from Dr Nicol Coetzee a consultant in communicable disease control at Public Health England ("PHE": see §8 below) who confirms that his is a "duly authorised statement on behalf of PHE". For the IP there were the following: a witness statement from Paul Lealman, Group Operations Director at Red Industries which includes the IP (5.8.21); a report from Lesley Anne Heasman, managing director and principal environmental chemist at M J Carter Associates (5.8.21); and two reports from Professor Sir Colin Berry, a histopathologist and toxicologist (5.8.21 and 12.8.21). Some of this evidence required the permission of the Court, having been adduced subsequent to and not falling within the terms of directions in my Order of 16.7.21. I considered all the evidence, and submissions on the evidence, 'de bene esse': to be able to adopt an informed position. I made clear at the start of the hearing that if

any party wished to maintain that evidence should be excluded, they would need to say why in their oral submissions. In the event, only one invitation to exclude evidence was maintained. Mr Wise QC said Ms Heasman's report should be excluded on the basis that prior work by her and by M J Carter Associates gave rise to a conflict of interest undermining her ability to give a proper expert opinion and the Court's ability to be able to rely on it. I cannot accept that either of those vices applies. The Heasman report, which properly draws attention to and deals with these matters, does not fall foul of the principle in Morgan & Baker v Hinton Organics (Wessex) Ltd [2009] EWCA Civ 107 [2010] 1 Costs LR 1 at §§67 and 71. It was appropriate – and made practical sense in this expedited case – for the IP to adduce the Heasman evidence. I am satisfied that it is appropriate to consider all the evidence in the case, and the submissions about that evidence made in writing and orally. I give permission for all the evidence that still needs it, including the expert reports not covered by my previous directions.

### *Experts in the 'hot tub'*

5. My previous directions included permission for Mathew to adduce expert evidence from Dr Sinha and for the EA to adduce expert evidence in reply if it wished to do so. They did not include permission for expert evidence from the IP, who had chosen not to participate in these proceedings at that early stage. I left open a question raised by Mr Wise QC, about whether it might be appropriate to hear oral evidence from any expert. In preparing for the hearing and liaising as to the arrangements the parties had and took the opportunity to grapple with what should happen. They agreed that Dr Sinha (for Mathew) and Professor Berry (for the IP) would attend on day one and give concurrent expert evidence under CPR35PD §§11.1-11.4, a process colloquially known as “hot tubbing”. The parties also agreed an agenda of 10 questions for me to use during the hot tubbing. I was satisfied that the agreed arrangements were appropriate and necessary for the just disposal of the issues and made a direction pursuant to §11.1. The hot tubbing process gave me real assistance in understanding what the two experts were saying to me, and where the areas of difference in their expertise and in their opinions lay. The process, together with the submissions on all sides, assisted me in crystallising the topics that really matter and the key evidence in relation to those topics. A significant part of my discussion of the context will involve considering that evidence (see §§7, 19-31, 35), which evidence – alongside the other evidence in the case – will inform the ultimate analysis (§§55-63). The hot tubbing process also enables me to try to address ideas and opinions, explained to me by distinguished experts with whom I had a direct interactive discourse, in a particular way: using non-technical and down to earth language. That promotes accessibility. It also involves transparency, laying bare how I understood the essential messages in what I was told by the two experts.

## **II. The Context**

### *Mathew's respiratory difficulties*

6. The context for this case rightly starts with Mathew. He was born on 11 February 2016. He lived with his family until August 2019 at Galingale View, some 200 metres east of WQLS. Since then, he has lived with his mum and nan at Victoria Close, and then with mum at Victoria Street, each being some 400 metres northwest of WQLS. Mum's evidence describes how Mathew was born prematurely, how he was brought back home

on oxygen assistance and how, in the first three years of his life he was always poorly, constantly at the GPs, and had countless hospital admissions struggling to breathe. The consultant paediatrician who saw Mathew in late April 2021 – Dr Martin Samuels of the University Hospitals of North Midlands NHS Trust – recorded in a letter to Mathew’s GP (26.4.21) the following “diagnoses” (the numbering is mine): “[i] Previous chronic lung disease of prematurity (26 weeks), on oxygen until 2 years. [ii] Recurrent wheezy bronchitis (asthma). [iii] Learning difficulties and right hemiplegia. [iv] Epilepsy. [v] Aggravation by environmental toxic gases”. The letter from Dr Samuels continued: “I reviewed Mathew 5 years with mum in clinic today. He had a very good long period with his chest remaining healthy in lockdown, but in the last couple of months his chest has been particularly bad from the sulphurous fumes emanating from a local landfill site. He is particularly prone to a cough through the night and first thing in [the] morning which leads to vomiting. He has also complained of an itchy nose and has had regular nosebleeds... Mathew seems to be clearly suffering from the environmental fumes he is subjected to on a regular basis given [that] they live so close to the landfill...” Rebecca Currie explained to me in her first witness statement: how awful and how scared she felt when Dr Samuels concluded that Mathew’s symptoms were related to pollution from WQLS; and the mix of anger, despair and guilt that she feels.

7. Dr Sinha is the consultant respiratory paediatrician who took over when Dr Samuels was unavailable. Dr Sinha’s first report (4.7.21) describes Mathew’s medical history and current respiratory problems, as follows. Mathew was born preterm and developed lung complications of prematurity, namely bronchopulmonary dysplasia (“BPD”), a condition with lifelong consequences requiring management strategies revolving around promoting excellent lung growth to compensate for the early problems of prematurity. Mathew was an extremely preterm infant born at 26 weeks gestational age by emergency Caesarean section. Babies born preterm have fragile lungs which do not work effectively because of profound immaturity of structure and function. Mathew required invasive ventilation on a life-support machine for a few days, then non-invasive support from a CPAP (continuous positive airway pressure) machine, which was stepped down to low flow nasal cannula oxygen within two or three weeks of birth, signifying excellent initial progress. Having been discharged on low volume oxygen he then required this until he was 19 months of age. Within the first three years of life Mathew suffered frequent episodes of severe acute respiratory problems including wheeze, pneumonia and bronchiolitis, necessitating urgent and unscheduled medical care from his GP and the hospital. Mathew’s respiratory health to date has been very poor: far worse than it should have been. This is evidenced by his persistent symptoms, his recurrent acute problems and his longer-than-expected need for supplementary oxygen. Mathew has developed a persistent productive cough, especially at night and in the morning, which can be so severe as to make him vomit. He wheezes and gets short of breath on exertion. He has a diagnosis of asthma. He requires long-term prophylactic antibiotics to prevent chest infections. The impact on his quality-of-life is profound: he misses school frequently and playing outside is restricted. He has poor sleep which affects his behaviour. His cough keeps him awake at night-time and makes him vomit in the morning. The evidence of Dr Sinha which I have summarised in this paragraph was not disputed. I accept it.

### *Public Health England*

8. PHE is an important state agency with what, in my judgment, is a prominent role in the context of the present case. As has been explained (see §4 above) the EA relies on a witness statement (6.8.21) from Dr Coetzee of PHE, as a “duly authorised statement” on PHE’s behalf. Key documents relating to hydrogen sulphide are put forward by Dr Coetzee (see §9 below). Key guideline levels have been identified and adopted by PHE (see especially §12(2), (4)-(6) below). Key assessment work and advice has been undertaken, and published, by PHE. That includes in particular the Fourth PHE Risk Assessment, an important document (see §32 below). Dr Coetzee explained the following in his witness statement (§2): PHE is an executive agency of the Department of Health and Social Care; it was established in April 2013 to bring together public health specialists from more than 70 organisations into a single public health service; and it provides government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific expertise and support. The EA’s pleaded defence describes PHE as “the responsible national body for public health and for protection from public health hazards”.

### *Hydrogen sulphide*

9. Many of the documents placed before the Court – including documents identified and hyperlinked in the main body of Dr Coetzee’s witness statement – address the nature and implications of emissions and inhalation of hydrogen sulphide (sometimes spelled “sulfide”). The documents included the following. (1) The World Health Organisation (“WHO”) Air Quality Guidelines 2<sup>nd</sup> edition (2000) chapter 6.6 entitled “Hydrogen sulfide” (“WHO 2000”). (2) The WHO Concise International Chemical Assessment Document 53 (2003) entitled “Hydrogen sulfide: human health aspects” (“WHO 2003”). (3) The US Environmental Protection Agency (“US EPA”) webpage entitled “Reference Concentration for hydrogen sulphide for Inhalation Exposure” (last updated 28.7.03) with its accompanying US EPA National Centre for Environmental Assessment document entitled “Integrated Risk Information System: Chemical Assessment Summary: Hydrogen sulphide 7783-06-4” (“US EPA 2003”). (4) The US Department of Health and Human Services Agency for Toxic Substances and Disease Register (“US ATSDR”) document entitled “Toxicological Profile for Hydrogen Sulfide and Carbonyl Sulfide” (November 2016) (“US ATSDR 2016”). (5) PHE’s document entitled “Hydrogen Sulphide Toxicological Overview” (November 2016) (“PHE 2016”).
10. Some key points which can be derived from the documents, and especially those which I have just listed, are as follows. (1) General. Hydrogen sulphide is a gas, the major route of human exposure to which is by inhalation. It is rapidly absorbed by the lungs into the bloodstream, widely distributed throughout the body, and metabolised producing sulphate which is rapidly excreted in urine. (See PHE 2016 p.1.) (2) Acute Exposure to High Concentrations. Acute inhalation exposure to high concentrations of hydrogen sulphide may result in collapse, respiratory paralysis and death within minutes (PHE 2016 p.1). An example of this was the accidental release from an industrial facility in Poza Rica in Mexico which led to 320 people being hospitalised and 22 deaths (WHO 2000 p.5). (3) Acute Exposure to Low Concentrations. Acute exposure to low

concentrations of hydrogen sulphide may irritate the eyes and respiratory tract, resulting in sore throat, cough and dyspnoea (PHE 2016 p.1). (4) Chronic Exposure: Health Effects. Limited data suggests that the effects from repeated exposure are similar to those for acute exposure, with respiratory, neurological and ocular effects at high concentrations (PHE 2016 p.1). Data on chronic exposure to hydrogen sulphide in humans are largely from ‘polluted communities’ and from occupational exposure: the reported features include respiratory, ocular and neurologic effects (PHE 2016 p.2). (5) Ambient levels. Hydrogen sulphide is present in the air from natural sources, with a natural sulphur cycle to whom bacteria and fungi make contributions (PHE 2016 p.4). The average ambient (natural background) air hydrogen sulphide level has been estimated at 0.2PPB (0.3 µg/m<sup>3</sup>) (WHO 2000 p.1). (6) Smell. Hydrogen sulphide has the characteristic smell of rotten eggs (PHE 2016 p.4). The odour threshold for hydrogen sulphide is around 8PPB (11 µg/m<sup>3</sup>) (PHE 2016 p.5). (7) Seasonal durability. The lifetime of hydrogen sulphide in air has been estimated to range from one day in the summer to 42 days during the winter months (PHE p.4; US EPA 2003 p.4).

11. As has just been seen, the presence of hydrogen sulphide in the air is expressed in one or both of two interchangeable ways. One way is milligrams (mg) or micrograms (µg) per cubic metre (ie. mg/m<sup>3</sup> or µg/m<sup>3</sup>), remembering that one milligram is 1,000 µg. The other way is parts per million (PPM) or parts per billion (PPB), remembering that one billion is 1,000 million. There is, as I came to understand, a straightforward linear interrelationship between these two measures. Mr Wise QC’s skeleton argument gave me these conversion factors: 1PPB is 1.4 µg/m<sup>3</sup> (so that 10PPB is 14.0 µg/m<sup>3</sup>). Turning it around: 1 µg/m<sup>3</sup> is 0.71PPB (so that 10 µg/m<sup>3</sup> is 7.1PPB). In other words, you multiply or divide by 1.4 to get from one measure to the other. That is what I have done throughout this judgment, when converting one measure to the other.

#### *Guideline Levels*

12. Many of the materials before the Court referred to guideline levels of hydrogen sulphide in the air. The following six levels, identified by various agencies or organisations, achieved particular prominence in the materials relied on by the EA. Four of the Guideline Levels feature in Table 2 within a PHE “Health Risk Assessment of Air Quality Monitoring results from March to June 2021 at [WQLS]” (published on 5.8.21) (“the Fourth PHE Risk Assessment”), as “health-based guidance values” which PHE “used for the assessment” (Coetzee witness statement §6). The labels used here are mine:

- (1) The EA short-term EAL: 107PPB (1 hour). The EA describes a short-term EAL (Environmental Assessment Level), which it uses when assessing the impact of hydrogen sulphide on air quality, the assessment being over the course of an hour. The level is 107PPB (150 µg/m<sup>3</sup>). This level was described in the Browell witness statement (§27). It is also described as a benchmark for use in risk screening of a hazard in the EA’s Guidance on the Management of Landfill Gas (LFTGN03) (“the EA Landfill Gas Guidance”: see §44(2) below) (§2.3.3).
- (2) The WHO 24-hour Guideline: 107PPB (24 hours). The WHO describes a “Guideline Value”, as a 24-hour average, of 107PPB (150 µg/m<sup>3</sup>). This is derived

from a lowest adverse effect level (“LAEL”), based on eye irritation, multiplied by 100. That multiple is described as a “relatively high protection (safety) factor”. (WHO 2000 p.6.) It is a level described in Table 2 of the Fourth PHE Risk Assessment, as one of PHE’s health-based guidance values. As PHE there explains (p.5): “Exposure to concentrations of hydrogen sulphide above the WHO 24-hour Guideline Value does not necessarily mean eye irritation or other health effects will occur, but it reduces the margin of safety that is considered desirable to protect health”. This level is described in the Coetzee witness statement (§11) as a “value... considered suitable for consideration of short periods of acute exposure because it protects against eye irritation”.

- (3) The EA long-term EAL: 100PPB (year). The EA’s long-term EAL when assessing the impact of hydrogen sulphide on air quality uses a level, assessed over the course of a year, of 100PPB (140 µg/m<sup>3</sup>). This is another level described in the Browell witness statement (§27) and another risk-screening benchmark in the EA Landfill Gas Guidance (§2.3.3).
- (4) The WHO half-hour Guideline: 5PPB (30-minute). The WHO Guideline as a 30-minute average is 5PPB (7 µg/m<sup>3</sup>). That is a guideline identifying a level which “hydrogen sulphide concentration should not be allowed to exceed” in the context of “odour annoyance among the exposed population” in order to avoid “substantial complaints”. (WHO 2000 p.6.) This is another a level described in Table 2 of the Fourth PHE Risk Assessment, as one of the “health-based guidance values” used by PHE for the assessment. It is described as the ‘WHO odour annoyance level’, as to which PHE says this: “Odours can become a nuisance and start to affect people, causing temporary symptoms including headache, nausea, dizziness, watery eyes, stuffy nose, irritated throat, cough or wheeze particularly if a person has a pre-existing respiratory condition, sleep problems and stress. Individuals will react differently to the odour of hydrogen sulphide. Some people may be more sensitive to hydrogen sulphide odour than others. As the hydrogen sulphide concentration increases more people would be expected to have symptoms, particularly when the concentration exceeds the WHO [half-hour Guideline] level... on a regular basis” (Fourth PHE Risk Assessment p.4; Coetzee witness statement §§13-14).
- (5) The US ATSDR Intermediate Value: 20PPB (days 1-364). This value of 20PPB (30 µg/m<sup>3</sup>) (US ATSDR 2016 p.209) is an MRL (“minimal risk level”): an estimate of daily human exposure to a substance that is likely to be without an appreciable risk of adverse effects over a specified duration of exposure (pp.20, 251). An MRL is a “substance specific estimate intended to serve as a screening level used by US ATSDR health assessors and other responders to identify contaminants and potential health effects that may be of concern at hazardous waste sites” (p.209). An “intermediate” MRL corresponds to the “specified duration of exposure” which is “between 15-364 days” (p.27). This level is described in the Coetzee witness statement (§11) as “the suitable value to assess the exposure to hydrogen sulphide throughout 2021”. It is another level described in Table 2 within the Fourth PHE

Risk Assessment”, as one of the “health-based guidance values used for the assessment”, which applies for periods “up to one year” (Fourth PHE Risk Assessment p.6).

- (6) The US EPA Reference Concentration: 1PPB (365 days or more). The US EPA reference concentration (“RfC”) is 1PPB ( $2 \mu\text{g}/\text{m}^3$ ), derived as a chronic inhalation RfC for chronic exposure to hydrogen sulphide (US ATSDR p.209). This is referable to durations longer than the “intermediate” 15-364 days (see §12(5) above), as a “chronic” value (p.27). An RfC is “an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer health effects during a lifetime” (p.253). This level had been evaluated in 2003, as described in US EPA 2003. It is described in the Coetzee witness statement (§11) as having been “selected by PHE for use to assess long-term exposure to hydrogen sulphide”. It is a level described in Table 2 within the Fourth PHE Risk Assessment”, as one of the health-based guidance values used for the assessment and is described by PHE as constituting “acceptable levels” for long-term exposure (Coetzee witness statement §§16, 18; Fourth PHE Risk Assessment p.9).
13. Other hydrogen sulphide guideline levels were to be found referred to in the documents before the Court. To those at §12(1)-(6) above, I add these: (7) Reference is made to the US EPA Acute Exposure Guideline Levels (“AEGs”), set out in Table 3 in the Fourth PHE Risk Assessment. AEGs involve three levels. Level 3 is the highest and is the level of the chemical in air at or above which the general population could experience life-threatening health effects or death. The three levels are each referable to each of five timeframes (the shortest being 10 minutes, the longest 8 hours). The highest AEG (level 3: timeframe 10 minutes) is 76PPM ( $105.9 \text{ mg}/\text{m}^3$ ) (that is 76,000PPB and  $105,900 \mu\text{g}/\text{m}^3$ ). The lowest AEG (level 1: timeframe 8 hours) is 330PPB ( $460 \mu\text{g}/\text{m}^3$ ). (8) Reference is made (in US ATSDR p.209) to the MRL for “acute” durations (days 1-14) of 70PPB ( $98 \mu\text{g}/\text{m}^3$ ). (9) Reference is made (in PHE 2016 p.4) to Health and Safety Executive (HSE) workplace exposure limits (“WELs”) enforced to protect workers from the harmful effects of hydrogen sulphide: a long-term WEL of 5PPM (5,000PPB) ( $0.007 \mu\text{g}/\text{m}^3$ ); and a short-term WEL of 10PPM (10,000PPB) ( $0.014 \mu\text{g}/\text{m}^3$ ). (10) The versions of Table 2 in the three PHE risk assessments which preceded the Fourth PHE Risk Assessment had referred to the US OEHHA Chronic REL (for assessment of lifetime exposure) of 7PPB ( $10 \mu\text{g}/\text{m}^3$ ). OEHHA is the California Office of Environmental Health Hazard Assessment. ‘REL’ here means reference exposure level: the concentration level at or below which no adverse health effects are anticipated.

#### *The information gap*

14. One point emerging clearly from the documents is 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. The WHO has said, on this topic, that “information about longer term exposures to hydrogen sulphide is scanty”, that “the need for epidemiological studies on possible effects of long-term, low-

level hydrogen sulphide exposure is obvious”, and that “a satisfactory biological exposure indicator is also needed” (WHO 2000 pp.4, 6). PHE has observed that studies of ‘polluted communities’ and occupational exposure have “shown associations between increased levels of hydrogen sulphide in air and respiratory symptoms”, but “interpretation of the studies is complicated by numerous confounders” (PHE 2016 p.8). US ATSDR 2016 notes: the dearth of information assessing the exposure of children and adolescents to hydrogen sulphide (p.185); that “we do not know whether children are more sensitive to hydrogen sulphide than adults” (p.4); and that “there is very little information to judge the impact of exposure to hydrogen sulphide in infants and children” (p.115).

