Trams for Warrington

Respondent Number 0395

Submission to September 2022 Public Inquiry on
Warrington Draft Local Plan

MATTER 13 – AIR QUALITY

Poor Air Quality produced by rubber wheeled vehicles in the Urban Areas of Warrington

1. Air pollution kills thousands of people each year and affects the health of many more. Although local data on the number of people whose health is affected by poor air quality is limited — what can be estimated are the deaths attributable to one pollutant, PM2.5, in cities across the UK.
2. This one pollutant is estimated to have caused just over 14,400 deaths of those aged 25 or older in UK cities in 2017.
3. By reducing mortality and diseases linked to poor Air Quality, almost 17,000 premature deaths every year and rising, preventing these deaths and allowing the individuals to live longer, the UK could gain almost 40,000 productive years which is estimated to provide a £1 Billion gain in the first year and in subsequent years, plus as the individuals are prevented from early retiral due to ill health, the UK could also gain an additional three million working days by reducing morbidity associated with poor air quality

4. 153,000 respiratory deaths, mainly young & old British Thoracic Report Figures show between 25% - 40% of deaths due to “Tail Pipe emissions” (38,250 – 61,100 deaths) UK Government

There are no minimum safe amounts

There are two main Transport Corridor Pollutants (UTC).

Tailpipe emissions

As we move the national fleet away from fossil fuel to words electric vehicles we are winning in a narrow band the Air Quality battle, but we are falling to cure other issues such congestion and creating greater Air Quality transport problems especially the urban transport corridors with Road, Tyre & Brake Dust (NEE) (Often Known as the “Oslo Effect)

Non Exhaust Emissions (NEE)

1. Each time a tyre rotates, it loses a layer of rubber about a billionth of a metre thick. This works out to about four million million, million carbon atoms lost with each rotation.
2. A busy road with 25,000 vehicles travelling on it each day will generate around nine (9) kilograms of road/tyre/brake dust alone per kilometre
3. Vehicle tyres, brakes, air suspensions and road surface wear (Non Exhaust Emissions NEE) are now bigger contributor to particulate matter (PM's) in the air than vehicle exhaust systems
4. NEE PM10 have increased from 29% in 2000 to 73% in 2016, (2.75% per annum)
5. NEE PM2.5 have increased from 26% in 2000 to 60% in 2016 (2.125% per annum)
6. NEE PMs Road Dust Suspension and downwind plume not included. Affects roadside buildings inside up to 25 miles
7. An urban car produces 8.7 mg of PM10 per km from tyres and 11.7 mg of PM from Brakes, total 20.4mg per km (approx.) 20.4mg x 10000 cars produces 2.04 tonnes per km (approx.)
8. An LGV produces 47.1 mg of PM10 per km from Tyres and 51.0 mg of PM from Brakes total 98.1mg (approx.) 98.1mg x 10000 LGV produces 9.10 tonnes per km (approx.)
9. All this PM material contributes to the air suspension swirl
10. A PCV produces 21.2mg of PM10 per km from tyres and 51.0 mg of PM from Brakes, total 72.2mg (approx.) 72.2mg x 10000 PCV produces 7.22 tonnes per km (approx.)
11. These figures do not include road surface wear and are estimated at between + 30% especially where there are pot holes (grinding effect)
12. All this material contributes to the air suspension swirl

There are no minimum safe amounts

Resuspended road dust.

1. Dusts from a number of sources accumulate on road surfaces. These originate from dry and wet deposition of airborne particles, especially coarser particles such as those deriving from soil.
2. Grinding
3. Additionally, abrasion products from the vehicle may deposit on the road contributing to the road surface dusts. Some of this material is in the PM10 size range when depositing to the road surface and the action of tyres on surface dusts may also cause some grinding leading to the creation of smaller particles from the coarser dusts. Studies of road surface dusts have shown a substantial fraction to be within the PM2.5 and PM10 size ranges. Such particles are rather easily suspended from the road surface, both by

shear forces at the tyre-road interface and by atmospheric turbulence in the wake of the vehicle.

4. There will be H&S issues with workplaces such as shops, offices etc. that have frontages facing the traffic
5. There is also evidence that elevated wind speeds contribute to the resuspension of surface dusts. In addition to these major contributors, there are also other abrasion sources associated with the vehicle such as wear of exposed drive belts, rubber gaiters and clutch plates, although in the latter case the majority of the abrasion products are contained by the clutch housing.
6. Most UK roads since the end of the Second World War until recently have used recycled tyre (Carbon) materials as surface binders.

