

Cllr Stephen Sweeney,

9<sup>TH</sup> March 2019

c/o Council Buildings

Newcastle,

STAFFS

Dear Stephen,

**Draft Taxi Licensing Policy 2019/21**

I read an article in today's Sentinel which concerned the proposal to require taxi drivers in Newcastle to use electric vehicles. I have worked as Assistant Works Chemist at what was then the world's largest manufacturer of miners' cap lamps (powered by lead acid batteries) which also had contracts with the Air Ministry and motor vehicle manufacturers, including those for Fork lift truck and Milk floats. Following this I worked in the research and development laboratories of probably the U.K.'s largest manufacturer of automotive batteries and which also made batteries for submarines. Their research laboratories were busy investigating and evaluating Fuel Cells. I therefore have more than a passing interest in the use of electrical power for vehicle propulsion.

My interest in electrically propelled vehicles was given a boost recently when I was sitting in the reception area of a local approved car repairer's. A customer was asked how he was making out with a German manufactured electric car. His reply was that he was taking it back to the distributor's garage and added that "They use a 600cc motor bike engine to extend the range – but the manufacturer has trouble in meeting the emissions limits". The customer was unhappy, and I could hardly believe what I had heard.

We have met socially and you will know that I have retired. There is absolutely no way that I could be convinced that an electric car would suit my purposes due to the comparatively low annual mileage which I cover. The high initial cost (even though subsidised by other taxpayers) would be excessive, but there are other factors such as the poor range, lack of charging points and the convenience of siting of such points. My eldest daughter lives near High Wycombe, and my sister lives in the Lake District for example. But why on earth would I be concerned for the Taxi operators of Newcastle?

Firstly I am unaware of any research which the council has done before reaching this (albeit) draft decision. We all value breathing clean air, but along with this come some alarming costs. The council does not seem to be too bothered about the smell emanating from the tip at Silverdale. I first encountered this when visiting Garner's Garden Centre several weeks ago. I have also been aware of it whilst passing through the town centre on my way home at night from Stafford Avenue along the A34, in the vicinity of what used to be Maxim's. The smell reminded me of the hydrogen sulphide which is produced when acid reacts with a metal sulphide. Hydrogen sulphide is more poisonous than hydrogen cyanide gas! However, since an investigator from the council could not smell anything, as reported in the Sentinel, it seems that all is well. Really!

Secondly, you cannot defy the laws of science. When you dip two dissimilar metals, (electrodes) in an electrolyte, i.e. a liquid which will conduct electricity, an electrical potential is set up between them. This is how primary cells work. Once they have become discharged, like a torch battery, you have to throw them away.

There are what are known as secondary cells where it is possible to re-charge them e.g. the lead/acid batteries used in motor cars. There is a book called, "International Critical Tables," where it

is possible to look up the possible voltages generated by a whole host of different metals and other conducting substances. Whatever the electrodes used the voltage generated never varies much above 2v. For a lead acid battery giving 12volts, there are six 2v cells.

The thickness of the plates in each cell determines the capacity, e.g. 50 amp.hr and the discharge rate. An aircraft battery will have very thin plates whereas a submarine battery will have very thick plates.

Thus, in order to obtain a voltage which would be useful to actually power a car for some distance, you would have to connect a large number of cells in series. The more cells the greater the weight, and the higher the volume -hence space required for it in the car. This is of little consequence in, for example, a fork lift truck or an electric milk float. They don't have to travel fast or far, and can be charged out of working hours.

Thirdly- shedding of battery materials. Eventually the positive plate begins to shed material due to the many recharging cycles and the unit has to be replaced.

Shedding of the electrode(s) even in Lithium- Ion batteries, shedding of the silicon electrodes has caused big research problems. The resultant loss of performance leads to having to replace the very, very expensive batteries. It may be that the batteries are leased but in the end the cost comes down to the owner of the vehicle.

Fourthly the State of research into batteries. Although there have been advances in charge storage capacity, the problems remain of high cost of the batteries and the range which they give. The chemistry is not understood enough presently and major advances are unlikely.

Fifth cost. According to the M.I.T. review, Tesla were on track to produce a car by 2017 which cost 35,000 dollars with a range of 200 miles. This compares poorly with a gasoline powered car with a range of 350 miles and costing 15,000 dollars.

Thus I have concluded that the cost of replacing current vehicles would be exorbitant for taxi owners who would either have to cease working or to charge more. This would not be pleasant news for ratepayers and inhabitants of Newcastle. The number of journeys would be reduced and the town's businesses would be hit financially. The supposed improvement in air quality would be unlikely to improve significantly, since the degree of pollution depends not only on the number of vehicles, but also on the flow of air. One rarely sees records of air flows when pollution levels are reported. I am unaware of there being a 60 year plan for Newcastle, but would guess that any new roads would follow the lines of the present and ancient "horse and cart" roads.

One may ask, "Why this government pre- occupation with electric vehicles." Who can afford those which we have now, who uses them, by how much are they subsidised? Who really pays the subsidies- is it those who could not possibly afford them? Where are the charging points, and how would the residents of a block of flats ever be able to charge their batteries if they all had electric vehicles? It all seems to be as well thought out and reasoned as Brexit! It looks like the story of the "Emperor's clothes", but dressed up differently.

A little knowledge is a dangerous thing, and I think that Newcastle Borough Council may be just mouthing the words of other deluded, or just ill informed politicians, when they insist on cab drivers changing over to electric vehicles. The costs as already mentioned, could be crippling.

Yours faithfully,