#### *Hydrogen sulphide emissions in Silverdale in 2021*

15. A strong theme in the evidence before the Court relates to the position regarding emissions of hydrogen sulphide from WQLS in 2021. Rebecca Currie’s witness statement (13.7.21) tells me that the Silverdale community had long been concerned about the possibility that WQLS might have an impact on local air quality and the health of local residents, and that the problem with the smell had been recognised for years. She then explains that “recently these fears have become more serious as residents in the village and surrounding areas experienced a worsening disgusting foul smell coming from the quarry. The smell can be really overwhelming and unpleasant and is best described as a stomach wrenching smell like rotten eggs, only worse. I now know that this smell is likely to be caused by hydrogen sulphide. My instinct when this smell started was that it was probably not good to breathe in this air”. She says that it was “Christmas 2020” when she was “really aware of the smell from the quarry” and that in January 2021 “the smell in the house became even worse and Mathew became more poorly again [and] started to cough in a different way... with lots of mucus, and sometimes he was sick”. As has been seen (see §6 above), Dr Samuels wrote in April 2021 that: “in the last couple of months [Mathew’s] chest has been particularly bad from the sulphurous fumes emanating from [the] local landfill site”. Michael Salt’s witness statement (13.7.21) explains that he noticed the foul odour from the site towards the end of 2019, was disturbed by it and began making enquiries and obtaining information which he assessed. He goes on to explain how, towards the end of 2020, there was a marked increase in the number of complaints. The witness statement of Sian Rooney (10.8.21) explains that she first noticed the smell from WQLS in February 2021 and things got very bad very quickly from then on. Other evidence describes how the landfill permit (§44(3) below) had been varied on 30 October 2020 to increase the capacity of annual waste which could be accepted at WQLS from 250,000 tonnes to 400,000 tonnes. The parties’ Agreed Chronology describes a significant increase in January 2021 in odour reports from individuals within 15 km of WQLS. Mr Wise QC points out that from January 2021 to August 2021 complaints from within 15 km of WQLS exceeded complaints from all other sites nationwide put together. He also drew my attention to the background of multiple breaches of the licence conditions recorded, and an ongoing investigation described, by the EA. The EA installed two MMFs (see §32 below) on 27 and 28 February 2021. On 13 March 2021 the IP voluntarily suspended acceptance of waste until 10 May 2021. On 23 March 2021 the EA’s officers detected odour beyond the site boundary which they assessed as likely to cause pollution in the absence of appropriate

measures in breach of the odour condition in the permit. As a consequence, an enforcement notice was served by the EA on the IP on 26 March 2021, requiring the IP to take specified steps by 30 April 2021. Two further MMFs were installed by the EA and began to operate in April 2021. On 13 August 2021 Newcastle-under-Lyme Borough Council served a nuisance abatement notice on the IP, on the basis that the smell emanating from the premises constitutes a statutory smell nuisance for the purpose of section 79(1)(d) of the Environmental Protection Act 1990, for which the IP is responsible, giving the IP five months to fulfil the requirements of the abatement notice and abate the nuisance.

*Evidence about those in the local community*

16. Mr Wise QC submits that the Court has good evidence that the hydrogen sulphide emissions from WQLS have been “unbearable” for the local community at all times throughout 2021, and that this is a community in “crisis”. He accepts that the same position is not evidenced for the years prior to 2021, and specifically for those years assessed by PHE as having involved average hydrogen sulphide emissions below the US EPA Reference Concentration 1PPB (see §32(1) below). On 25 July 2021 Sian Rooney compiled what she called a “Community Health Survey report”, to explore the impact of gas from WQLS on the physical and mental health and well-being of those living and/or working in the surrounding area. The collated comments span some 70 pages of the “survey”. I bear in mind the shortcomings of a survey of this kind. Mr Wise QC took me through the statements made in response to that survey. He also showed me the 20 pages of similar social media messages covering the period from February 2021 to August 2021. He submitted that this was relevant evidence of the “lived experience” of members of the local community. I accept that submission. I will need to analyse its legal relevance later (see §49 below).
17. The following are typical statements made in response to the survey, relating to children. A parent describes a daughter who “can smell the gases at school and comes home with a headache every day”. Another parent describes a child who “feels a lot better when we are out of the area visiting family 25 minutes’ drive away”. A parent describes a daughter who had “a lovely week away at the coast” but has returned back to “eyes red again, crying saying head hurting” and who “vomited while trying to breathe in the non-existent fresh air in our garden”. Another parent describes “many more instances of sore throat, sneezing, itching etc”. A school pupil explains that “the landfill site makes you feel sick. I can smell it at home, in the garden, when travelling around the local area and when sitting in class at school”. A parent says: “my daughter worries about going to bed at night because she knows it is going to smell. She wakes regularly throughout the night. She has headaches and sore throats daily and has also had several nosebleeds”. A school pupil describes “having to have the inhaler a lot more, often having to have air purifiers on all the time, having no sleep, coughing all night long and having to smell it all day even at home and school”. A parent says: “my toddler struggles to sleep through the night and she cries because she wants to be in her bed. It’s worse when the smell is worse. She coughs daily and is constantly saying her nose hurts. She has had nosebleeds. She’s also been complaining of stomach pain and after some research I believe this is caused by the hydrogen sulphide release from the landfill”. A parent says “my daughter has been so

poorly over the weekend and had nosebleeds; this has never happened before”. A pupil says: “I have been physically sick because of the smell in the house”. A parent says: “my toddler has breathing difficulties” which “require an inhaler” and which “I believe were caused, or significantly worsened, by the quarry”. Another parent describes the smell “at times as being truly sickening”. A parent describes their 8 year old “sitting crying in their room saying they can’t take it anymore”. Another parent describes feeling “trapped in our home” unable to open windows due to the smell, with two air purifiers running, all windows closed and having had to “cellotape the front and back door and still the smell gets in”; it being draining; and being concerned about the impact it is having on the children. A parent describes their 17-month-old waking up crying whenever the smell is really bad. Another parent describes their 6-year-old “talking about the horrible smell that is making her poorly, makes her sad and want to move house”.

18. The following are typical statements from and about adults. One describes the smell as coming and going without warning and being afraid to leave windows open in case the house fills with the smell. Others describe dull headaches, a decline in well-being, chronic pain and loss of sleep having a massive impact, daily asthma attacks, headaches, sore throats and itchy eyes on a daily basis; the feeling of being mentally drained and worried about children’s health; the stress from the gas from the landfill affecting health and well-being; being prisoners in their own homes; experiencing headaches and shortness of breath; nosebleeds; sitting or lying coughing with a funny taste in the mouth and then the sore itchy eyes that continuously stream; stinging eyes, sore throats and headaches; anger and stress anxiety from not knowing how harmful the gases are; the feeling of being poisoned; the unbearable smell; the feeling of being unable to get fresh air into the home; the continual experience over the past 10 months of constant pungent odour even inside the home; the shame in inviting people to your home; the feeling of being forced to move out of the area; the feeling of being constantly tired and helpless; the foul stench as being relentless and inhumane; the feeling that life is being ruined; the feeling of being absolutely sick of the smell. One adult writes of their concern for their mental health “crying as I write, asking for help”. Another describes feeling abandoned to suffering environmental disaster. Another describes the vile smell from the quarry meaning that they are now looking to move from their home of 34 years.

*Hydrogen sulphide and human health: four ‘Harms’*

19. This was one of the topics addressed through the ‘hot tubbing’. Dr Sinha identified for me four different types of harm to human health which are relevant to this case and which he says are attributable to exposure to hydrogen sulphide emissions in the air. The labels are mine. Harm (1): immune system impairment. This was described by Dr Sinha as the inhalation of hydrogen sulphide changing the balance in the body and thereby impairing the immune system. Harm (2): inflammation. This was described by Dr Sinha as the inhalation of hydrogen sulphide giving rise to a reaction in the lungs, whereby the body response to what it perceives as a foreign substance. Harm (3): irritation. This was described by Dr Sinha as the inhalation of hydrogen sulphide giving rise, for example, a reddening of the eyes. Harm (4): poisoning. This was described by Dr Sinha as the inhalation of hydrogen sulphide giving rise to cellular dysfunction through acute toxicity.

20. Dr Sinha described to me how the knock-on effects of Harms (1) and (2) give rise to further harm to human health: through susceptibility to harm from infections (for example pneumonia); through impairment of airways; and through development of COPD. Dr Sinha explained that, from his perspective, and viewed in terms of the impact on Mathew, what this case is really about is Harms (1) and (2) and their knock-on effects, in the context of long-term (chronic) harm to health both (a) from spikes in emissions and (b) from ‘low-level hydrogen sulphide concentrations’. Professor Berry told me that he did not agree that Harm (3) – albeit an irritant causing discomfort – would properly be characterised as a “harm to human health”. A central area of dispute was Professor Berry’s rejection of Harm (1). He explained to me why he did not recognise Harm (1). That was because he could not think of a mechanism for that type of harm and he had seen no evidence supporting its existence. Dr Sinha maintained that Harm (1) is well-understood and well-documented.

*The pathway from BPD to COPD*

21. Dr Sinha and Professor Berry were in agreement: (i) that Mathew has BPD as a result of his extremely premature birth; and (ii) that Mathew is at risk of developing COPD. Dr Sinha explained the pathway (or flowchart) for a child starting with BPD and developing COPD. He explained that developing COPD would mean a significant reduced life expectancy: an earlier death in adulthood. As Dr Sinha explained it to me: Mathew’s BPD means that he is now on the pathway to COPD; that he will develop COPD unless he recovers; that Mathew’s window of opportunity for recovery, so as to avoid developing COPD, is the next 3 to 5 years; and that in order to recover and avoid developing COPD what Mathew needs, above all, is clean air. He also needs good nutrition, which Dr Sinha told me he has no reason to doubt that Mathew receives at home. Professor Berry told me that he deferred to the clinical opinion of Dr Sinha and that he had not himself seen Mathew’s medical records. The central point of disagreement between him and Dr Sinha on this part of the case is that Professor Berry’s opinion is that any development of COPD – and any non-recovery in that respect from the BPD – would be squarely the consequence of Mathew’s premature birth, and that no exposure to hydrogen sulphide could be a factor unless it were above the ‘good reliable safety level’ which Professor Berry identified for me, to which I now turn.

*Professor Berry’s ‘good reliable safety level’ (30,000PPB/100,000PPB)*

22. On the issue of ‘safety levels’ for hydrogen sulphide Dr Sinha and Professor Berry have very different expert opinions. They are in effect, as I saw it, in polar opposite camps. Professor Berry explained to me that he felt able to give me what he described as a “good reliable safety level” in relation to potential adverse effects to human health from hydrogen sulphide. Its derivation was, as he explained, described in detail in his first report (5.8.21) under the heading “toxicity in man”. The text there refers in particular to Harm (4) poisoning (see §19 above): cellular dysfunction through acute toxicity. It references studies, especially: Khan et al. (1990); Bhambhani & Singh (1991); Dorman et al (2002). In this context, Professor Berry also discussed the population observation studies. These are epidemiological studies (epidemiology refers to the investigation of factors that determine the frequency and distribution of disease or other health-related conditions within a defined human population during a specified period). Professor Berry

gave me his interpretation of those studies. He emphasised New Zealand studies (Bates et al) over a 40-year period in relation to a population, including children, in a geothermal area (Rotorua). He said these had failed to show specific significant adverse effects on human health from hydrogen sulphide exposure. He explained to me that the epidemiological studies in relation to children included a “good study” (Yu et al) which he accepted could be interpreted as identifying an “association” between hydrogen sulphide exposure and respiratory problems in children. But Professor Berry explained that this was not the same as demonstrating a causal link: association does not necessarily reflect cause; and causality requires a robust further enquiry with a suitable method (or methodology). Professor Berry’s ‘good reliable safety level’ was, he told me, based in particular on studies involving rat experiments and his observations relating to human studies. He referred to the use of a “NOEL” (no observed effect level) and a “NOAEL” (no observed adverse effect level). The ‘good reliable safety level’ was a dual level: there was a lower level of 30PPM or 30,000PPB ( $42,000 \mu\text{g}/\text{m}^3$ ) and a higher level of 100PPM or 100,000PPB ( $140,000 \mu\text{g}/\text{m}^3$ ). As I understood it, below the lower level there could be no “effect” and below the higher level there could be no “adverse effect”. So, Professor Berry’s opinion is that below those levels there can be no harm to human health from hydrogen sulphide exposure, for whatever duration, for any human. Professor Berry explained that position as follows. Hydrogen sulphide needs to be promptly dealt with by the body. It does not accumulate within the human body. It is promptly dealt with, by metabolism. There is a level of hydrogen sulphide inhalation which is safe, because the human body will always successfully be able to metabolise it. That would be the case for a child, for a vulnerable adult, for a vulnerable child. It would be the case for a child like Mathew, with BPD and facing the onset of COPD. What it means is that, if there were inhalation of hydrogen sulphide at this safe level – every minute of every hour of every day – every human body would simply be able to metabolise it. It means every human starts every day afresh – as good as new, as right as rain. There can be no harm, and no risk, so far as hydrogen sulphide and human health is concerned, below the ‘good reliable safety level’. Professor Berry said this was the case for exposure below a level of 100,000PPB ( $140,000 \mu\text{g}/\text{m}^3$ ). He said it was certainly the case for exposure below a level of 30,000PPB ( $42,000 \mu\text{g}/\text{m}^3$ ). So, in Professor Berry’s opinion, Mathew could be, and could continue to be, being exposed to 100,000PPB ( $140,000 \mu\text{g}/\text{m}^3$ ) – and certainly 30,000PPB ( $42,000 \mu\text{g}/\text{m}^3$ ) – every minute of every hour of every day and there could be no possible harm to his health and no possible risk of harm to his health. On that basis, the guideline levels and values identified (see §12 above), including those which PHE has chosen, are massively overprotective and hugely precautionary, compared to real-life, real-world risk and harm. The guideline levels being used are very significantly detached from an evidence-based NOEL and NOAEL. On that basis, Mathew’s health conditions cannot be linked to hydrogen sulphide exposure, given the levels observed. All of this is Professor Berry’s, sincerely held, expert opinion.

*Dr Sinha’s ‘zero-tolerance’ (0.2PPB)*

23. Dr Sinha also addressed the question of ‘safety levels’. His opinion on that topic is that there is no level which has been identified which can be regarded as being a safe level, at least for children. Dr Sinha was prepared to accept ambient environmental levels of hydrogen sulphide: I have explained that the average ambient (natural background) air

hydrogen sulphide level has been estimated at 0.2PPB (0.3 µg/m<sup>3</sup>) (see §10(5) above). Dr Sinha accepted that this would be a level of hydrogen sulphide inhalation to which Professor Berry's description of a 'safe level' would apply: the human body would always successfully be able to metabolise it; including a child and a vulnerable child; including a child like Mathew, with BPD and facing the onset of COPD. Dr Sinha accepted that, if there were inhalation of hydrogen sulphide at this ambient level – every minute of every hour of every day – every human body would simply be able to metabolise it in the way that Professor Berry described: starting every day as good as new, as right as rain; with no harm and no risk. Dr Sinha told me that above the ambient level, he would not be able to give a level – a “number out of the air” – for harm to the health of children. He told me that he “can see why regulators need a level to aim to”. He also recognised that guideline levels can be “precautionary” levels using uncertainty factors which address the risks and uncertainties “to a degree”. However, Dr Sinha regards the guideline levels as imprecise and based on flawed data. He believes that the experience regarding hydrogen sulphide is akin to the journey on which he told me that scientists and regulators went in relation to lead (Pb), resulting in the recognition that there is no safe level. In order to protect children what would be needed would be zero-tolerance, which accepts no increased emissions of hydrogen sulphide above ambient levels, in the light of what is known and what is unknown. All of this is Dr Sinha's, sincerely held, expert opinion.

*Dr Sinha's assessment in relation to Mathew*

24. Dr Sinha described his opinion in relation to Mathew, based on the medical records and medical history and his knowledge and experience as a respiratory paediatrician. He described Mathew as “already developing” COPD and as “not recovering” as regards the pathway between BPD and COPD (see §21 above). Dr Sinha described the sharp contrast between two medical pictures. The first was the medical picture of Mathew after his premature birth, his BPD, his initial stay in hospital including in intensive care, which medical picture in Dr Sinha's experience – in the scheme of things – was “not that bad”. The second was the medical picture in the years since Mathew was first discharged from hospital, beginning with the long-term (19 month) need for low-flow oxygen supplement, the frequent hospital admissions, and culmination in Mathew's health conditions now in 2021, including the persistent wet cough, which current medical picture in Dr Sinha's experience – in the scheme of things – would make Mathew the “worst case in the clinic”. Dr Sinha emphasised another sharp contrast. This was the contrast between Mathew's breathing problems when at Silverdale and the way in which they subside when Mathew is on holiday away from Silverdale. Dr Sinha explained his appreciation of the current levels of hydrogen sulphide emissions and monitoring at Silverdale. Dr Sinha told me that he agrees with the assessment of Dr Samuels – himself a renowned consultant paediatrician – that Mathew's health condition is aggravated by environmental toxic gases (see §6 above). Dr Sinha told me that in his opinion the preterm birth and BPD do not explain Mathew's current health condition. Dr Sinha's opinion – expressed in his first report (4.7.21) and maintained – includes the following: that environmental exposure to hydrogen sulphide at the current levels is significantly impairing Mathew's current health and quality of life; that continued exposure will have a lifelong detrimental effect on his future respiratory health; and that this will subsequently reduce his life expectancy.

Importantly, as I saw it, this assessment by Dr Sinha was not premised on his zero-tolerance opinion. Rather, it was focused on current levels of exposure of hydrogen sulphide from WQLS.

25. As part of his analysis Dr Sinha considered data and literature. Dr Sinha maintained the position adopted in his first report, describing a pattern which he had derived from PHE data regarding Silverdale council ward, involving higher than average rates of respiratory illness, higher than expected rates of death from respiratory illness, diagnosis of lung cancer and hospitalisation with COPD. Dr Sinha explained in writing and orally the evidenced link which he sees in the observational research (epidemiological studies) relating to children, supporting the conclusion that long-term (chronic) exposure to hydrogen sulphide appears to increase the risk of respiratory problems including COPD and death from respiratory illness, at least in children. He told me his interpretation of the studies involved a pragmatic (rather than a purist) approach to the literature, by reference to the results and quality of the studies, in the context of plausibility, common sense and implications/ramifications, accepting the methodological shortcomings and information gap (see §14 above), and accepting that proven association is not the same as proven causality. Dr Sinha emphasised studies from Rome (Mataloni et al 2016), China (Yu et al 2018) and Nebraska (Campagna et al 2004), all of which were papers about children which he interprets as evidencing a link between hydrogen sulphide exposure and respiratory problems. That link was plausible given the respiratory position of children: their faster breathing lower body weight and developing immune systems. Dr Sinha emphasised that he was aware of no papers pointing the other way. He regarded these studies as indicating the knock-on effects of the culmination of Harms (1) and (2) (see §§19-20 above) from chronic exposure to low concentration hydrogen sulphide.