Road Surface Wear

1. The friction between the tyre surface and the road surface which leads to tyre abrasion is also liable to abrade the road surface, especially where this is already fragmenting.
2. Hence, road surface wear particles are also released to the atmosphere. Some studies have suggested that road wear particles are internally mixed with tyre rubber in the particles generated through this abrasion process Sometimes the rubber comes off in a dramatic cloud of smoke when the car skids on the road. Sometimes the road surface is sharp, and slices fragments out of the rubber. But most of the time, in the course of normal rotation without skidding or cutting, the rubber is compressed and then expands.
3. As it compresses and expands, tiny cracks develop and spread in the tread — and tiny particles of rubber flake off.

Micro Plastics, An emerging air and water Tsunami

1. Extracts from a report that has been prepared for the Department for Environment Food and Rural Affairs under the project code ME5435
2. “Microplastics are small pieces of plastic debris (<5 mm) that have accumulated either because of the fragmentation of larger items of plastic in the environment or have entered the environment directly as particles of less than 5 mm. It is widely accepted that microplastic contamination is widespread and increasing. Recent reports indicate that associated negative consequences could become widespread within the next 50 – 100 years unless current rates of contamination are reduced.
3. It has been suggested that microplastics generated during use, for example from the wear of textiles and tyre tread are potentially the major sources of microplastic, yet empirical evidence on their pathways to the environment are lacking. The principal aims of this study were therefore to investigate the sources and pathways of synthetic fibre and tyre wear contamination to the

marine environment. Some data exist on the sources of synthetic fibres, and it is clear they are widely distributed in the marine environment. However, data on the pathways for tyre wear particles from roads to the marine environment is sparse, and for that reason much of our environmental sampling was focused on roadways.

4. Tyre particles and synthetic fibres were detected entering the environment via all three pathways examined. Based on the sampling sites examined here, the presence of tyre particles reaching the environment, via all three pathways, appears to be substantially greater than the presence of fibres.
5. Based on the locations sampled it would appear that storm water discharges, which pass directly from roads to aquatic environments, probably represent the most important pathway for tyre particles, whereas deposition from the atmosphere is likely to be the key pathway for fibres. Relatively low quantities of fibres and tyre particles were found in wastewater effluent."
6. In conclusion, the findings of this report support the predictions of previous desk-based studies that tyre wear particles are a major direct source of microplastics to the environment. It is important to note therefore that inadequate sampling of tyre particles in previous microplastic sampling is likely to have resulted in a considerable underestimate of the total microplastic burden that has accumulated in the environment. That is to say, tyre particles represent a substantial environment. That is to say, tyre particles represent a substantial source of microplastics of microplastics that is in addition to previously reported quantities of microplastics from other sources (fibres, fragmentation, microbeads from cosmetics).

Air Quality solutions

1. For trams in public transport to become a force in dealing with urban congestion, carbon reduction, improving air quality and to be an attractive alternative to the car, it must be built quickly and operate affordably and whilst not every street should have trams, all major transport corridors should have the benefit of this mode.
2. Some benefits:
3. Light rail & tram systems have proven track record growing the public transport market with by creating modal shift in some cases 32%. Supporting regeneration, renewal and inward regeneration
4. Assisting in the creation of a new urban framework. An extremely green mode of transport. Will drastically reduce the nations carbon footprint. Can be used to re-engineer city districts
5. Trams are a major low-cost tool in the box with major secondary benefits, many of which are not acknowledged by Government and the Treasury in particular.
6. Trams have no pollution at point of use, No tail pipe emissions
7. Trams reduce the immediate pollution. They reduce death on the pavement. There is no "Oslo Effect". There are year on year savings to health costs. They release funding for other health projects etc.. They improve the ambience of the city streets and improve the liveability of the immediate & surrounding area. Footfall in the town would increase dramatically.

8. Successfully supply the last/first mile door to door connectivity to existing and planned train and station upgrades.
9. Be fully accessible to all residents and visitors including those with reduced mobility to all Tram and shared Bus stops, Public Transport Pathways (PTP)
10. Be mindful that we have an ageing population, and the network will be fully accessible, easy to understand and use.