#### *Themes from Dr Sinha and Professor Berry*

26. As I saw it, a number of key themes came out of the evidence of Dr Sinha and Professor Berry. One is that Professor Berry and Dr Sinha have different, albeit overlapping, expertise. Professor Berry is an experienced and expert toxicologist and pathologist. Dr Sinha is an experienced and expert respiratory paediatrician. Another is that they have different approaches to the information gap (see §14 above). Professor Berry finds Dr Sinha's suggested harm and risk to human health as being undemonstrated and unsound. Dr Sinha finds Professor Berry's suggested safety from harm and risk to human health as being undemonstrated and unsound. Another, linked to that, is about guideline levels (see §§12-13 above). To Professor Berry, the guideline levels are over-precautionary and overprotective in terms of the real risk of harm to human health including children. To Dr Sinha, the guideline levels are insufficiently precautionary and under-protective in terms of the real risk of harm to human health at least in the case of children. To Professor Berry the suggestion of the risk of harm to human health above the guideline levels is speculative. To Dr Sinha the suggestion of the absence of risk of harm to human health below them is speculative. Then there are the studies. Dr Sinha sees relevant, concrete value in the observational epidemiological studies regarding children, notwithstanding their methodological shortcomings. Professor Berry sees the idea of relevant, concrete value in the observational epidemiological studies regarding children as fatally undermined by their methodological shortcomings. Then there are the four harms (see

§19 above). Dr Sinha sees a type of harm to human health (Harm (1)) as being well established and well documented. Professor Berry does not recognise it or see evidence of it. In the end, there is Mathew. Professor Berry sees a 5-year-old boy whose health condition cannot be being adversely impacted – or at risk of being adversely impacted – by the levels of emissions from WQLS seen in the monitoring, because these are far below the ‘good reliable safety level’ (see §22 above), and so the health condition is and must be the consequence of the BPD caused by his premature birth. Dr Sinha sees a 5-year-old boy whose health condition does not make sense from the BPD and position regarding premature birth, but which does make sense in light of the monitored emissions constituting the current levels of hydrogen sulphide from WQLS.

*Discussion of Professor Berry’s safety levels and Dr Sinha’s zero-tolerance*

27. For the purposes of the legal analysis in this case, I am not able to approach questions about exposure to hydrogen sulphide by adopting Professor Berry’s ‘good reliable safety level’ (see §22 above), nor Dr Sinha’s zero-tolerance (see §23 above). I cannot address the legal issues by proceeding on the basis of Professor Berry’s safety level position: that there can be no harm to human health or risk of harm to human health, including in vulnerable children, where levels of inhalation of hydrogen sulphide are below 100,000PPB (140,000  $\mu\text{g}/\text{m}^3$ ) or 30,000PPB (42,000  $\mu\text{g}/\text{m}^3$ ). But nor on the basis of Dr Sinha’s zero-tolerance position: that harm or risk of harm to human health, at least in children, arises whenever levels of inhalation of hydrogen sulphide are above 0.2PPB (0.3  $\mu\text{g}/\text{m}^3$ ). I can suppose a future world of greater clarity and understanding and even consensus, with the information gap (see §14 above) having been closed, through clear results achieved using an impeachable methodology. I can imagine incontrovertible vindication for Professor Berry, or for Dr Sinha, or for some position in between.
28. What I am doing in this judgment, as the judicial review and human rights court, is considering how the public authority regulator – the EA – has been dealing with a licensing and supervisory function in relation to the IP’s activities at WQLS. That is in a context where PHE – the executive agency of the Department of Health and Social Care, with its public health specialists, whose function is to provide evidence-based professional and scientific expertise and support (see §8 above) – has conducted an up-to-date assessment which addresses the question of whether it is right to use any guideline safety levels, and if so which. I have had the advantage of considering WHO 2000 and WHO 2003 (see §9(1) and (2) above). I have been able to consider the WHO 24-hour Guideline: 107PPB (24 hours) (see §12(2) above), as a value considered suitable for consideration of short periods of acute exposure because it protects against eye irritation, derived using a relatively high protection or safety factor. I have been able to consider the WHO half-hour Guideline: 5PPB (30-minute) (see §12(4) above), as a value which hydrogen sulphide concentration should not be allowed to exceed, by reference to effects particularly if a person has a pre-existing respiratory condition and where some people may be more sensitive.
29. So far as concerns ongoing (chronic) exposure to hydrogen sulphide, I have been able to consider US EPA 2003 and US ATSDR 2016 (see §9(3) and (4) above). US ATSDR 2016 is a very detailed, 250-page report. It considers the decades of work by Bates et al

in studying the population of the Rotorua geothermal area of New Zealand (see for example pp.52-53). It also cites Khan et al (1990), Bhambhani et al (1991) and Dorman et al (2002) (referenced at pp.233, 220, 224). That means it is a report which considers the sources and studies from which Professor Berry has derived his ‘good reliable safety level’ of 100,000PPB (140,000  $\mu\text{g}/\text{m}^3$ ) or 30,000PPB (42,000  $\mu\text{g}/\text{m}^3$ ) (see §22 above). The report also considers (for example at pp.53 and 62) Campagna et al (2004), the Nebraska study on which Dr Sinha relies (see §25 above). The report notes the information gap (see §14 above): the dearth of information assessing the exposure of children and adolescents to hydrogen sulphide (p.185); that “we do not know whether children are more sensitive to hydrogen sulphide than adults” (p.4); that “there is very little information to judge the impact of exposure to hydrogen sulphide in infants and children” (p.115). It appears that the Rome Study Mataloni et al (2016) and the China study Yu et al (2016), also relied on by Dr Sinha, were too recent to be discussed in the report. But it does not appear that those 2016 studies are regarded by US ATSDR as being watershed developments: the report emphasises that MRLs are revised as new health effects data become available and as methods to assess levels of significant human exposure improve (see p.20). But no revision has yet been considered necessary. The report is still relied on, in 2021. The US ATSDR Intermediate Value and US EPA reference concentration, referred to in the report (p.209), are each relied on as the current guideline value. The report expressly emphasises that it addresses child health issues (pp.vii, 4, 180-181). It expressly recognises the ways in which a child’s exposure may differ from those of an adult: breathing more air per kilogram of body weight and, being closer to the ground than adults, inhaling more of a gas like hydrogen sulphide which is heavier than air (see pp.180-181). The report is authored by expert contributors, was the subject of internal reviews by a health effects review committee, an MRL workshop and a data needs review. It was peer-reviewed by a panel. MRLs undergo a rigorous review process (p.A-2). The “Intermediate” Value is arrived at using an uncertainty factor which includes a component of a full 10 for human variability. In the absence of an MRL “chronic” value, the report embraces the US EPA Reference Concentration of 1PPB (1.4  $\mu\text{g}/\text{m}^3$ ) (p.209), a level identified 13 years earlier in 2003 (in US EPA 2003), and a level which had been revised by the US EPA at that time, but which remains current and has not been considered to need further revision. It is right that the US ATSDR Intermediate value (20PPB) and the US EPA reference concentration (1PPB) both use uncertainty factors. They do this deliberately, well aware of and having regard to concepts such as the NOAEL, a term which is explained (p.252). The uncertainty factors are described as intended to account for the following (p.254): variation in sensitivity among the members of the human population; uncertainty in extrapolating animal data to the case of humans; uncertainty in extrapolating from data obtained in a study that is of less than lifetime exposure; and uncertainty in using lowest observed adverse effect level (LOAEL) data rather than no observed adverse effect level (NOAEL) data. It is also described as a design feature of MRLs that they contain a degree of uncertainty because of the lack of precise toxicological information on the people who might be most sensitive to the effects of hazardous substances, foremost among whom are children and those with pre-existing health conditions, it being assumed that certain persons are particularly sensitive (p.A-2). The report does not accept or support Professor Berry’s ‘good reliable safety level’; but nor does it support Dr Sinha’s zero-tolerance.

30. All of this, in my judgment, stands as a convincing and principled, precautionary approach in the context of uncertainty, risk, diversity and human health. Mr Wise QC emphasises that MRLs are described as being intended as a screening tool to help public health professionals decide where to look more closely (p.A-1). But, in my judgment, that does not undermine the appropriateness of relying on them in the precautionary ‘middle area’ between opposing views about ‘safety levels’ exemplified by Professor Berry and Dr Sinha. MRLs are also described as capable of being “viewed as a mechanism to identify those hazardous waste sites that are not expected to cause adverse health effects” (pp.A-1, A-2). The virtues of adopting the US ATSDR Intermediate Value, and the long-term (chronic) US EPA Reference Concentration, both of which are described as relevant guideline values at (US ATSDR 2016 p.209) are convincing and compelling. That is an important conclusion in the context of this case. It links to what I will come on to say about the Fourth PHE Risk Assessment (see §32 below).
31. If I pause and reflect on what Professor Berry was telling me about his ‘good reliable safety level’, it has these implications. Professor Berry’s NOAEL-based ‘good reliable safety level’ below which there is “no effect” (30,000PPB) is 150,000 times the ambient level hydrogen sulphide (0.2PPB); 30,000 times the US EPA Reference Concentration (1PPB); 6,000 times the WHO half-hour Guideline (5PPB); 3,750 times the odour threshold for hydrogen sulphide (8PPB); 1,500 times the US ATSDR Intermediate Value (20 PPB); 300 times the EA long-term EAL (100PPB); 280 times the WHO 24-hour Guideline (107PPB); and 280 times the EA short-term EAL (also 107PPB). Professor Berry’s NOFAEL-based ‘good reliable safety level’ below which there is “no adverse effect” (100,000PB) is 500,000 times the ambient level hydrogen sulphide (0.2PPB); 100,000 times the US EPA Reference Concentration (1PPB); 20,000 times the WHO half-hour Guideline (5PPB); 12,500 times the odour threshold for hydrogen sulphide (8PPB); 5,000 times the US ATSDR Intermediate Value (20 PPB); 1,000 times the EA long-term EAL (100PPB); 935 times the WHO 24-hour Guideline (107PPB); and 935 times the EA short-term EAL (also 107PPB). Then if I pause and reflect on what Dr Sinha was telling me about his zero-tolerance level, it has these implications. Dr Sinha’s zero-tolerance level would be at the average ambient level hydrogen sulphide (0.2PPB). It would be 1/5<sup>th</sup> of the US EPA Reference Concentration (1PPB); 1/40<sup>th</sup> of the odour threshold for hydrogen sulphide (8PPB); 1/25<sup>th</sup> of the WHO half-hour Guideline (5PPB); 1/100<sup>th</sup> of the US ATSDR Intermediate Value (20 PPB); 1/500<sup>th</sup> of the EA long-term EAL (100PPB); 1/535<sup>th</sup> of the WHO 24-hour Guideline (107PPB); and 1/535<sup>th</sup> of the EA short-term EAL (also 107PPB). Dr Sinha’s ‘zero-tolerance’ would of course also mean any detectable hydrogen sulphide from any industrial facility would cross the threshold for harm and risk of harm to human health at least in children. On Professor Berry’s approach, the 32PPB hydrogen sulphide emissions which caused such concern about endangering health in Lopez Ostra need not have troubled the Strasbourg Court on that score as it did in 1994 (see §37 below); nor need hydrogen sulphide exceedances of a Russian MPL of 3.6PPB have featured in what troubled the Strasbourg Court in Fadeyeva in 2005 (see §39 below). On Dr Sinha’s approach, anything above ambient level should have troubled the Strasbourg Court in 1994 and 2005, or should do in 2021, at least so far as concerned children like Cristina Lopez Ostra.

32. The Fourth PHE Risk Assessment is a document which was prominent at the hearing and in the oral submissions. It was the most recent PHE health risk assessment of air quality monitoring results in respect of WQLS. It is the culmination of an assessment of the monitoring results from March to June 2021 observed from a ring of four air quality Mobile Monitoring Facility (MMF) units located by the EA in the surrounding areas around WQLS. The four locations are: Silverdale cemetery (MMF 1); Silverdale Road (MMF 2); the fire station (MMF 6); and Galingale View pumping station (MMF 9). Mr Lowe's witness statement explains that the EA owns a fleet of 11 MMFs used to conduct ambient air quality monitoring. He describes them as armoured trailers that can be towed to a location and left for several months to conduct the study, inside each of which there is a power distribution system, weather station, data-logger and analytical equipment. Mr Lowe provides a map which identifies where the MMFs are located. He also explains that generally speaking the predominant wind direction across the UK is from south-west to north-east. If one imagines a compass with an 'inner' ring and an 'outer' ring, the picture is as follows: MMF 1 is inner north-west; MMF 2 is inner north; MMF 6 is outer north-east and MMF 9 is inner east; Mathew's home would be outer north-west, with MMF 1 as the nearest monitoring unit. The Fourth PHE Risk Assessment is, in my judgment, an important document which contains a number of clear features.

- (1) 2017-2019 emissions were below US EPA Reference Concentration (1PPB). The Fourth PHE Risk Assessment records (pp.6-7) PHE's assessment of the EA's previous monitoring data for hydrogen sulphide from WQLS. The Assessment explains that PHE has taken the EA's MMF monitoring data from 6 July 2017 to 14 February 2018, and from 15 January 2019 to 25 June 2019. PHE has compared that data against the US EPA Reference Concentration 1PPB (365 days or more), that being the US EPA estimate of continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. PHE explains the results of that assessment. It was found that the average 24-hour concentration in the 2017-18 monitoring was  $0.85 \mu\text{g}/\text{m}^3$  (ie. 0.6PPB). It was found that the average 24-hour concentration from the 2019 monitoring was  $0.95 \mu\text{g}/\text{m}^3$  (ie. 0.7PPB). PHE's conclusion was that: "These previous concentrations are below the US EPA value; therefore, they would not be expected to contribute to any significant effect on health".
- (2) 7 March 2021 emissions were above US EPA AEGLs Level 1. The Fourth PHE Risk Assessment records PHE's assessment of "peak exposures" from the 2021 monitoring data, compared with US EPA AEGLs for acute exposure (see §13(7) above). PHE assessed that AEGL "Level 1" had been exceeded in relation to all 5 "timeframes" on 7 March 2021 at MMF9 (Galingale pumping station), but that there had otherwise been no exceedances of the AEGLs. AEGL "Level 1" is defined as follows: the level of the chemical in the air at or above which the general population could experience notable discomfort, irritation or certain asymptomatic non-sensory effects, which effects are not disabling and are transient and reversible upon cessation of exposure.

- (3) 7-8 March 2021 emissions were above the WHO 24-hour Guideline (107PPB). The Fourth PHE Risk Assessment records PHE's assessment of the 2021 monitored emissions against the WHO 24-hour Guideline (107PPB). PHE assessed that this guideline level had been exceeded on two days – namely 7 and 8 March 2021 – at MMF 9 (Galingale pumping station). The 24-hour average concentrations of hydrogen sulphide had been 116PPB (163 µg/m<sup>3</sup>) on 7 March 2021 and 144PPB (202 µg/m<sup>3</sup>) on 8 March 2021.
- (4) 2021 emissions were above the WHO half-hour Guideline (5PPB). PHE assessed that this guideline level had been exceeded for all MMFs. PHE assessed the percentage of the time for which this half-hour Guideline had been exceeded. I have found it helpful to think of 48 half-hour periods in each 24-hour day, so that one half-hour exceedance every day could be seen as exceedance during 2% of those periods. PHE found exceedances of this “odour annoyance” guideline level as follows: exceedance for 9% of the time between 14.4.21 and 30.6.21 at MMF 1 (Silverdale cemetery); exceedance for 12% of the time between 5.3.21 and 30.6.21 at MMF 2 (Silverdale Road); exceedance for 6% of the time between 24.4.21 and 30.6.21 at MMF 6 (the fire station); and exceedance for 31% of the time between 6.3.21 and 30.6.21 at MMF 9 (Galingale pumping station). PHE's assessment was that “there was potential for significant odour complaints to occur over these periods” and that regular exceedances of this guideline level “is reflected in the impacts on the effects of people's well-being and the symptoms they are experiencing, as reported to Staffordshire County Council's Smell and Symptom Tracker”. Describing these outcomes, PHE's conclusion was (p.9): “The results for hydrogen sulphide continue to be above the WHO odour annoyance guideline value for a considerable percentage of the time, which is undesirable due to the effects on people's well-being and the symptoms they are experiencing”.
- (5) PHE's recommendation regarding the WHO half-hour Guideline (5PPB). In the light of the exceedances of the WHO half-hour Guideline (5PPB) which it records and discusses (see §32(4) above), the report sets out PHE's recommendation, which is (pp.4, 9):

*PHE strongly recommends that all measures are taken to reduce the off-site odours from the landfill site ...*

*PHE strongly recommends that all measures are taken to reduce the off-site odours from the landfill site, as early as possible.*

That important recommendation is about addressing the “undesirable ... effects on people's well-being and the symptoms they are experiencing” from emissions above the guideline value and which are still above that value “for a considerable percentage of the time”. The language is “all measures” and “as early as possible”.

- (6) The US ATSDR “Intermediate” Value (20PPB) is an appropriate value for emissions from WQLS in 2021. The Fourth PHE Risk Assessment makes clear that

PHE has assessed the US ATSDR Intermediate Value (for days 15-364), for periods “up to one year”, as appropriate when assessing longer-term implications of “concentrations experienced so far in 2021”. PHE states in its conclusions that it has compared the concentrations to the ATSDR Intermediate Value “for exposure between 14-364 days”, in order to assess the risk “from the increased concentrations in 2021” (p.9). In order to understand this, I raised with all Counsel this question: what was it that made 2021 ‘year one’ (up to day 364) so far as hydrogen sulphide emissions from WQLS are concerned? Mr Mould QC (who appeared with Jacqueline Lean for the EA) supplied what, in my judgment, was a convincing answer. He pointed to PHE’s assessment that 2017-2019 emissions were below US EPA Reference Concentration (1PPB) (see §32(1) above). He submitted in essence that, having found compliance with this guideline in years prior to 2021, PHE was justifiably treating the “increased” emissions “experienced so far in 2021” as being a ‘new problem’, to which the “Intermediate” Value (days 15-364) was applicable. I accept that explanation of PHE’s reasoned analysis. It is coherent and logical. It ‘joins the dots’ between features within PHE’s reasoned, documented assessment. It does mean that an assumption favourable to WQLS has been adopted by PHE in relation to the year 2020, when there was no MMF monitoring and when levels are not assessed in the document. It also means that the “year one” explanation – and application of the “Intermediate” Value – would apply only to emissions during 2021. The “Intermediate” Value, being days 15-364, would not be applicable from January 2022. Mr Mould QC accepted that this was the logic of his explanation and I agree with him.

- (7) The US EPA Reference Concentration (1PPB) is an appropriate value for emissions from WQLS from January 2022. This feature follows logically from the previous feature, and from the point which I have just made. I agree with Mr Mould QC that this is the reasoned logic of PHE, as expressed in the Fourth PHE Risk Assessment. In short, it must be what PHE means. This value explains what PHE meant when it spoke in its conclusions about long-term effects and emissions decreasing to “acceptable levels” (p.9), being “health-based guidance values used to assess long-term exposure”. It is also noteworthy that in the First, Second and Third PHE Risk Assessments PHE had included reference to the OEHHA Chronic REL (7PPB) (see §13(10) above), alongside the US EPA Reference Concentration (1PPB). That reference was dropped in the Fourth PHE Risk Assessment and a single appropriate long-term value was, clearly and unambiguously, identified as the US EPA Reference Concentration (1PPB).
- (8) 2021 emissions are below the US ATSDR Intermediate Value (20PPB). The next feature of the Fourth PHE Risk Assessment is that it records PHE’s assessment against the US ATSDR Intermediate value (20PPB) (days 15-364). PHE assessed that there were no exceedances of this intermediate value from the average daily hydrogen sulphide concentrations in 2021. The assessed averages were 1.6PPB (2.3 µg/m<sup>3</sup>) at MMF1 (Silverdale cemetery) between 14.4.21 and 30.6.21; 2.4PPB (3.3 µg/m<sup>3</sup>) at MMF2 (Silverdale Road) between 5.3.21 and 30.6.21; 2.1PPB (2.9 µg/m<sup>3</sup>) at MMF6 (the fire station) between 24.4.21 and 30.6.21; and 13.3PPB (18.6

$\mu\text{g}/\text{m}^3$ ) at MMF9 (Galingale pumping station) between 6.3.21 and 30.6.21. PHE explained that the Intermediate Value “has not been exceeded”. PHE’s assessment based on this outcome was that the concentrations experienced “so far in 2021” are “unlikely to cause a lasting impact of physical health, and as such, any risk to long-term (lifetime) physical health is likely to be small”. PHE’s conclusions added: “currently any risk to long-term physical health is likely to be small, however we would stress that we cannot completely exclude a risk to health from pollutants in the area, especially if exposure continues at these levels. Short-term transient health effects may be experienced such as irritation to the eyes, nose and throat, in addition to effects resulting from odour such as headache, nausea, dizziness, watery eyes, stuffy nose, irritated throat, cough or wheeze, sleep problems and stress. Individuals with pre-existing respiratory conditions may be more susceptible to these effects. With continual exposure these effects may be prolonged, but are not anticipated to continue long term, once exposure has decreased to acceptable levels” (p.9). As I have explained, “acceptable levels” was a reference to the US EPA Reference Concentration (1PPB), assessed as complied with in the period 2017-2019 and assessed as the acceptable level after year 1 (up to day 364).

- (9) 2021 emissions exceed US EPA Reference Concentration (1PPB). The next feature is that PHE assessed that there is in 2021 emissions a current ongoing exceedance of the US EPA Reference Concentration (1PPB). To repeat, PHE’s assessment of the monitoring results is that the average daily hydrogen sulphide concentrations in 2021 are: 1.6PPB ( $2.3 \mu\text{g}/\text{m}^3$ ) at MMF1 (Silverdale cemetery) between 14.4.21 and 30.6.21; 2.4PPB ( $3.3 \mu\text{g}/\text{m}^3$ ) at MMF2 (Silverdale Road) between 5.3.21 and 30.6.21; 2.1PPB ( $2.9 \mu\text{g}/\text{m}^3$ ) at MMF6 (the fire station) between 24.4.21 and 30.6.21; and 13.3PPB ( $18.6 \mu\text{g}/\text{m}^3$ ) at MMF9 (Galingale pumping station) between 6.3.21 and 30.6.21. All of those levels would be multiples of the US EPA Reference Concentration (1PPB) used for chronic exposure durations (365 days and longer). Standing back, MMF1 in 2021 is 1.6 times the value; MMF2 is 2.4 times the value; MMF6 is 2.1 the value; and MMF9 is 13.3 the value. On that basis the PHE assessment concludes: “The hydrogen sulphide data at the end of June 2021 shows continuing exposure to the population around the site, above levels acceptable for long-term (lifetime) exposure”, referring to the effects of current average daily hydrogen sulphide concentrations as being “not anticipated to continue long term, once exposure has decreased to acceptable levels” (p.9). As has been seen, the “acceptable levels” were the “levels acceptable for long-term (lifetime) exposure”: namely the US EPA reference concentration 1PPB (for 365 days or more).
- (10) PHE’s recommendation regarding the US EPA Reference Concentration (1PPB). The final feature of the Fourth PHE Risk Assessment was a second recommendation, further to the first recommendation (see §32(5) above) regarding the WHO half-hour Guideline (5PPB). The second recommendation concerned long-term average exposure (365 days and longer). Based on the assessment relating to emissions in 2021 and “levels acceptable for long-term (lifetime) exposure” (365 days and longer) PHE’s recommendation was as follows:

*PHE strongly recommends that all measures are taken to... reduce the concentrations in the local area to levels below those health-based guidance values used to assess long-term exposure.*

Mr Mould QC recognised this as being a strong recommendation from PHE which would involve returning, from January 2022 onwards, to average 24-hour concentrations below 1PPB (2 µg/m<sup>3</sup>), as the acceptable long-term exposure level (365 days and longer), as seen in 2017-2019. That is the position, having allowed the more generous Intermediate ATSDR Intermediate Value (20PPB) to emissions experienced in 2021 (treated as “year 1”: up to “day 364”). I agree with Mr Mould QC: this is the clear and reasoned logic of the PHE assessment.

33. The Fourth PHE Risk Assessment, in my judgment, stands as a beacon in this case. It is clear and transparent. It is a coherent, reasoned analysis. It makes clear, assessed choices as to relevant “health-based guidance values”. It makes clear, assessed evaluations of 2017-2019 emissions and 2021 emissions. It addresses acceptability and unacceptability. In particular, it identifies two things that really matter in addressing the unacceptable 2021 emissions. First, ongoing exceedances of the WHO half-hour Guideline (5PPB) are not acceptable. Secondly, exceedances after 2021 (beyond day 365) whose daily average is above the US EPA Reference Concentration (1PPB) are not acceptable. The advice, found in the strong recommendation, is therefore twofold. First, that all measures be taken to reduce off-site odours as early as possible so that the WHO half hour guideline (5PPB) currently exceeded for “a considerable percentage of the time” (9%, 12%, 6% and 31%) is met, addressing the undesirable current effects on people’s well-being and the symptoms they are experiencing. Secondly, that all measures be taken to reduce concentrations in the local area for 2022 (day 365 and beyond) below the US EPA reference concentration (1PPB), being the acceptable level and health-based guidance value used to assess long-term exposure, returning to the compliance with this level observed for 2017-2019, but having applied the more generous US ATSDR Intermediate Value (20PPB) to emissions during 2021 (up to day 364). These are real and significant changes. It is worth remembering that the odour threshold for hydrogen sulphide is 8PPB. Given the particular significance which chronic long-term exposure has in the present case, it is important to recognise that this is what the daily average of 1PPB addresses. In very simple terms, it means that for every time that emissions are at, say, 1.5PPB there would need to be, say, an equivalent time when they are below 0.5PPB. Or for every time they are at, say, 2PPB there would need to be, say, twice as long when they are below 0.5PPB. Otherwise, the average of 1PPB will not be met, as it must be. It matters, if public health is going to be protected. Especially for Mathew.
34. PHE’s clear advice – read and analysed carefully and properly understood – resonates as identifying practical and effective health-based intervention action. It has several very clear virtues. First, it tells Mathew and the local community against what exceedances, currently experienced, they are going to be protected. Secondly, it identifies existing guideline values – including, importantly, the most protective and precautionary long-term health-based value of 1PPB – from impressive, health-orientated documented sources from the WHO, US ATSDR and US EPA. Thirdly, it provides clarity as to the objective of the measures: what is needed is for all measures to be taken to achieve

particular outcomes. Fourthly, the outcome is objectively verifiable. MMFs will show the objective truth: the WHO half-hour Guideline (5PPB) being met or not met; the US EPA Reference Concentration (1PPB) being, from January 2022, met or not met. As I shall come on to explain, it ultimately provides the answer for the human rights analysis in this case.

*‘Some indication of a downward trend’*

35. I mention here that Mr Mould QC submitted that the evidence before the Court gives “some indication of a downward trend”. Dr Sinha expressed his doubts as to whether there has really been any improvement, based on his own analysis of 2021 air monitoring data, which presented the data through a number of questions. As has been seen (see §32(4) above), PHE has considered – as one relevant question – the proportion of the time at which there are exceedances of the WHO half-hour guideline (5PPB). The First to Fourth PHE Risk Assessments record the following overall (cumulative) proportions of time. MMF1: n/a, 11%, 10%, 9%. MMF2: 22%, 14%, 14%, 12%. MMF 6: n/a, 2%, 7%, 6%. MMF9: 38%, 36%, 36%, 31%. Against it is PHE’s assessment that, even viewed in this way, the proportions of time still constitute “a considerable percentage of the time”. There is also the problem of an observed 42-fold durability in winter compared to summer (see §10(7) above). Mr Mould QC chose his words carefully: “some indication” of a “downward trend”. That is a modest claim, which in my judgment is fairly made. But what matters ultimately, in my judgment, is whether measures are being implemented to ensure that PHE’s clear advice is going to be met. That is a question to which I will need to return.

### **III. Key Case-Law**

#### *Five key Strasbourg cases*

36. I turn now to discuss five cases decided by the European Court of Human Rights in Strasbourg which were cited to me, and which have particular significance for the analysis under Article 2 and Article 8 in the present case. I will endeavour to encapsulate what the Strasbourg Court decided in each case, in what context and circumstances, and why. References are to paragraphs in the judgment (or, “Com”, the report of the European Commission of Human Rights). I will then turn to identify a series of propositions which can be derived from these cases (see §42 below). After that, I will add two points which emerge clearly from a domestic Supreme Court case (§43 below). Here are the five cases.
37. Lopez Ostra v Spain (1995) 20 EHRR 277 (9.12.94): the Spanish waste treatment plant case. In this case the Strasbourg Court found an Article 8 violation (§58) by reason of the inaction of the Spanish authorities in relation to the waste treatment plant operated, without a licence (§8), by a private operator (Sacursa) in the Spanish town of Lorca. This was a case about polluted air, nuisance and health problems, in which the focus was on hydrogen sulphide emissions (§§18-20, 49; Com §49). The Article 8 violation was in the nature of a breach of the Spanish state authorities’ positive obligation to take operational protective measures, breached by reason of their failure to act (§46). They had failed to take the measures necessary for protecting Mrs Lopez Ostra’s right to respect for her home and for her private and family life (§§55-56). Although the waste treatment plant was privately operated by Sacursa, it was located on municipal land and enjoyed a state

subsidy (§52), and the state authorities had general supervisory and licensing powers (§54). The Article 8 positive obligation was triggered by the severe environmental pollution affecting Mrs Lopez Ostra's well-being and preventing her from enjoying her home in such a way as adversely to affect her private and family life, whether or not it also seriously endangered her health (§51). Although seriousness of the pollution was contested by the Spanish government (§48) the Lopez Ostra family had endured 3 years of nuisance (§57) between October 1988 and February 1992 (§8), and there were medical reports and expert opinions to the effect that "hydrogen sulphide emissions from the plant exceeded the permitted limit and could endanger the health of those living nearby" and that "there could be a causal link between those emissions and [Mrs Lopez Ostra]'s daughter [Cristina]'s ailments" (§49). The expert opinions and written evidence 1991-93 (§§9, 18-20) included the following: (a) October 1992 and January 1993 reports from University of Murcia chemist Professor Clavel (Com §49) stating that hydrogen sulphide had been detected in concentrations exceeding permitted levels (§18); (b) October 1992 and February 1993 reports from the National Toxicology Institute (NTI) stating that hydrogen sulphide levels probably exceeded permitted limits, that these did not pose any danger to the health of people living close to the plant but that, given the duration of testing, it could not be ruled out that long-term exposure from living in a neighbouring house constituted a health risk (§18); (c) a December 1991 certification from paediatrician Dr Sanchez that Cristina's nausea, vomiting, allergic reactions, anorexia etc could only be explained by the fact that she was living in a highly polluted area (§19); (d) an April 1993 report of the Institute of Forensic Medicine (IFM) indicating that hydrogen sulphide levels in houses near the plant exceeded the permitted limit and that Cristina and her cousin Fernando presented typical symptoms of chronic absorption of hydrogen sulphide, periodically manifested in the form of acute bronchopulmonary infections, considered to be causally linked to the levels of hydrogen sulphide (§19); and (e) a January 1992 police report of smells from the plant experienced from the Lopez Ostra family home which were very strong and induced nausea (§20). These 1991-1993 sources had been discussed by the Commission in its report (Com §§47-53). The positive duty to take reasonable and appropriate measures to secure Mrs Lopez Ostra's Article 8 rights involved a "certain margin of appreciation" and required the striking by the Spanish state authorities of a "fair balance" between the competing interests of the individual and the community as a whole including the town's economic well-being (§§51, 58). It was primarily for the Spanish administrative and judicial authorities to interpret and apply domestic Spanish law (§55). Even leaving aside the domestic law position (§55), the Spanish state authorities had not taken the measures necessary for protecting Mrs Lopez Ostra's right to respect for her home and for her private and family life (§55) and had not struck a fair balance (§58). The Article 3 threshold of inhuman and degrading treatment was not crossed (§60). It is hard from the judgment and report to find the Spanish 'permitted limit' for hydrogen sulphide emissions. However, what is identified is that the hydrogen sulphide concentration which exceeded that statutory limit. It was  $45 \mu\text{g}/\text{m}^3$  (Com §49 fn.29), which corresponds to 32PPB. Lopez Ostra is a 'looking back' case (concerning state authority inaction in 1988-92), about a breach of the operational duty constituting an Article 8 violation, in the context of a regulated industrial activity and hydrogen sulphide emissions.

38. Oneryildiz v Turkey (2005) 41 EHRR 20 (30.11.04, Grand Chamber): the Turkish landfill case. In this case, the Strasbourg Court found an Article 2 violation (§110) by reason of the inaction of the Turkish authorities in relation to a municipal waste tip operated in non-conformity to relevant technical standards (§109), at which an April 1993 methane explosion had led to a landslide engulfing 10 slum dwellings and killing 39 people (§18) including 9 of Mr Oneryildiz's relatives (§63). No separate issue arose under Article 8 (§160). There was a separate violation of A1P1 (property rights) arising from loss of home and property without adequate redress (§§119-138): a breach of a positive obligation on the part of the state authorities not to "do everything within their power to protect the applicant's proprietary interests" (§135). In Article 2 terms, this was a case about an explosion which had caused loss of life, and about Turkish state authority inaction during the preceding years. The case was not about the 'framework duty' (as to which, see §42(3b) below) (§§89-90) or about the duty to respond to the loss of life in April 1993 (§91). Rather, it was about the failure to take the necessary urgent measures, before or after March 1991 domestic regulations (§§98, 102), in the context of risk of a methane explosion highlighted in a May 1991 committee of experts report (§§100-101, 13) and the Environment Office recommendation later in 1991 as to measures to be implemented to deal with the hazard to health (§§15, 102), bringing the tip into line with applicable regulatory standards through installation of a drainage system (§102). Mr Oneryildiz's case was that the Turkish national authorities "did not do all that could have been expected of them to prevent the deaths" (§70) and the Strasbourg Chamber had concluded that the Turkish authorities "could not be said to have done everything that could reasonably be expected of them" (§75). The Grand Chamber explained that the positive obligation on the state authorities to take appropriate steps to safeguard the lives of those within their jurisdiction was applicable in the context of any activity, whether public or not, in which the right to life may be at stake including industrial activities dangerous in nature, such as the operation of waste collection sites, toxic factory emissions or nuclear tests (§§71-72). Whether appropriate steps to safeguard life had been taken was answerable by reference to matters such as (§73): inherent harmfulness; contingency of risk arising from life endangering circumstances; the status of those bringing about the life-endangering circumstances; and whether acts or omissions were deliberate. There was by 1991 a real and immediate danger through the risk of an explosion (§100). The state authorities, responsible for supervising and managing the tip, knew or ought to have known of the risks and necessary preventive measures from at least May 1991 (§101). The relevant public authorities "failed to take the necessary urgent measures" and resisted the Environment Office's advice (§102). The Strasbourg Court's role did not include substituting its views on the best policy to adopt (§§80 and 107). It was important not to impose an impossible or disproportionate burden on authorities making operational choices in terms of priorities and resources in difficult social and technical spheres (§107). But the necessary urgent measures (§102) were the timely installation of a gas extraction system which could reasonably be regarded as a suitable means of averting the risk, as a preventive measure falling within the authorities' conferred powers (§107). Oneryildiz is a 'looking back' case (concerning state inaction from May 1991), about a breach of the operational duty constituting an Article 2 violation, in the context of a regulated industrial activity, and the risk of a fatal explosion.

39. Fadeyeva v Russia (2007) 45 EHRR 10 (30.11.05): the Russian steel plant case. In this case, the Strasbourg Court found an Article 8 violation (§134) by reason of the inaction of the Russian authorities in relation to ongoing pollution from a steel plant operated by a private operator (Severstal) in the Russian town of Cherepovets. This was a case about polluted air, nuisance and health effects in which the focus was on a number of pollutants including phenols, ammonia and formaldehyde, but also including hydrogen sulphide (§§83, 31-34, 38-40). The steel plant was a state-authorized polluting enterprise whose toxic emissions exceeded statutory safe limits and might endanger the health of those living nearby (§132). The plant operated in breach of domestic environmental standards and no information showed that the state authorities had designed or applied effective measures, so as to take into account the interests of the local affected population, which actions would be capable of reducing the industrial pollution to acceptable levels (§133). Focusing on the position from May 1998 (§82), there was an interference directly affecting Ms Fadeyeva's home, family or private life attaining the article 8 minimum level of adverse effects of environmental pollution by reference to intensity, duration, physical effects and mental effects (§§68-70). That was because, although no medical report established a causal link between the environmental pollution and deterioration in Ms Fadeyeva's health (§80), the documented picture recorded environmental pollution at her place of residence as having constantly exceeded safe levels (§§81, 83-84, 87-88). The statutory maximum permissible limits for air quality (§§49-50) had been seriously exceeded over a significant period of time near her house (§87). A 'very strong combination of indirect evidence and presumption' made it possible to conclude that her health deteriorated as a result of her prolonged exposure from the industrial emissions but, even if the pollution did not cause quantifiable harm to her health, it inevitably made her more vulnerable to various diseases (§88). Although the state, having owned the plant until 1993, did not operate it at the relevant time from 1998 (§§90, 82) the responsibility of the state arose from the failure to regulate private industry (§89), in circumstances where the operation was state-authorized (§132) and the state authorities continued to exercise powers of licensing and supervision (§90). The Russian state authorities knew of the long-lasting problem (§19) and were in a position to evaluate the pollution hazards and take adequate measures to prevent or reduce them (§92). The question was whether the state authorities "could reasonably be expected to act so as to prevent or put an end to the alleged infringement of the applicant's rights" (§89). The state authorities had a number of tools at their disposal capable of preventing or minimising pollution but had not complied with their positive duties (§124), in circumstances where toxic substances in the air near the steel plant exceeded safe levels and progress to reduce emissions appeared to be very slow (§§126-127). It was not the task of the Strasbourg Court to substitute its view of the best policy (§104), or to determine exactly what should have been done to reduce pollution (§128), but the Court had a review function in relation to the relevance and sufficiency of the justification put forward by the state authorities (§102), and in relation to the decision-making process to examine whether it was such as to afford due respect of the interests safeguarded to the individual by Article 8 (§105). The onus was on the state to justify, using detailed and rigorous data, a situation where certain individuals bore a heavy burden on behalf of the rest of the community (§128). Here, Government programs in 1990 and 1996 to reduce toxic emissions to acceptable levels (§§12 and 15) had not been successfully implemented (§§126-127). The Russian

authorities had not approached the problem with due diligence and given consideration to the competing interests (§128), it being unclear how the interests of the resident local population been taken into account when establishing licence conditions (§129), the authorities having failed to show clearly what the policy in relation to the operator was, and having failed to give due weight to the interests of the community living in close proximity to the steel plant (§131). The state authorities had failed to strike a fair balance between the competing interests of Ms Fadeyeva and the community as a whole, including economic well-being (§§93, 99, 101). What can be found in the judgment is reference to the maximum permissible limits (“MPLs”) in the Russian legislation (§§49-50), identifying a threshold above which pollution was potentially harmful to health and well-being (§87). It appears that the Russian statutory MPL for hydrogen sulphide was evidently 5 µg/m<sup>3</sup> (or 3.6PPB). This can be deduced from the government figures given to the Court (§38). The Russian government gave the Strasbourg Court the 1999 average as being 16 µg/m<sup>3</sup> (ie. 11.4PPB), which was recognised to be 320% of the MPL. The 2003 average was given as 6 µg/m<sup>3</sup> (ie. 4.3 PPB), which was recognised to be 120% of the MPL. Fadeyeva is a ‘present breach’ case about a breach of the operational duty, from May 1998 and ongoing, constituting an Article 8 violation in the context of a regulated industrial activity.