A warning for the near future

1. According to Air Quality News Feb 2022 and Client Earth who successfully have taken the UK Government to court, their top adviser says individuals can sue EU/UK Governments/Local Authorities/Polluters over dirty air and has said that individuals should be able to demand compensation from EU/UK governments over harm they suffer as a result of illegal air pollution.
2. The opinion, by Advocate General Kokott, was issued to guide an ongoing court case in France, in which a citizen is asking for €21m in compensation for damage to his health caused by air pollution.
3. Kokott's opinion confirms that people have an individual right to clean air and can claim damages based on that, if certain tests have been met. She also highlights the particular impact of illegally dirty air on structurally underprivileged communities. Environmental lawyers have hailed this latest step towards protecting the right to healthy air for people across the EU.
4. Client Earth lawyer Irmina Kotiuk said: 'Advocate General Kokott has reiterated that air quality has profound links with fundamental rights – and when those rights are infringed, people have the right to take their government to task and demand compensation for harm they suffer.
5. 'Individuals have the right to breathe clean and healthy air and there are specific EU laws designed to guarantee this. But across the bloc, governments are failing people, with lifelong impacts, and shocking rates of premature deaths. This legal confirmation that there are routes to hold those in power to account is a major breakthrough in the fight for clean and healthy air.'
6. The EU is in the process of updating the Ambient Air Quality Directive (AAQD) – its key air pollution law. ClientEarth's lawyers say that the revised law should include a clear legal framework to clarify how people can hold their governments accountable for damage wrought on their lives by illegal air pollution.
7. Irmina Kotiuk said: 'People everywhere in the EU are suffering the cumulative harm of constant exposure to air pollution. We need to move past an era where this is somehow considered acceptable. Legal mechanisms to hold those in charge accountable are major part of the route forward.'
8. Irmina Kotiuk, Senior Lawyer and Fundamental Rights Specialist in the clean air programme at environmental law charity ClientEarth, explains how *human rights law can be used to fight for clean air.

9. *This will be easier under the UK Bill of Rights announce today, 22 June 2022 using existing and amended UK Legislation including Health & Safety at Work 1974. This will include identified polluters.
10. There is by now overwhelming scientific evidence showing that air pollution has disastrous impacts on people's lives. Yet courts are only just beginning to recognise the link between one's health and the levels of air pollution in their environment. The concepts of right to life and right to health are well-established human rights concepts and we are gearing up to see them applied more and more to air pollution.
11. The damages caused by air pollution to people's health is, by this point, unequivocal. Air pollution affects the health and quality of life of people across the world on a daily basis. World Health Organization (WHO) experts decided that the new evidence on the adverse effects of air pollution demanded a response – and as a result made their guidelines more stringent in September 2021.
12. Let us not forget that protecting people's health is not only essential for wellbeing, but it also has tangible economic benefits. Analysis conducted by the Confederation of British Industry concluded that work absences related to poor air are costing Britain about £600m annually.
13. While the evidence base on air pollution impacts is strong, judges have been slow to catch up. Two recent cases are changing this – by bringing the dangers of air pollution beyond statistics to an acutely personal level.
14. In 2020, a court in France quashed an expulsion order against a Bangladeshi immigrant living in France because his country of origin has very high levels of air pollution that would be detrimental to his asthma. The court recognised the link between the man's asthma and air pollution in Bangladesh. It acknowledged that his asthma would be aggravated there and combined with the standard of healthcare in Bangladesh, which would significantly increase his risk of death.
15. As local authorities there is a need to approach the air pollution issue from the perspective of fundamental rights. The health damage and risks to life posed by air pollution naturally extend to the questions of protecting the right to life and the right to health, which are well-established concepts within the human rights' legal framework.
16. As Government fails to hit Environmental Targets and severe pressure from the public as the above issues become more widely known, Governments will be forced to tighten the pollution limits which from a Public Health perspective to the point that polluting rubber wheeled vehicles including public transport vehicles which pollute to be severely restricted if not withdrawn until to pollution clears. Easing of targets is not an option
17. This raises a large number of questions on the future viability of trunk roads which do not have steel on steel trams which are not affected and in reality with a high modal switch circa 28% -32%, the major tool in the bigger environmental picture
18. We have seen from around the world that when transport pollution becomes excessive, drastic measures follow including the banning of the polluting vehicles initially on alternating days based on their registration plates and Clean Air Zone Taxation. This will clearly impact on our Public Transport systems especially buses which will be forced off the road

19. How will we enable people to get to work, maintain connectivity, generate wealth etc?
20. As buses run on rubber tyres and are a significant contributor of fine particulate pollution 18% and rising, and a low modal switch, we see buses in this arena as at risk and should only be used as feeder vehicles to the low-cost tram corridor

In conclusion, the Draft Local Plan has missed or failed to take into account or forward project the climate changed world to come in the next 20 + years. Instead reflects a thinking and provisions of a world of the sixties, using a predict and provide methodology long since proven ineffective as shown in this draft document.

All documents and their sources can be found on www.lightrailuk.co.uk