40. Budayeva v Russia (2014) 59 EHRR 2 (20.3.08): the Russian mudslide case. In this case, the Strasbourg Court found an Article 2 violation (§160) by reason of the Russian authorities’ inaction in failing to set up an early warning system (§155) or any other measure (§156) for the Russian town of Tyrnauz. July 2000 mudslides, which the damaged mud retention dam was unable to withstand (§§17-18, 31), hit the town causing several deaths (§§32-33) including that of the husband of one of the applicants (Mrs Budayeva) (§44). Other applicants escaped but had their homes destroyed (§§57, 64, 72, 81). Although only one of the applications concerned a death, Article 2 was applicable to all of the applicants given the undoubted “threat to their physical integrity” (§146). The Article 2 violation was a breach of the framework duty (§159): the Russian authorities had failed in their positive obligation to establish a legislative and administrative framework. The Russian authorities were well aware of the dangers (§§148-149), there having been repeated recommendations to implement an early warning system with observation posts to secure emergency evacuation (§§20-24), but no such measures were ever implemented (§25). The unexplained failure to do that (§§154-155) was a failure of the need for “all possible diligence” which “could reasonably be expected” of the Russian authorities in the circumstances (§152). A separate argument based on A1P1 (property rights) failed in the light of adequate state compensation arrangements (§§184-185). In the context of natural disasters and disaster relief, the Court described the state authorities’ positive obligation as being a duty “to do everything within the authorities’ power in the sphere of disaster relief” as distinct from the A1P1 duty to do “what is reasonable in the circumstances” (§175). This was a case of a natural disaster (§174), not a case of state regulated and controlled industrial activities such as waste treatment (§173). Budayeva is a ‘looking back’ case about breach of the framework duty, constituting an Article 2 violation in the context of natural disasters.

41. Brincat v Malta Application No.60908/11 (24.7.14): the Malta Drydocks case. In this case, the Strasbourg Court found a breach of Articles 2 and 8 (§117) by reason of the inaction of the Maltese authorities during the period when a number of individuals had been working with asbestos at the Malta drydocks, a state-owned employer (§47). There were 5 applications and 21 applicants before the Court. One group of applicants were the wife and children of Mr Attard, who had worked at the Malta drydocks between 1959 and 1974 (§6), and who had died in 2006 as a result of mesothelioma, a malignant cancer linked to exposure to asbestos (§12). The Attard group of applicants succeeded in establishing a violation of Article 2 (§117): Article 2 had been recognised as applicable in cases of persons suffering from serious illnesses such as terminal cancer (§82), and Mr Attard’s cancer and death were causally linked to the asbestos exposure at the Malta drydocks (§83). The other applicants were employees who had worked at the Malta drydocks from the 1950s/1960s to early 2000 (§§1, 111). Medical tests in the case of all but one of them (Mr Dyer) had revealed bilateral pleural plaques compatible with asbestos exposure, suggesting the strong probability of the presence of asbestos fibres in their stomach linings and digestive organs, the presence of which asbestos in their bodies made them prone to malignant mesothelioma (§§12, 68 and 77). Article 2 did not apply in these applicants’ cases, because they had “not to date been diagnosed with malignant mesothelioma” and it could “neither be said that their conditions constitute an inevitable precursor to the diagnosis of that disease, nor that their current conditions are of a life-threatening nature” (§84). However, Article 8 was applicable to those applicants’ cases, given the clear effect on family and private life, and there was a substantial overlap between the principles applicable to the positive obligations under Article 2 and Article 8 (§§85 and 90). The violations of Article 2 (the Attard applicants) and Article 8 (the other applicants) arose because of the failure of the Maltese government to satisfy its positive obligations, to legislate or take other practical measures (§116), to regulate the protection of and information to employees working with asbestos. That was in circumstances where the Maltese authorities had known or ought to have known, from at least the early 1970s, of the dangers of employees working with asbestos (§106), where no specific legislation had been introduced until 2003 and 2006 (§§109 and 111), and where in addition to the absence of relevant legal provisions there were no practical measures in place to satisfy the positive obligation (§112). Brincat was a ‘looking back’ (to the 1970s onwards) case, about the failure to legislate or take operational measures, in the context of employment within industrial activities.

*Propositions from these Strasbourg cases*

42. Having endeavoured to encapsulate these Strasbourg cases, I will also now set out some propositions which can be derived from them. (1) General. (1a) In the context of dangerous industrial activities the scope of the positive obligations under Article 2 largely overlaps with those under Article 8 (Fadeyeva §133; Budayeva §133; Brincat §102). (1b) The responsibility of the state authorities in environmental cases may arise from a failure to regulate private industry (Fadeyeva §89). (2) Article 8. (2a) Severe environmental pollution affecting an individual’s well-being and adversely affecting private and family life can trigger a positive obligation on the state authorities pursuant to Article 8 to take reasonable and appropriate measures to secure rights to private and family life (Lopez Ostra §51; Brincat §102). (2b) The positive obligation under Article 8 is triggered only

if there is a direct effect on the applicant's home, family life or private life; and only if the adverse effects of environmental pollution attain a minimum level, which level depends on all the circumstances such as intensity, duration, physical and mental effects (Fadeyeva §§68-70). (2c) Where triggered, the Article 8 positive obligation on the state authorities is to take reasonable and appropriate measures to secure rights to private and family life, striking a fair balance between the interests of the individual and of the community as a whole (Lopez Ostra §51; Fadeyeva §99). (2d) The Court has the task of assessing whether state authorities could reasonably be expected to act (Fadeyeva §89). (2e) The Court also has the jurisdiction to assess whether the state authorities approach the problem with due diligence and gave consideration to all the competing interests (Fadeyeva §128). (2f) The Court does not substitute its view as to the best policy to adopt in a difficult technical and social sphere (Fadeyeva §105). (3) Article 2. (3a) Article 2 lays down a positive obligation on state authorities (the safeguarding obligation): to take appropriate steps to safeguard the lives of those within the state's jurisdiction (Oneryildiz §71; Budayeva §128; Brincat §79). (3b) The safeguarding obligation entails above all a primary duty (the "framework duty") to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life (Oneryildiz §89; Budayeva §129; Brincat §101). (3c) The safeguarding obligation applies to activities, whether public or not in which the right to life may be at stake, including industrial activities which by their very nature are dangerous and in the particular context of dangerous activities: special emphasis must be placed on regulations geared to the special features of the activity in question, particularly with regard to the level of the potential risk to human lives; these must govern the licensing, setting up, operation, security and supervision of the activity and must make it compulsory for all those concerned to take practical measures to ensure the effective protection of citizens whose lives might be endangered by the inherent risks; among which preventive measures particular emphasis should be placed on the public's right to information (Oneryildiz §§71, 90; Budayeva §130-132; Brincat §§80, 101). (3d) The safeguarding obligation may entail a positive obligation to impose particular practical measures (the operational duty), in which situation: there may be a choice of means and the positive duty may be capable of fulfilment by alternative means; an impossible or disproportionate burden must not be imposed on the authorities without consideration being given in particular to the operational choices which they must make in terms of priorities and resources, in difficult social and technical spheres (Budayeva §§134-135; Brincat §101). (3e) In assessing whether the state authorities have complied with the positive obligation the Court must consider the particular circumstances of the case, regard being had, among other elements, to the domestic legality of the authorities' acts or omissions, the domestic decision-making process, including the appropriate investigations and studies, and the complexity of the issue, especially where conflicting Convention interests are involved; the scope of the positive obligations imputable to the state authorities in the particular circumstances would depend on the origin of the threat and the extent to which one or the other risk is susceptible to mitigation (Budayeva §§136-137; Brincat §101).

*Rabone and the Article 2 operational duty*

43. The parties made extensive submissions about the decision of the Supreme Court in Rabone v Pennine Care NHS Trust [2012] UKSC 2 [2012] 2 AC 72, an Article 2 case about releasing a mental health detainee in the context of a risk of suicide. Two points can be seen clearly in Rabone in which, as Mr Wise QC’s judicial review grounds put it: “The circumstances in which a State authority will be held to have breached its positive duty to protect the right to life under Article 2(1) was authoritatively considered by the Supreme Court”.
- (1) The real and immediate risk to life test. The first point which can be seen in Rabone is the formulation of the trigger test for the Article 2 positive operational duty, where: “the authorities knew or ought to have known at the time of the existence of a real and imminent risk to the life of an identified individual or individuals” (Rabone §12) The formulation is “real and immediate risk to life”, which is “present and continuing”. As Mr Wise QC’s judicial review grounds put it: a “real” risk to life is one which is “significant and substantial” as opposed to “remote and fanciful”, but there is no need for there to be a “likelihood or fairly high degree of risk” (Rabone §38); and an “immediate” risk to life is one which is “present and continuing”, but it need not be “imminent” (Rabone §39).
- (2) The reasonable steps duty. The second point which can be seen is the formulation of the operational duty, once triggered, where: “the authorities ... failed to take measures within the scope of their powers which, judged reasonably, might have been expected to avoid that risk” (Rabone §12). As Mr Wise QC’s judicial review grounds put it: as regards the measures that must be taken to satisfy the positive duty, the standard demanded is one of “reasonableness”, taking into consideration “the circumstances of the case” and “the ease or difficulty of taking precautions and the resources available”, but with no wider “margin of discretion” (Rabone §§42-43). From this, Mr Wise’s pleaded case was that “the EA has failed to do all that could reasonably have been expected to prevent the real and immediate risk to Mathew’s life”.

**IV. The Regulatory Framework**

44. Mr Mould QC submits that the framework duty is important and that in the present case, insofar as it is triggered, it has clearly been discharged. I accept both of those submissions, which were not contested by Mr Wise QC. There can be no finding of breach of the framework duty in this case, as by contrast there were in Budayeva §159 and Brincat §112. The framework duty (see §42(3b) above) is described as “a primary duty”, entailed “above all” by the safeguarding obligation. The question of domestic legality and the domestic regulatory process are important elements in assessing compliance with the safeguarding obligation, and the regulatory framework of licensing and supervision attract special emphasis in the context of effective protection against inherently dangerous industrial activities conducted by non-state entities (see §42(3c) and (3e) above). The framework in place in this case is an important part of the picture and includes the following key components.

- (1) The legislation. The EA is the non-departmental public body established by the Environment Act 1995 whose principal aim (s.4(1)) is to discharge its functions so as to protect or enhance the environment. The EA is responsible, among other things, for pollution control pursuant to regulations made under section 2 of the Pollution Prevention and Control Act 1999 and by virtue of section 2(2) of the European Communities Act 1972 to the extent that those regulations relate to pollution (1995 Act s.5). WQLS is obliged to comply with the requirements of EU Directive 1999/31/EEC as implemented through the Environmental Permitting (England and Wales) Regulations 2016, which are retained law for the purposes of the European Union (Withdrawal) Act 2018. As a regulated facility (reg.8(1)) – an installation carrying out specified activities (Sch 1 Part 2) – the IP’s operations at WQL are prohibited unless authorised by an environmental permit (reg.12). The EA has the function of granting or varying the permit (reg.12), revocation (reg.22), enforcement (reg.36), suspension (reg.37) and ‘step-in’ powers (reg.57). The meaning of “pollution”, which the EA controls through its statutory powers and the permit conditions, includes “any emission as a result of human activity which may (a) be harmful to human health [or] (b) cause offence to a human sense” (reg.2(1)). Suspension notices (reg.37) apply where a regulated facility under environmental permit is operated in a way which “involves a risk of serious pollution”. The statutory scheme is replete with references emphasising the primacy of the EA’s exercise of judgment: “the regulator considers that” an operator has contravened, is contravening, or is likely to contravene an environmental permit condition (reg.36(1)); “the regulator considers that” the operation of a regulated facility under environmental permit involves a risk of serious pollution (reg.37(2)); “the regulator considers that” a risk of serious pollution exists as a result of the operation of a regulated facility (reg.57(1)). Also prominent within the statutory scheme are references to the need for the EA’s action to be given on a reasoned basis and with specified steps required of the operator, who is given a right of appeal to the Secretary of State. The EA not only has its powers and duties under this statutory scheme but also has the overlay of its duty to act compatibly with Convention rights pursuant to section 6 of the HRA, together with its general public law duties such as the duty to act reasonably and the duty of sufficient enquiry (to take reasonable steps to acquaint itself with relevant information).
- (2) The Guidance. Read alongside the statutory scheme is the EA Landfill Gas Guidance, a 124-page document containing detailed provision setting out a structured approach to the management of all gases generated from landfilled waste and the monitoring required to demonstrate proper performance of the control measures. The Guidance deals with the regulatory framework; risk assessment; gas management plan; requirements for gas control; requirements for monitoring; landfill gas production and emission; gas control measures; and monitoring. Integral to its control mechanisms are the need for an operator to have, and comply with, a risk assessment and a gas management plan. The required risk assessment (Guidance §2.2) which screens and prioritises potential risks, matches effort and resources in evaluating potential risks to the magnitude of environmental damage that could result from a hazard, identifies an appropriate level of measures to

manage risks and is iterative in nature being kept under review. The required gas management plan (§3.2) addresses aspects of gas management considered during the risk assessment, identifies operational controls, sets out performance criteria for control measures, sets out design objectives and principles for gas control measures, sets out methods of implementing site-specific gas management systems to prevent the migration of and control any release of landfill gas, to minimise the impact on local air quality, to control the release of deodorants and to prevent harm to human health; sets out criteria and quality assurance procedures and deals with responsibilities and review. Gas control measures are containment, collection and treatment (§4.1). Containment includes capping (§4.2.3). Gas collection systems are to be designed to minimise emissions (§4.3). The Guidance deals with the detailed requirements for monitoring emissions (§8.3). It refers (§§2.3.3, 8.3) to the EALs identified in Mr Browell’s witness statement. It addresses the prohibition on mixing sulphate-bearing wastes with biodegradable wastes, to prevent hydrogen sulphide from being produced in that way (§6.3.2).

- (3) The Permit. This was originally granted on 9 June 2005, transferred to the IP (then Red Industries RM Ltd) on 3 November 2016, and varied on 30 October 2020 to increase the annual waste input from 250,000 tons to 400,000 tons. Under the Permit the IP is authorised to receive, handle and dispose of non-hazardous waste as part of the restoration of the quarry site. The types and quantities of waste permitted for acceptance and any conditions or qualifications applicable to acceptance are detailed (condition 2.6 and Schedule 2). There are waste acceptance criteria and procedures, including a duty on the operator to carry out inspections of waste deliveries and keep records of samples to establish conformity, reporting quarterly as to waste accepted (condition 4.2.4). There are conditions against mixing, including as to gypsum-based or high sulphite waste (conditions 2.6.3 and 2.6.4). Condition 2.9 deals with appropriate measures to control the accumulation and migration of landfill gas, including the requirement of an EA-approved landfill gas management plan, including a revised plan where required by the EA (condition 2.9.3). Condition 2.4 imposes operating techniques and requires a revised plan or document to be approved by the EA if the operator is notified by the EA that activities are giving rise to pollution, which documents must identify and minimise the risk of pollution (condition 2.4.2). Condition 3.3 provides 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 EA, 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”. The operator is required to operate the site in accordance with an odour management plan (Table S1.2). Other conditions deal with matters such as emissions and monitoring (condition 3.5, schedule 3).

## **V. Mathew’s Claim**

### *Article 2*

45. I outlined Mathew’s claim at the outset (see §3 above). I will set out here in some more detail the key points which were advanced by Mr Wise QC on Mathew’s behalf. Many

of these submissions link to propositions and principles which I have already discussed (see §§42-43 above), and about which it will not be necessary to say more. Some discrete points arise for discussion (see §§48-54 below), but what matters ultimately are the points which relate to whether the positive operational duties are triggered (see §§55-57 below) and to what compliance with those duties requires in the circumstances of this case (§§58-63 below). I will start by seeking to encapsulate the essence, as I saw it, of Mr Wise QC's Article 2 submissions. They were along these lines. (1) The EA is a public authority on whom Parliament has imposed the section 6 HRA duty to act compatibly with Mathew's Article 2 and Article 8 rights. The EA's domestic statutory functions (see §44(1) above) of protecting against pollution and of licensing and supervising the IP in relation to activities at WQL make the EA the appropriate state authority for the purposes of protecting Mathew's Article 2 and Article 8 rights. The EA's statutory functions also provide it with the tools it needs, in order to be able to protect those rights. (2) Alongside the framework duty, the safeguarding obligation (the positive obligation under Article 2 to safeguard Mathew's life) also involves a positive obligation to take operational steps, where the triggering conditions are met. The positive operational duty is applicable where the EA, as the relevant state authority, has the functions of licensing, regulating and supervising the activities of the private operator of an inherently dangerous industrial activity such as a landfill site. There are two triggering conditions for the positive obligation to take operational steps to protect life. Each must be satisfied. The first is that there is a real and immediate risk to the right to life, which is significant and substantial, present and continuing. The second is that the state authority knows or ought to know of that risk. (3) In this case, both conditions are satisfied. As to the first condition, a real and immediate risk to the right to life – which is significant and substantial, present and continuing – can be met where the affected individual is facing, by reason of the industrial activity, the development of a condition which would entail a reduced life expectancy. In the present case, Dr Sinha convincingly assesses Mathew, by reason of the current level of hydrogen sulphide emissions from WQLS, as not recovering on the pathway from the BPD caused by his premature birth to the development of COPD which would mean a substantial and significant reduced life expectancy (earlier death in adulthood). That constitutes, for the purposes of Brincat §84, “an inevitable precursor to the diagnosis of” a relevant disease and it is not necessary for Mathew also to have “current conditions ... of a life-threatening nature”. The second condition is met, at least from 5 July 2021 when Dr Sinha's first report was sent to the EA. (4) Once triggered, the positive obligation under Article 2 is to take such operational measures, within the scope of the EA's powers, as constitute reasonable steps to avoid the risk to Mathew's right to life. Identifying whether reasonable steps have been taken involves an objective standard for the Court to delineate and enforce. The contextual application of that objective standard must include recognising the vulnerabilities of Mathew as a child. This is a context where the best interests of the child are a primary consideration in accordance with the provisions of the UN Convention on the Rights of the Child, which is well-recognised to inform the content and application of the Convention rights. The Court does not impose an impossible or disproportionate burden. But, in a context such as the present, the content of the positive operational duty must require that the EA do “everything within their powers” to safeguard life. There is an overlap between the Article 2 positive operational duty and the equivalent positive obligation arising under Article 8 in the context of

serious environmental pollution. The correct approach to the overlap involves applying stringent standards associated with Article 2 to an alternative Article 8 analysis, not by diluting standards of Article 2 by reference to the qualified right in Article 8. (5) The Article 2 positive operational duty is being breached in the present case, for these key reasons: (a) the EA can do “much, much more” than is currently being done, both in relation to waste reception (currently primarily left as a matter of ‘self-regulation’ by WQLS) and in relation to waste which is already on site; (b) the position of children and Mathew in particular has never been addressed by the EA; and (c) the application of the two WHO guideline levels by the EA is inappropriate where the problem is one of chronic exposure and respiratory difficulties, particularly in children and particularly for Mathew. It is inappropriate for the Court to adopt any particular guideline level or value for hydrogen sulphide emissions, no safe level can be supported on behalf of Mathew, in light of Dr Sinha’s evidence. It is inappropriate and unnecessary for the Court to identify any particular step or steps which the EA should be requiring the IP to take. What is appropriate, and sufficient, is for the Court to find that the current levels of hydrogen sulphide from WQLS constitute a breach by the EA of its positive operational duty under Article 2.

#### *Article 8*

46. Unsurprisingly, given the recognised overlap between the positive operational duties under Article 2 and Article 8 (see §42(1a) above), the key points advanced by Mr Wise QC in relation to Article 2 (see §45 above) were to a large extent also advanced in the alternative under Article 8. The points of difference, as I saw them, were these. (1) There is a positive obligation under Article 8 to take operational steps to protect Mathew’s rights to respect for private and family life, where the triggering condition is met. The triggering condition is severe environmental pollution affecting Mathew’s well-being and adversely affecting private and family life, with a direct effect on Mathew’s home, family life or private life, where the effects of the environmental pollution attain the minimum level, by reference to the circumstances such as intensity, duration, physical and mental effects. (2) That is met by reference to Dr Sinha’s assessment about the significance for Mathew’s health and wellbeing of clean air and the implications of the current levels of hydrogen sulphide emissions. It is met by the evidenced realities – described by Dr Sinha and by Mathew’s mother – as to the health concerns and fears for his health, and the practical effects on Mathew’s well-being, from breathing hydrogen sulphide emissions rather than fresh air. (3) Once triggered, the Article 8 positive obligation on the EA is to take reasonable and appropriate measures to secure rights to private and family life, striking a fair balance between the interests of the individual and of the community as a whole, where the Court has the task of assessing whether state authorities could reasonably be expected to act. This is an objective standard and, here too, it is necessary to recognise the vulnerabilities of Mathew as a child, whose best interests are a primary consideration. The Court must also assess whether the EA has approached the problem with due diligence and gave consideration to all the competing interests, including in particular the interests of children in general, and Mathew in particular. The Article 8 obligation is being breached, and no fair balance has been struck, essentially for the same reasons as seen in relation to Article 2, but also having regard to

the experience of the local community. The outcome should be the same as described in the context of Article 2.

### *Common law*

47. Having encapsulated the arguments under Article 2 and Article 8 what is left is Mathew's case as to public law duties of reasonableness and reasonable enquiry. In essence, as I saw it, Mr Wise QC's key submissions as to these common law standards were echoes of his key points advanced in relation to Articles 2 and 8. The premise – as is common ground – is that the EA owes public law duties at common law, to act reasonably and undertake a sufficient enquiry (reasonable steps to acquaint itself with relevant information). Mr Wise QC submits, for all the reasons developed under Articles 2 and 8 that the EA is not acting reasonably. He also submits that there has been a breach of the duty of enquiry, because the EA has not adequately enquired into the impact of the emissions at WQLS on children in general and Mathew in particular. I can deal with these common law points shortly, as did all parties in their submissions. Even leaving aside whether the Article 2 positive operational duty is triggered, if it is the case that the Article 8 positive operational obligation seen in Lopez Ostra and Fadeyeva is triggered – as I find it is – Mathew could not fail as to Article 8 and yet succeed as to the duty of reasonableness at common law. That means either he does not need it, or he cannot succeed under it. Mr Wise QC accepted that when I put it to him. In my judgment, the same is true in relation to the common law duty of enquiry, given that Article 8 can be breached by an absence of due respect and due diligence in considering relevant interests, as illustrated by Fadeyeva (§§105, 128-129, 131). So far as that is concerned it is, moreover, a complete answer that the EA has taken the advice of PHE as to health impacts and risks, including by eliciting from PHE a response, given by Dr Coetzee (see §59 below) to Dr Sinha's first report in relation to Mathew. It is necessary, and sufficient, to analyse this case by reference to the positive operational obligations.

## **VI. Analysis of Some Discrete Topics**

### *Article 8 as the appropriate prism*

48. This is the first of a series of discrete topics which I will discuss. Mr Mould QC accepts that Article 8 is applicable to the present case. He submits that Article 8, rather than Article 2, which is the appropriate Convention right by which to test the legal adequacy of the EA's response to hydrogen sulphide emissions from WQLS. He points to the recognised overlap in the positive obligations (Brincat §§85, 90), recognised by Mr Wise QC. The logic of that submission, as I see it, would include these points. As with the non-Attard group of applicants in Brincat, so it is Article 8 which is applicable here. Mathew and his mother are in the same position as were Mrs Lopez Ostra and her daughter Cristina in Lopez Ostra. That case, moreover, was all about hydrogen sulphide emissions from the Spanish waste treatment plant: a regulated industrial activity, also concerned with waste. In that case there were (Professor Clavel, Dr Sanchez, IFM), as in this case there are (Dr Samuels, Dr Sinha), medical reports and expert opinions to the effect that hydrogen sulphide emissions could endanger health and were or could be causally linked to the child's ailments (there, Cristina Lopez Ostra; here, Mathew). In that case there was (NTI), as in this case there is (PHE), an assessment which could not rule out health risks from long-term exposure. Article 8 identifies the relevant severity of effects of serious

environmental pollution. Article 8 poses the relevant question to test the reasonableness of the EA's actions. It did so in Lopez Ostra. It also did so in Fadeyeva, in the case of the Russian steel plant, where there were health effects in terms of health deterioration or vulnerability to health deterioration, and where the evidence described levels above which pollution was potentially harmful to health and well-being. The virtues of Article 8 include bringing in the position of the community as a whole. If the cases of Mrs Lopez Ostra (and Cristina), and Ms Fadeyeva, did not trigger Article 2 standards but rather Article 8, the same is true of Mathew. If the EA has acted compatibly with Article 8, unlike the Spanish regulatory authorities in Lopez Ostra and the Russian regulatory authorities in Fadeyeva, then Mathew's claim will – and should – fail. There is considerable force in these points. It is possible that the Strasbourg Court would select Article 8 as the closest fit and find that no separate issue arose under Article 2. What is more, in my judgment, the overlapping positive operational duties would not yield a different answer whether analysed as originating from Article 2 or Article 8. Nor is it necessary, as submitted by Mr Wise QC, to treat Article 8 standards as heightened by virtue of the overlap. Notwithstanding all this, I will resist the temptation to analyse the case solely by reference to Article 8. I will address the trigger questions both for Article 8 and Article 2.

#### *Relevance of impacts on the local community*

49. This claim is brought by Mathew, and by nobody else. As Mr Mould QC and Mr David Hart QC (who appeared with Thomas Beamont for the IP) point out, it is Mathew – and not other members of the local community – who is the HRA “victim”. The analysis turns on his position and the questions concerning protection and violation of his Article 2 and Article 8 rights. But that does not make the local community, or the wider community, irrelevant. Mr Wise QC submitted that the “fair balance” test, applicable under Article 8, brings in the position of “the community as a whole”: that would include not only economic well-being and the public interest in waste disposal arrangements which can weigh in the fair balance against the victim's interests; but also the adverse impacts on the local community which can weigh in the fair balance with the victim's interests. I accept that submission. It fits with the expression of the fair balance test (see §42(2c) above); it would make relevant in Lopez Ostra the fact that the Spanish waste treatment plant had been causing “nuisance and health problems to many local people” (§52), as well as “the interest of the town's economic well-being” in “having a waste-treatment plant” (§58); it would avoid the artificiality of treating a sickening hydrogen sulphide smell detected by police in “the neighbourhood” as only adversely affecting the victim's household (§20). It means Article 8 considers effects on the victim seen in terms of their wider effects (see Fadeyeva §§44-47), including “adverse effects of pollution on all residents” (§85) and the implications of pollution for “those exposed to it” (§87); ensuring that the state authorities have given “due weight to the interests of the community living in close proximity” (§131), acting to “take account [of] the interests of the local population, affected by the pollution” (§133). In my judgment, similar considerations would apply to the reasonable steps duty (see §43(2) above) where the Article 2 operational duty has been triggered (see §42(3d),(3e) above): what steps are appropriate is informed by the context and circumstances (cf. Oneryildiz §73); the importance of not imposing a disproportionate burden (see §42(3d) above) necessarily

brings in a balancing of competing considerations; and the principled Article 2 and 8 overlap (see §42(1a) above) would be undermined if this aspect were disregarded. It follows, in my judgment, that the lived experience of the local community (see §§16-18 above) is relevant, not only to whether the Article 8 minimum level is crossed (see §42(2a), (2b) above), but also to the substantive positive obligation to strike a fair balance (Article 8) and take reasonable steps (Article 2).

*This is not a 'looking back', but an 'in the moment', case*

50. Mr Mould QC rightly emphasised that, unlike many of the cases on which reliance has been placed, this is not a 'looking back' case. The problem of hydrogen sulphide emissions from WQLS is a present problem, which the EA is addressing at the present time. Reasonable steps and the striking of a fair balance need to be seen, and approached with caution, for that reason. I accept that positive operational duty cases will frequently involve 'looking back'. In Rabone the daughter had committed suicide. In the case in which the positive operational duty was first identified – the case of Osman v United Kingdom (1998) 29 EHRR 245 – the husband and father had been murdered. The analysis involved 'looking back' at what the NHS Trust (Rabone) and the police (Osman) had done and not done in the context of the risk. Lopez Ostra was looking back at Spanish state authority inaction in the period 1988-92; Oneryildiz was looking back at Turkish state authority inaction from May 1991; Budayeva was looking back at Russian state authority inaction from August 2000; Brincat was looking back at Maltese state authority inaction between the 1960s/70s and early 2000 and the Attard applicants succeeded by reference to inaction between 1959 and 1974 (Brincat §105). Only Fadeyeva was a 'present breach' case, looking at the May 1998 position and up to the present (2005). It is quite right that the Courts – and especially, for obvious practical reasons, the Strasbourg Court – will be 'looking back'. However, importantly, the Courts are not considering positive operational duties with "hindsight". That would be inconsistent with the principles that Convention rights are interpreted and applied to make safeguards "practical and effective" (Oneryildiz §69), and that the Court does not impose burdens which are "impossible" or "disproportionate" (see §42(3d) above). It follows that a national court, considering compliance with an HRA s.6-type obligation, would in principle be able to address and, if necessary, enforce the positive operational duty at the time ('in the moment'). Suppose a Spanish human rights court in the period after 1988, at least if relevant expert opinions and written evidence had been produced (Lopez Ostra); or suppose a Turkish human rights court in the autumn of 1991, with the May 1991 report and the Environment Office recommendation (Oneryildiz); or suppose a Russian human rights court after May 1998, with the government programs of 1990 and 1996 (Fadeyeva); or a Russian human rights court after August 2000, with the recommendations of an early warning system (Budayeva); or a Maltese human rights court in the 1970s, with the known risks to those working with asbestos (Brincat). The logic of the Strasbourg Court's decisions and analysis in those cases would, in my judgment, involve the national human rights court – enforcing a HRA s.6-type obligation – asking itself 'in the moment' whether there is an identifiable content to an applicable positive operational duty and, if so, give such remedies as ensures that the duty is being complied with. In Oneryildiz for example, that could have been a mandatory order from the domestic court requiring installation of a gas extraction system; or it could have been

a judgment making clear that the Environment Office’s 1991 recommendation required urgent implementation. In Fadeyeveva for example, it could have been a domestic court judgment or declaration recording that the state authorities were under an obligation to take such steps as would reduce emissions to the identified “acceptable levels”. Caution is one thing. Abdication is another. The inexorable logic of these human rights cases is that public authorities – and courts – must ‘step up’ at the time.

*Reasonable steps, fair balance and latitude*

51. Mr Wise QC submitted that the positive operational duty to take reasonable steps (see §§43(2), 45(4) above) involves an objective standard applied by the Court, which I accept. He further submitted that the contextual application of that standard can, in principle, give rise to a situation where there is no room for any discretion or latitude on the part of the relevant state authority. I accept that such a situation could, in principle, arise. So did Mr Mould QC: he accepted that could be a situation where reasons for not taking particular action ‘do not stack up’ and in consequence there can be a duty to take that action; he pointed to the facts of Oneryildiz, where the Strasbourg Court explained that what was required was the installation of a gas extraction system (§§102, 107), being “the necessary urgent measures” (§102). Mr Wise QC put forward various formulations as to when, he submitted, a duty would arise with objectively reasonable content and involving no “margin of discretion”. He relied on the expression “a duty for the state to ensure, by all means at its disposal, an adequate response” (Oneryildiz §91), and the expression “a duty to do everything within the authorities’ power” (Budayeva §175), as reflecting situations where the duty is not ‘reasonable steps’ but the more exacting standard of ‘everything they can’. He characterised the more exacting standard as applicable to state supervision of private operators of inherently dangerous industrial activities; or to a ‘public health emergency’. In response, Mr Mould QC submitted that these expressions of “all means at its disposal” and “everything within the authorities’ power” do not serve to eliminate the importance of latitude, at least in a case like the present. I agree with Mr Mould QC. The latitude for judgment and appreciation, on the part of the public authorities charged with licensing and supervisory functions in relation to dangerous industrial activity, is extremely important and the Court must never lose sight of it. That latitude is well understood by the judicial review courts. It is clearly recognised in the context of the EA as a specialist regulator: see R (BACI Bedfordshire) v Environment Agency [2019] EWCA Civ 1962 [2020] Env LR 16 at §§87-88. It is reinforced by the language used in the statutory scheme (see §44(1) above). Article 2 and Article 8 safeguards are to be “practical and effective”. Burdens are not to be “impossible or disproportionate”. The Article 2 positive operational duty is a “reasonable steps” duty (see §43(2) above). The Article 8 positive operational duty is a “fair balance” duty (see §42(2c)): a “positive duty to take reasonable and appropriate measures” (see §42(2c); Brincat §102), asking whether the authorities could reasonably be expected to act (see §42(2d) above). The positive obligations involve a principled overlap (see §42(1a) above). The latitude, which for the Strasbourg Court as an international court operates as a “margin of appreciation” enjoyed by national authorities (see eg. Fadeyeveva §§96, 102, 134), has a principled equivalent which is informed by many of the same considerations, when the domestic judicial authority is supervising the actions of the domestic administrative authorities. Judicial formulations must not be taken out of context or read

as a statute. In Oneryildiz §91 the phrase “by all means at its disposal” was in fact being used to describe the implementation of the framework to repress and punish breaches, in the situation “where lives have been lost”. Even then, the Strasbourg Court was speaking of “an adequate response” and the framework “properly implemented”. In Budayeva §175 the phrase “a duty to do everything within the authorities’ power” was a phrase being used “in the sphere of disaster relief”, and the Court was contrasting A1P1 protection by reference to “what is reasonable in the circumstances”. Sometimes, even an A1P1 violation is described in these terms: “the state officials and authorities did not do everything within their power” (Oneryildiz §135). The Article 2 positive operational duty has been described in terms which ask whether the authorities have done what “could reasonably be expected” of them (see eg. Oneryildiz §§70, 75; Budayeva §152); as has the Article 8 positive operational duty (see eg. Fadeyeva §89). Like the Strasbourg Court, this Court: does not substitute its view of the best policy to adopt in a difficult technical and social sphere (see §42(2f) above); recognises that there may be a choice of means and the positive duty may be capable of fulfilment by alternative means (see §42(3d) above). Even specific action like installing a gas extraction system (Oneryildiz) or putting in place a mudslide early warning system (Budayeva) will involve judgment, appreciation and choice. Like the Strasbourg Court, it is not this Court’s “task to determine what exactly should have been done in the present situation to reduce pollution in a more efficient way” (Fadeyeva §128) and “to dictate precise measures which should be adopted” (Fadeyeva §133). Ultimately, Mr Wise QC’s own approach to remedies acknowledged that to be so.

#### *Article 2 and reduced life expectancy*

52. In the context of the risk of a methane explosion (Oneryildiz) or a mudslide engulfing a town (Budayeva), the risk to the right to life may be equated to the risk of being killed. In the context of hydrogen sulphide emissions, that would be clearly engaged in the context of the risk of a Poza Rica incident (see §10 above) or Level 3 US AEGL exceedances (see §13(7) above). There can be a relevant risk to life even though individuals do not, or may not, die: where there is an equivalent threat to their physical integrity. That was the position of those applicants in Budayeva who, and whose relatives, escaped. Mr Wise QC submits that, in principle, the real and immediate risk to life may arise by reason of an impact which would reduce life expectancy, and would thus accelerate death. I accept that submission. It follows naturally from the recognition (Oneryildiz §72) that Article 2 can apply in cases concerning “toxic emissions” and “nuclear tests”. A level of toxic or nuclear emissions which would leave those living nearby alive, but with life-shortening illness, can therefore in principle fall within Article 2. Mr Wise QC cited Watts v UK (App. No: 53586/09) at §88 (where Article 2 was treated as applicable due to the possible negative impact on the life expectancy of a badly managed transfer of a frail older person). It is also clear from Brincat, where the Strasbourg Court (at §82) cited a series of cases in which Article 2 had been applied where there is “a serious risk of ensuing death”, including “persons suffering from serious illnesses”, including a “potentially life-threatening disease”, or “leukaemia diminishing [the applicant’s] chances of survival”, or “different types of terminal cancer”. Neither Mr Mould QC nor Mr Hart QC disputed that the Article 2 positive operational duty could in principle arise where the risk concerns reduced life expectancy. In my judgment, they

were right not to do so. I find it difficult to conceive that Article 2 would apply to a real and immediate risk of a methane explosion which would mean employees all in their 40s and 50s would be killed, but would not apply to the real and immediate risk of a nuclear leak which would mean local children would get cancer reducing their life expectancy so that they would in due course die in their 40s or 50s. Mr Hart QC advanced a separate argument about reduced life expectancy and private operators, to which I will need to come (see §54 below).

*Positive operational duties and private operators of industrial activities*

53. Mr Hart QC advanced two submissions referable, as I saw them, to the situation where the danger is said to come from an industrial activity operated by a private operator. First, he submitted that there must be an element of “assumption of responsibility” on the part of the State which is absent in the present case. Mr Hart QC located the need for “an assumption of responsibility” from *Rabone* §22: “the operational duty will be held to exist where there has been an assumption of responsibility by the state for the individual’s welfare and safety (including by the exercise of control)”. He explained the *Strasbourg* cases as involving the State elements of a municipal waste tip (*Oneryildiz*) and a state retention dam (*Budayeva*). To these he could add the state-owned employer (*Brincat*), previous state ownership (*Fadeyeva*) and municipal land and state subsidy (*Lopez Ostra*), as constituting additional state elements in all of the cases. He submitted that there is no assumption of responsibility in there being state licensing and state supervisory responsibility, which bars any positive operational obligation from arising, at least in the case of Article 2. I cannot accept those submissions. I agree with Mr Wise QC’s submission (see §45(2) above). What mattered in *Lopez Ostra* was the failure to act on the part of state authorities who had supervisory powers (§§46, 54). So it is that “the State’s responsibility in environmental cases may arise from a failure to regulate private industry” (*Fadeyeva* §89: the proposition at §42(1b) above) and so the State’s regulation and control “brings accidents in this sphere within its responsibility” (*Budayeva* §173). So it is that in Article 2 cases the Court speaks of “any” inherently dangerous activity, “whether public or not” (*Oneryildiz* §71; *Brincat* §80). The emphasis on state regulation of private operators was the answer to the Turkish government’s unsuccessful complaint of an unwarranted extension of the jurisprudence (*Oneryildiz* §§66-67). It provides a principled symmetry between the framework obligation (the duty to have licensing and supervisory arrangements) and the positive operational duty (owed by the licensing or supervisory state authorities with the “tools” to act: *Fadeyeva* §§124, 132). It is why the status of the operator is no more than a factor relevant to the substantive content of the duty (*Oneryildiz* §75). State licensing and supervisory responsibility suffices, whether (as I think) that would place this situation within the ‘general indicator’ of assumption of responsibility (*Rabone* §22), or whether alternatively it is one of those situations where assumption of responsibility is not needed (see *Rabone* §23).
54. Secondly, Mr Hart QC submitted that – in the context of reduced life expectancy – the existence of a private operator regulated and supervised by State authorities brings into play the heightened Article 3 threshold seen “in the immigration context”. He referred to the test of a “reduction in life expectancy” which is “substantial” and so “significant” which, alongside “a serious, rapid and irreversible decline in ... health resulting in intense

suffering”, governs the Article 3 compatibility of immigration removal: AM (Zimbabwe) v Secretary of State for the Home Department [2020] UKSC 17 [2021] AC 633 at §31. This is a principle seen in a long line of Strasbourg cases addressing risks which “on account of the absence of appropriate treatment in the receiving country or the lack of access to such treatment” mean immigration removal (see AM §§14-26). I was shown no indication of the Strasbourg Court as recognising a principled parallel between the environmental state regulation cases and that line of authorities. In my judgment, the analogy is not a sound one. But, in any event, I am satisfied that Dr Sinha in his evidence in this case was describing a reduced life expectancy which is both “substantial” and “significant” if Mathew were to develop COPD, which evidence I accept.

## **VII. Are the Positive Operational Duties Triggered?**

### *The Article 2 trigger*

55. On the question of whether the conditions for triggering the positive operational duty under Article 2 are met (see §§43(1), 45(3) above), Mr Mould QC’s ultimate submission, supported by Mr Hart QC, involved a concession and a proposition. It arose out of the passage in Brincat at §§83-84. There, the Strasbourg Court explained that Article 2 applied in the case of Mr Attard, who had died of malignant mesothelioma, arising from his exposure to asbestos at Malta Drydocks. The Court explained (§82) that it had “repeatedly examined complaints under Article 2 from persons suffering from serious illnesses”, including “potentially life-threatening disease hepatitis C”, “Leukaemia diminishing [the applicant’s] chances of survival” and “different types of terminal cancer”. The Court then explained why Article 2 did not apply to the other applicants. Having described their respiratory problems, plaques in their lungs, and the other complications related to exposure to asbestos, the Court gave the reason (§84) (the square bracketed numbers are mine):

*[They] have not to date been diagnosed with malignant mesothelioma. It can neither be said [i] that their conditions constitute an inevitable precursor to the diagnosis of that disease, nor [ii] that their current conditions are of a life-threatening nature. It follows that Article 2 does not apply in their case.*

The concession was this. Mr Mould QC and Mr Hart QC accepted, including when pressed by me, that Mr Wise QC can demonstrate by reference to the evidence of Dr Sinha that Mathew satisfies the Brincat §84 description of [i] “conditions [which] constitute an inevitable precursor to the diagnosis of [a relevant] disease”. They accept that this would meet the condition for triggering the Article 2 positive operational duty if, in giving the description of [ii] (“current conditions ... of a life-threatening nature”), the Strasbourg Court was describing alternatives. The proposition was this. They submit that [i] and [ii] in Brincat §84 are to be read and understood as being cumulative, not alternative. So, Mathew would need to satisfy both. Since he cannot, Article 2 is not triggered. In response, Mr Wise QC submits that [i] and [ii] in Brincat §84 are alternatives and, [i] being accepted, the Article 2 positive obligation is triggered. In my judgment, Mr Wise QC is right about Brincat §84: the Strasbourg Court was clearly describing [i] and [ii] as alternatives. In fact, there were three different and alternative ways in which Article 2 could have been triggered. The first alternative was if an employee had, by reason of

exposure to asbestos through working at the Drydocks, already been diagnosed with malignant mesothelioma. That would put the applicant in the position of having the “potentially life-threatening disease” of a specific “terminal cancer”, akin to the cases discussed in Brincat §82 where Article 2 applied. The second alternative was if an employee had, by reason of exposure to asbestos through working at the Drydocks, already developed some condition or conditions which “constitute[d] an inevitable precursor to the disease of malignant mesothelioma”. So, if it were “inevitable” that pleural plaques would become malignant mesothelioma then being exposed to asbestos through working at the Drydocks would have given the applicant a medical condition (pleural plaques) which, inevitably, put the applicant on the pathway to the terminal cancer. But it was not “inevitable”, as the Court explained in §84. The Court elsewhere described the applicants with pleural plaques as “prone to malignant mesothelioma” (§68), recording the Maltese government’s argument that there was no inevitable link, because pleural plaques (§77) “were not precursors to lung cancers”. The third alternative was if an employee had, by reason of exposure to asbestos through working at the Drydocks, already developed current health conditions which, although not malignant mesothelioma, were themselves “of a life-threatening nature”. That would place the applicant in the same category of “potentially life-threatening disease” (§82) by reason of the other and current conditions. So, the first alternative would be met through a current diagnosis of malignant mesothelioma; the second would have been met if pleural plaques were an inevitable precursor to a diagnosis of malignant mesothelioma; the third would have been met if pleural plaques were themselves a condition of a life-threatening nature like malignant mesothelioma. In addition, there is this. If Mr Mould QC and Mr Hart QC were right, an individual who satisfied [ii] (a current life-threatening condition) would also need to satisfy [i] (an inevitable precursor to a diagnosis of malignant mesothelioma). I cannot see why that should be. For these reasons, I am satisfied that [i] and [ii] are alternatives. On that basis, it is common ground that the condition for the Article 2 positive operational duty is satisfied, and the duty is triggered.

56. I have asked myself whether Mr Mould QC and Mr Hart QC were right – and if so why – as to their concession. As I have explained, they accepted that Mr Wise QC has made good, by reference to the evidence of Dr Sinha, a current condition which constitutes an inevitable precursor to a relevant diagnosis for the purposes of Brincat §84 [i], in the context of the triggering of the Article 2 positive operational duty. I think they were right and that their concession is properly made. My reasons are as follows. (1) COPD is an illness which reduces life expectancy, and which would squarely fall within the ambit of the illnesses described at Brincat §82, to which Article 2 has been applied. (2) Mathew’s BPD puts him on the pathway to COPD (see §21 above). However, unlike the pleural plaques developed by the other applicants in Brincat which were attributable to asbestos exposure while working at Malta Drydocks, Mathew’s BPD is not attributable to hydrogen sulphide emissions from WQLS but rather to his premature birth. That means there is no parallel with the situation being considered in Brincat in that respect. (3) However, on the evidence of Dr Sinha: (i) there is a pathway from BPD to COPD which is inexorable unless Mathew recovers; (ii) Mathew is not recovering; and (iii) Mathew’s non-recovery is attributable to current levels of hydrogen sulphide exposure from WQLS. That is the professional opinion of Dr Sinha, an expert clinician. It agrees with the

diagnosis of Dr Samuels, another expert clinician, which is clear and cogent. It is an opinion which was not premised on the idea of zero-tolerance, but rather an assessment in relation to actual emissions. It is an opinion, in my judgment, which the evidence of Professor Berry does not convincingly displace. This distinguishes the present case from Fadeyeva, which was advanced and analysed under Article 8. The Government there pointed out that Ms Fadeyeva’s medical history did not link the deterioration in her health to unfavourable environmental conditions in her place of residence (§44). The Court explained (§80) that, although Ms Fadeyeva claimed “that her health ha[d] deteriorated as a result of her living near the steel plant”, the “only medical document” which she had produced – a report from a St Petersburg hospital – had reported indications of occupational illness (§45) and “did not establish any causal link between environmental pollution and the applicant’s diseases” (§80). The medical evidence in the present case is very different. (4) What this means, on the evidence, BPD is properly to be seen as constituting “an inevitable precursor” to a serious illness reducing life expectancy, where that very inevitability is attributable to the ongoing exposure to hydrogen sulphide emissions from WQLS at current levels, against which the EA has the powers to protect. I add this. If this is wrong, the consequence is that substantially the same principles will be applicable by reference to Article 8, as in Brincat (§§85, 90, 102, 116-117).

#### *The Article 8 trigger*

57. I accept Mr Wise QC’s submission whose essence I have sought to encapsulate at §46(2) above. In my judgment, this is a case in which the Article 8 positive operational duty is triggered. Based on all the evidence – about Mathew, and about the emissions, and about the implications of the emissions for Mathew – I am satisfied that there is a direct effect on Mathew’s home, family life and private life from adverse effects of severe environmental pollution which attains the relevant minimum level by reference to intensity, duration, physical and mental effects. This is, moreover, not a case concerning a “detriment” which is “negligible in comparison to the environmental hazards inherent in life in every modern city” (Fadeyeva §69).

### **VIII. What does Compliance with the Positive Operational Duties Require?**

#### *Step (1)*

58. Mr Mould QC submits that the EA has complied with any positive operational duty as arises (as well as its common law duties), on the basis of the following position, developed in his written and oral submissions. In its essentials, as I saw it, it involves three key steps, which I will identify and consider in turn. Mr Hart QC supported the EA on these points and accepted that the EA’s position advanced by Mr Mould QC constituted a position open to the EA. First, Step (1). Mr Mould QC’s starting point is that the application of Article 2 and/or 8 and common law standards must start from the position that the EA as regulator has a latitude involving the exercise of judgment and appreciation in (a) appraising a situation, (b) conducting a suitable enquiry and (c) identifying appropriate steps. That latitude is reflected in the Strasbourg cases through the discussion of the “margin of appreciation” and the same principled reasons which underpin the Strasbourg Court’s restraint inform the nature and width of the latitude which the domestic judicial review court should afford to the specialist regulator. The principle of fair balance (Article 8) but also the test of reasonable steps (for the purpose

of Article 2, if applicable) recognises that it is not for the court to substitute its views to the appropriate policy, that it is for the EA to identify appropriate steps and choose from alternative steps and that the court must not impose an impossible or disproportionate burden. It is for the EA to address as a matter of judgment and expertise how measures can be effectively and speedily achieved. That includes issues as to whether effectiveness is secured with the landfill continuing to operate. It includes the appropriate ongoing iterative process in circumstances where an operator is cooperating. I accept Mr Mould QC's Step (1). It is linked to what I have said at §51 above.

*Step (2)*

59. Mr Mould QC's next step – Step (2) – is as follows. In the context of the public health concerns arising in this case, including the concerns relating to Mathew's health, the EA took the reasonable and appropriate action of (a) monitoring emissions levels and (b) taking advice from PHE. PHE was plainly an appropriate state agency from whom to take advice (see §8 above). The EA's pleaded defence to this claim emphasises that the EA has worked, and continues to work, closely with PHE regarding potential impacts of landfill gases, and has done so specifically with respect to WQLS since early 2021; that PHE has undertaken and published its Risk Assessments; that the EA has sought PHE's advice on whether Dr Sinha's report (5.7.21) about Mathew's health conditions and the impacts on him affect the basis on which PHE assesses the risks. Through Dr Coetzee (§9), PHE has confirmed: "The information provided in the report and addendum statement of Dr Sinha would not lead Public Health England (PHE) to change its risk assessment approach including the health-based guidance values used to assess the potential risks to health". This means PHE has acted to address directly and conscientiously the public healthcare concerns which arise in the context of hydrogen sulphide and WQLS, including in relation to Mathew. The EA has engaged with PHE and has taken PHE's advice. The actions of eliciting informed advice from PHE demonstrably discharged the duty to take reasonable steps to acquaint itself with relevant information, when viewed alongside the EA's other actions including its consideration of the position of residents. By specifically taking PHE's advice in relation to Dr Sinha's reports, the EA has manifestly discharged his duty to take into account and consider the health effects of operations and emissions at WQLS. PHE has made clear and strong recommendations in the Fourth PHE Risk Assessment. If the EA takes actions which have as their purpose and design the implementation of PHE's recommendations and thus PHE's advice, that response will constitute a discharge of the positive obligation arising under Article 8 and Article 2 (if applicable). That is because the specialist public health agency of the State has made strong and clear recommendations identifying what it is that needs to be achieved. It has done so, by reference to what it has properly assessed to be appropriate health-based guidance values. Those guidance values and their applicability have been carefully chosen, clearly identified and explained by PHE, as can be seen in the Fourth PHE Risk Assessment. The PHE's advice identifies the "acceptable" level of emissions. That includes the WHO half-hour Guideline (7PPB), to which one strong recommendation applies. It includes the US EPA chronic (lifetime) level, to which the second strong recommendation applies. Once the use "during 2021" of the US ATSDR "Intermediate" Value (20PPB) is understood, what PHE has clearly advised is that the US EPA Reference Concentration must be met from January 2022 (as

days 365 onwards). As Mr Mould QC submitted: the appropriate standard to evaluate risk is PHE's advice; and the appropriate way to assess progress is to establish monitoring, take PHE's advice, and implement it. So, if the EA designs an action plan involving the measures which it has designed as being sufficient – in its judgment – to achieve this outcome from this date onwards, then reasonable steps have been taken and the duty is being discharged.

60. I accept Mr Mould QC's Step (2). In my judgment, this step is correct, and it is an essential part of the analysis in this case. I have set out (see §32(5) and (10) above) what it is that the Fourth PHE Risk Assessment is advising. I accept that the EA would discharge its legal obligations if and insofar as it takes the action which – in its judgment – will be effective to implement that advice. In my judgment, it is not a question of this being sufficient, but also of this being necessary, to discharge the EA's legal obligations. The EA's pleaded defence convincingly submits that it is "appropriate for the EA to have relied on the advice from PHE as the responsible national body for public health and for protection from public health hazards". PHE, as the relevant state public health body, has been asked to conduct an assessment and give advice. It has done so. It has identified what it considers to be the appropriate health-based levels of hydrogen sulphide. It – and the work which it has adopted and applied – has done so, having regard to the need to protect the human health of all those who are exposed, including children and all those vulnerable to hydrogen sulphide. In those circumstances, reference to the Convention on the Rights of the Child, would not take matters further. The identification of appropriate health-based levels is of real significance in securing practical and effective health safeguards. As has been seen, in Fadeyeva there were maximum permissible limits (§49), which had been identified in and through the Russian legislation, as limits above which the Russian legislative authorities had assessed that "pollution becomes potentially harmful to the health and well-being of those exposed to it" (§87) and "might endanger the health of those living nearby" (§132). The breach of the positive operational obligation in Fadeyeva was because "the polluting enterprise at issue operated in breach of domestic environmental standards" and (§133):

*there is no information that the State designed or applied effective measures which would take into account the interests of the local population, affected by the pollution, and which would be capable of reducing the industrial pollution to acceptable levels.*

This, in my judgment, is a clear encapsulation of what is sufficient – but also necessary – for the EA to do in the present case. The phrase "acceptable levels" in the present case is the one used by PHE and Dr Coetzee. What is needed is the design and application of measures which are effective to reduce the emissions to those acceptable levels. It is PHE's clear and published advice, by reference to identified health-based standards, which would satisfy the need to approach the problem with due diligence (Fadeyeva §128). Fadeyeva is not the only case to provide a helpful reference-point. In Lopez Ostra the Spanish authorities had identified "permitted levels", above which hydrogen sulphide emissions "could endanger the health of those living nearby", and the NTI had reported that exceedances of those values could endanger health. In Oneryildiz, a committee of experts had written a report and the Environment Office had given advice, making a recommendation, which the state authorities decided not to implement, but rather to resist. There were also relevant recommendations in Budayeva, which were not adopted

and implemented. Likewise, to fail to adopt the clear advice and recommendations of PHE, referable to protective and precautionary health-based standards identified as appropriate by PHE, would be to fail to comply with the positive operational duty. Only recognition, acceptance and implementation of PHE's advice – through the design of effective measures to achieve the outcomes in PHE's advice – could satisfy the positive operational duty given the real, anxious and evidenced health concerns relating to Mathew, a vulnerable child.

61. Mr Mould QC would not flinch at this. All of it is congruent with the submissions which he made in defence of the EA's actions in this case. Mr Wise QC, on the other hand, strongly submitted that this analysis could and would not go far enough to protect Mathew. That submission was based, as I saw it, on three objections in particular. Mr Wise QC's first objection was that Mathew's team cannot accept that there is any 'safe level', above ambient levels of hydrogen sulphide, and nor should the Court. I understand that objection of course, and the evidence of Dr Sinha on whose 'zero-tolerance' (see §23 above) it is based. I appreciate that Dr Sinha would not have supported the Russian acceptable levels for emissions including hydrogen sulphide, discussed by the Strasbourg Court in 2005 in Fadeyeva; nor the Spanish acceptable levels for hydrogen sulphide, discussed by the Strasbourg Court in 1994 in Lopez Ostra. But I cannot accept that the human rights assessment falls to be approached on Dr Sinha's 'zero-tolerance' approach (§§27-31 above). I make clear that it is not a question of the utility for regulators of always having a level to aim for (see §23 above): there may be pollutants in respect of whom the only level is zero, or ambient levels. The point is that the evidence before this Court justifies PHE in taking the position which it has in this case: that there are, properly precautionary, short and long-term health-based values. Having considered the WHO materials and the relatively recent and cogently reasoned US ATSDR 2016, PHE's position stands as an independently supported, objectively justified approach. PHE's chosen health-based levels are designed and assessed properly to address and protect against risk: for the local community; and for Mathew. They also require real and significant change, as a matter of urgency. Mr Wise QC's second objection was the submission that the lived experience of the local community has been unbearable throughout 2021, including at any times when emissions have been below the US EPA Reference Concentration daily average of 1PPB. In my judgment, the answer to that lies in taking the position in 2017-2019, years when PHE has assessed that the US EPA Reference Concentration was met. That is the direct comparator for the position which PHE is requiring to be restored. 2021 is a period in which there are WHO half-hour Guideline (5PPB) exceedances for significant periods of time, where the daily averages are multiples of the US EPA Reference Concentration (1PPB), where the Intermediate Value for overall average (20PPB) is being applied, all of which can be seen in the context of an odour threshold of 8PPB. Mr Wise QC made clear that he does not submit that the lived experience of the local community was unbearable throughout 2017-2019. Mr Wise QC's third objection was that this Court should say no more than whether the legal obligations are currently being met and, if not, say that and then say nothing more; the rest is for the EA to work out for itself. In my judgment, that will not do. In the present case, it is important, if possible, to be able to identify what the concrete content of the

positive operational obligation is, and to say so. That is what I am doing. It promotes practical and effective rights. It means everyone knows where they stand.

*Step (3)*

62. Finally – and as what I am calling Step (3) – Mr Mould QC submits that the Court should accept, on the evidence, that the relevant individuals within the EA have sat down and designed measures which they have assessed will be effective in reducing the pollution to acceptable levels as advised and recommended by PHE. Mr Mould QC showed me the action plan exhibited by Sarah Dennis. It identifies 18 actions at the WQLS, with planned completion dates the latest of which is 24 December 2021 (in the case of the final 6 of the actions to be completed). I asked Mr Mould QC whether the action plan had been designed with a ‘flight path’ to achieve landing at the outcome of hydrogen sulphide emissions from WQLS meeting US EPA Reference Concentration (1PPB) from January 2022. His submission was that yes, “in substance”, that was what the action plan was designed to achieve. He also accepted that there are the two recommendations in the Fourth PHE Risk Assessment, as I have explained (see §32(5) and (10) above). One involves ensuring that all measures are taken, as early as possible, to reduce the off-site odours from the landfill site so that hydrogen sulphide results will be below the WHO half-hour Guideline value of 5PPB (10 µg/m<sup>3</sup>), as a health-based guidance value, not above it, as they have been and remain during 2021 “for a considerable percentage of the time”. The other involves ensuring that all measures are taken to reduce the concentrations in the local area to a level below the health-based guidance value used to assess long-term exposure, as the “acceptable” long-term exposure level, that being 1PPB (2 µg/m<sup>3</sup>), that being the US EPA Reference Concentration. Mr Mould QC’s submission was that the EA has set out to meet that goal, and to do so by 24 December 2021. That timeframe, he submitted, fits alongside the 5-month one given by the Borough Council in the nuisance abatement notice. It applies to what is a ‘new problem’, where previously emissions were under the acceptable long-term limit (US EPA reference concentration) and where the current position in 2021 is that the US ATSDR Intermediate Value, assessed by PHE is appropriate for 2021, is being met. Mr Mould QC submitted that this Court should adopt the “inference” that EA personnel have sat down, with PHE’s recommendations as their objective, and have designed steps which they have assessed will be effective to meet that objective, including achieving below-1PPB average hydrogen sulphide emissions observed from MMFs encircling WQLS, from January 2022. He submits that this is how Sarah Dennis’s witness evidence (6.8.21) should be understood, when she says (§13): “As the volume of landfill gas emitted into the atmosphere is reduced then the disturbance and concern will reduce to acceptable levels”. He also submits that it is how the EA’s pleaded defence should be understood, when it describes it as “appropriate for the EA to have relied on the advice from PHE as the responsible national body for public health and for protection from public health hazards” (§72) and says “the EA has taken and continues to take the necessary, effective action to ensure that H<sub>2</sub>S emissions at the site are controlled and managed in accordance with the guidance and advice of PHE for the protection of human health” (§73). He says there is no basis for thinking that the EA has had any other objective in mind. Finally, says Mr Mould QC, if the Court has concerns as to a “gap” in the evidence, that concern would not support the conclusion that the positive operational duty is being breached, which

would be an unfair conclusion at which to arrive without affording a further opportunity to explain and fill the “gap”.

63. I cannot accept Mr Mould QC’s step (3). I am not satisfied, on the evidence, that officials within the EA have done what compliance with the applicable legal duties requires. My reasons are as follows. (1) There is a necessary discipline in setting a clear objective, by reference to an accurately articulated understanding of what outcome needs to be secured and by when, and then working out what steps will achieve that objective of that outcome in that timeframe. There is a what, and a when. There is also a who. The discipline involves someone taking responsibility for the exercise of judgment. Someone needs to say: ‘I have assessed that these measures will achieve below-1PPB average hydrogen sulphide emissions from January 2022’. If that has been done, someone has done it. (2) The Court has thousands of pages of materials and yet there is no document before the Court which adopts that discipline, or begins to do so. I find it impossible to imagine that the discipline could be performed without some document somewhere reflecting that this was what was being done. As Mr Wise QC put it: if there is a plan, it would have been set out somewhere. (3) There is no reference, anywhere, to the long-term US EPA Reference Concentration (1PPB) average being achieved from January 2022. Yet – as Mr Mould QC acknowledged – that is the clear logic of the Fourth PHE Risk Assessment and the second recommendation, PHE having applied the US ATSDR Intermediate Value (20PPB) for 2021 (up to day 364). That is an important, and a straightforward point. (4) None of the witness statements from the EA tell me that this is what has happened, and it would be easy to say if this were the position. As I explained at the outset (see §4 above), I have heard from Sarah Dennis, an installations technical leader who works at the EA in the team responsible for the environmental regulation of industrial and waste installation (6.8.21); from David Browell, a senior adviser on landfill gas and technical lead on landfill gas issues at the EA (6.8.21); and from Christopher Lowe, senior air-quality adviser and team leader to the national odour team at the EA (6.8.21). Mr Browell’s section on “regulatory approach” (§§73-78) makes no reference to PHE’s chosen health-based levels and his earlier discussion (§27) refers to the EA applying the short-term and long-term EALs described in the EA Landfill Gas Guidance (see §§12(1), (3), 44(2) above). Mr Lowe describes monitoring by reference to the two WHO guideline values (§37) and refers to PHE’s published risk assessments (§40iii). That was the same position as had been described by the EA in its pre-action letter of response (7.7.21), emphasising the WHO guidelines in the context of the monitoring and PHE assessments (p.8). Ms Dennis speaks of emissions reducing to acceptable levels (§13) and goes on to describe the action plan as having been developed by her “from 01 January 2021” (§67). (5) Then there is the timing. The PHE Risk Assessments are cumulative. It was the Fourth PHE Risk Assessment which dropped the OEHHA Chronic REL (7PPB) (see §32(7) above) and involved PHE nailing its colours to the mast of the US EPA Reference Concentration (1PPB) as the acceptable long-term level. It was the Fourth PHE Risk Assessment which, for the first time, adopted the second recommendation (see §32(10) above). Sarah Dennis’s witness statement tells me she was lead compliance officer until 5 July 2021. After the hearing, I asked what the date was of the Fourth PHE Risk Assessment: the EA’s Senior Managing Lawyer in Environmental Regulation gave me as the relevant date PHE’s own publication date of 5 August 2021.

That means the second recommendation really was very new. The EA's witness statements, the documents exhibited, and the pleaded defence, were all dated the following day. None of them indicated that – or indicated how – the new Fourth PHE Risk Assessment recommendation had been addressed. (6) My conclusion does not turn on who bears the onus of proof though, in principle, the onus would as it seems to me be on the EA (cf. Fadeyeva §128).

## **IX. Outcome and Consequential Matters**

### *Outcome*

64. What should the Court do in the light of these conclusions? What is needed in this case is clarity. The position in law, as I have found it to be, can be stated as follows:

*In order for the Environment Agency to comply with its legal obligations, the Agency must implement the advice of Public Health England as expressed in the Fourth PHE Risk Assessment (published 5 August 2021), by designing and applying and continuing to design and apply such measures as, in the Agency's regulatory judgment, will and do effectively achieve the following outcomes in relation to emissions of hydrogen sulphide from Walleys Quarry Landfill Site: (1) the reduction of off-site odours so as to meet, as early as possible and thereafter, the World Health Organisation half-hour average (5PPB); and (2) the reduction of daily concentrations in the local area to a level, from January 2022 and thereafter, below the US EPA Reference Value (1PPB) as the acceptable health-based guidance value for long-term exposure.*

I will grant a declaration in these terms. In my judgment, to do so is just and convenient and is in the interests of justice. It will provide the clarity, and the reassurance, which this case needs. It constitutes this Court saying – as Mr Mould QC characterised it in argument – that in the light of all the evidence, it is critical to make clear that this outcome must be secured. It will secure practical and effective human rights safeguards. It will require pressing and ongoing action which will, in my judgment, make a very real difference so far as the air which Mathew (and his community) breathes is concerned. It will also recognise the important role played by PHE in identifying guidelines and outcomes, and the latitude which the EA has in assessing what steps are necessary and most appropriate, effectively to achieve these outcomes. Having granted that declaratory relief, I accept that it is not necessary – nor is it appropriate – for this Court to say that there is a current breach by the EA of its legal obligations. I have made clear that I am not satisfied, on the evidence, that the EA has yet addressed its legal duties in the way that it must. But there is an obvious and pressing public interest imperative that it must do so, as a matter of urgency. It is well able to do so. It will doubtless publish its confirmation that, and how, it has done so. What matters from this Court is clarity as to what the EA's legal obligations are and what the EA must, in law, do. That puts the focus where it should be, in this urgent, 'in the moment' (see §50 above), human rights case involving positive operational duties.

### *Consequential matters*

65. Having circulated a confidential draft judgment (§§1-64), I am able to deal here with consequential matters having considered the parties' written submissions on those matters, for which I express the Court's gratitude. The parties agreed that my Order should include: (1) permission to apply for judicial review is granted; and (2) permission

is granted (a) for Mathew to rely on the evidence of Rebecca Currie (11.8.21), Sian Rooney (10.8.21) and Dr Ian Sinha (1.8.21 x2, 16.8.21) and (b) for the IP to rely on the evidence of Paul Lealman (5.8.21), Lesley Anne Heasman (5.8.21) and Professor Sir Colin Berry (5.8.21, 12.8.21).

*Wording of the declaration*

66. As to the wording of the declaration, I inserted the word “daily” at (2) (see §64 above), having circulated the draft judgment. I agree with Mr Wise QC that that is an appropriate clarification, in circumstances where the US EPA Reference Concentration (1PPB) (see §12(6) above) is concerned with “daily” concentrations. This is reflected (and was in the draft judgment) in “average daily hydrogen sulphide concentrations” (§32(9) above) and “daily average” (§§33 and 61 above). Mr Wise QC suggested other amendments, also for clarity. But I do not think they are needed. He invited me to spell out at (2) “from 1 January 2022” but I have made “daily” clear and the phrase “from January 2022” as used in the judgment (see §§32(6)(7)(10), 33-34) already covers the whole of that month and is in contradistinction to the position “in 2021” (see §32(6)). Mr Wise QC invited me to reformulate “reduction of off-site odours so as to meet, as early as possible and thereafter ...” in (1), to say instead “reduction of off-site emissions so as to ensure, as early as possible and thereafter, ... is not exceeded at any time”. But, in my judgment, there is no lack of clarity: “off-site odours” is in PHE’s recommendation (see §32(5)); to “meet” the WHO half-hour average (5PPB) (see §§12(4), 32(4)-(5)) means, and can only mean, hydrogen sulphide levels being below it.

*Liberty to apply?*

67. Mr Wise QC invited me to include provision for “liberty to apply”, as follows: “liberty to apply on notice for (a) further or additional relief or (b) in relation to any issue that may arise in the course of the [EA]’s compliance with its legal duties as specified in the Court’s declaration” with “any such application to be considered and/or heard by Fordham J if possible”. The background was that Mathew’s team had unsuccessfully invited the EA to provide “proposed undertakings” to “ensure” specified “emissions” from specified dates and to provide ongoing emissions monitoring and reporting. Mr Wise QC submitted that liberty to apply would be an appropriate “contingent and precautionary” provision, justified in the interests of justice in the “unusual circumstances”, in order to “act as a valuable discipline”, in circumstances of “a well-founded lack of confidence” in the EA’s “ongoing regulation of the site”, and to provide “an efficient and cost-effective way of returning to Court” if there is evidenced non-compliance, compared with fresh legal aid, fresh pre-action correspondence and fresh pleadings. In my judgment, although the judicial review Court has the jurisdiction in an appropriate case to include a “liberty to apply” provision in an Order, it is not justified or appropriate in the present case. The declaration is clear. The judgment explains clearly what is needed and why (see §§60-61, 63-64). The substantive content of the positive obligation arises clearly from the Fourth PHE Risk Assessment (see §§32(4)-(5), (7), (10), 33-34) and it was Mr Mould QC for the EA who identified it in his analysis (§59). This Court has discharged its supervisory function and is making a binding declaration reflecting the Court’s reasoned judgment. The EA has not opposed the making of the declaration, in light of the substantive content of the judgment. As to monitoring and

transparency there is no reason to suppose that these will not continue and every reason to suppose that they will, as is reflected in Mr Mould QC's consequential submissions. Undertakings – which as to emissions levels rewrote the declaration – are and were unnecessary. I agree with Mr Mould QC: this is not an exceptional case justifying liberty to apply, as was R (ClientEarth) (No.3) v Secretary of State for Environment Food and Rural Affairs [2018] EWHC 198 (Admin); it is a case to which the observation in R (P) v Essex County Council [2004] EWHC 2027 (Admin) at §33 is applicable. That observation explained that the Administrative Court “reviews ... lawfulness of a decision, action or failure to act in relation to the exercise of a public function”; it does not “monitor and regulate the performance of public authorities”. If the EA were to fail to comply with its legal obligation that failure could, and should, be the subject of a fresh and crisply-targeted letter and then fresh grounds, with at least the urgency from the parties and the Court as was seen in this case in and from mid-July. It is not necessary or appropriate to keep these proceedings on foot.

### *Costs*

68. The question of costs arises squarely between Mathew and the EA. Nobody submits that any costs order should be made against (or for) the IP. Mr Wise QC's position is that the EA should pay Mathew's reasonable costs of the claim in full, to be assessed if not agreed. Mr Mould QC's primary position is that there should be no order as to costs; his fall-back position is that costs should be limited and should be no greater than £75,000. Mr Wise QC submits that on a realistic and common sense basis Mathew is the successful party; and that real weight should be given to the overall success, albeit – as is always likely to be the case – the successful party failed on certain issues. He points to the declaration, as a practical and effective remedy which Mathew has secured through the proceedings, and the success on the contested issue of whether the Article 2 positive obligation was triggered. He says this is also a case in which the Court should have regard to the realities in relation to legal aid, legal aid practitioners and high costs case plans. Mr Mould QC acknowledges that Mathew – “technically” – is the successful party. He emphasises the Court's analysis, in light of Mr Wise QC's arguments: that the Court has not given a judgment or made an order recognising “current breach by the EA” which was the remedy being sought (see §§3, 45(5), 46 above); nor accepting Dr Sinha's ‘zero-tolerance’ (see §61 above). Mr Mould QC also seeks to draw a parallel with the costs cap (£35,000) that could be expected to apply to an Aarhus claim (CPR 45.43). In my judgment, the appropriate order for costs in all the circumstances of the present case is that the EA should pay one-third of Mathew's costs, to be the subject of a detailed assessment if not agreed; and with a detailed assessment of Mathew's publicly funded costs. I agree that the declaration stands as a practical and effective remedy, achieved by Mathew through bringing these proceedings, which justifies regarding Mathew as “the successful party”, as Mr Mould QC rightly recognises. On the other hand, Mr Wise QC – from first to last – steadfastly maintained two key destinations. First, he wanted a finding that the EA is in present breach of its obligations, a finding which I have declined to make (see §64 above). Secondly, he wanted an analysis from this Court which accepted Dr Sinha's ‘zero-tolerance’ approach, which I have declined to adopt (see §§27-31 above). Mr Wise QC did not moreover advance, as the substantive content of the obligation and remedial solution to this case, the PHE analysis (see §32) and the logic of

implementing it, even when it loomed large at the hearing. On the contrary, it was the EA – through Mr Mould QC – who identified the importance of the Fourth PHE Assessment and implementation of its recommendations (§59). I agreed with Mr Mould QC’s Step (2), and that this provided the sufficient – and necessary – content for discharging the EA’s legal obligations (§60). It has been necessary and appropriate to make a declaration which achieves a practical and effective outcome for Mathew (§64). I interpose that – notwithstanding the dual premise on which it is based – it is a declaration which the EA evidently has difficulty accepting (see §70 below). Then there is the fact that I rejected (§63) Mr Mould QC’s Step (3) (§62). I have considered the way in which other contested issues were determined and their materiality. In all the circumstances – stepping back – the just and appropriate costs order, as an exercise of my judgment and discretion, is that the EA should pay one-third of Mathew’s costs. I add this. My evaluative judgment is not one which has been materially influenced in Mathew’s favour by Mr Wise QC’s reference to the legal aid position; but nor in the EA’s favour by Mr Mould QC’s reference to cost-caps in Aarhus claims. It is rather – in my judgment – the correct, just and proportionate order in all the circumstances of this case.

#### *Payment on account of costs*

69. The next question concerns payment on account of costs. Mr Wise QC invites me to direct pursuant to CPR 44.2(8) an interim payment by 4pm on 30 September 2021, at a level which he had pitched at 72% of the estimated inter partes costs (estimated at £367,433.66 including VAT). Mr Mould QC accepts that in principle an interim payment is appropriate, but submits that it should not exceed £50,000 and asks that it be stayed or held by Mathew’s solicitors in escrow, pending the determination of any appeal. I have considered the parties submissions and the White Book 2021 commentary at §§44.2.12 and 52.16.2-3. In my judgment, the appropriate order is that the EA shall pay the sum of £85,000 inclusive of VAT by 4pm on 28 October 2021. I am satisfied that that level of interim payment constitutes a reasonable sum on account of costs in the light of the one-third order that I have made and that there is no good reason for declining to make that order. Neither the principles described in the cases discussed in the White Book commentary, nor the submissions made by Mr Mould QC (based on one of the cases discussed there), lead me to conclude that a stay or a holding in escrow is appropriate. It cannot be uncommon for a legally aided claimant to succeed and a defendant to be contemplating seeking to pursue an appeal to the Court of Appeal. I would have expected, if those circumstances justified conditions on any interim payment, there to be some illustrative authority or guidance directly on point. The date of 28 October 2021 affords the EA the opportunity, should it think it can make good its position on a stay or holding in escrow, to pursue with urgency an application to the Court of Appeal alongside any application for permission to appeal. That course of action is one which arises from the conclusion at which I have arrived in relation to permission to appeal, to which I turn.

#### *Permission to appeal*

70. The EA seeks permission to appeal, in relation to §§63-64 of the judgment. Mr Mould QC asks me to accept that it is arguable with a realistic prospect of success in the Court of Appeal, or that there is otherwise a compelling reason for permission to argue there, that I have erred in refusing (at §63) to accept his Step (3) (§62) and in making the

declaration (at §64). I observe that his proposed appeal, logically, would involve an important dual premise: (i) that the Court is right about PHE's assessment, advice and recommendations (§§32-34); and (ii) that the Court is right to accept (§60) his Step (2) (§59). In my judgment, and beyond argument, once that dual premise is recognised, the declaration (§64) is in fact its clear and binding reflection: no less, but no more. Mr Mould QC says the "correct course" was for the Court to "limit itself to stating its conclusions", with no "grant of relief", but if that submission has any purchase, it could only be in the shadows where the Court's stated conclusions as to the content of a legal obligation are diluted because not then embodied in a declaration. That logic, if anything, reinforces the need for the declaration. Mr Mould QC has three other grounds: that my finding at §63 was not "properly open"; that it "prioritises form over substance" and/or means the Court has "substituted its own view"; and that it was procedurally unfair since the 'flight plan' was not how Mr Wise QC had put the case and the Court should have allowed a chance to close any evidential 'gap'. Considering an application for permission to appeal calls for judicial humility, in circumstances where – naturally – the Court regards the judgment as correct. My difficulty is that I can see in Mr Mould QC's points no realistic prospect of his overturning the reasoned conclusion at §63; still less the declaration at §64; nor a compelling reason for granting permission in order to seek to do so. The 'flightpath' point (§62) arose fairly and squarely, and indeed arose out of the logic of Mr Mould QC's submissions (his Step (2)), as he rightly recognised at the hearing. But the EA was unable to make good, despite the wealth of contemporaneous documents and detailed witness statements and the opportunity to provide them, what he had recognised was needed (§§59-60) and what he claimed (his Step (3)) was evidenced or should be inferred (§62). Submissions to the effect that the EA had "taken action", and was taking "appropriate and necessary" and "effective" steps to "address" the issue, did not and do not show that anyone had taken or was (or now is) taking PHE's recommendations and designing steps which they have satisfied themselves would achieve those outcomes. The judgment did not find a present breach. It identified what was needed. As explained (§64), I was not satisfied on the evidence that the EA had yet addressed its legal duties in the way that it must. The conclusion embodied in the declaration (§64), like the main body of the judgment (see eg. §§42(3d), 51), affords primacy to evaluative judgments: of PHE as responsible national body for public health (§8); and of the EA as a regulator whose own Step (2) rightly recognises the need to implement PHE's recommendations. I refuse permission to appeal.