Response to consultation on when to end the sale of new non-zero emission L-category vehicles.

The Motorcycle Action Group (MAG)

20th September 2022

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1. Introduction

1.1 The Motorcycle Action Group (MAG) is the leading riders' rights organisation in the UK. MAG membership consists of over 8,000 full members and 150,000 affiliates and associates. MAG is a founder member of the Federation of European Motorcycle Associations (FEMA). MAG is no longer a member of the recently formed National Motorcyclists Council (NMC), and the views expressed by the NMC should not necessarily be represented as consistent with those of MAG.

The views of members on this particular subject have been gathered by discussion and debate within MAG's membership and engagement and discussion with the wider riding community, other organisations and the industry.

1.2 At MAG's 2019 Annual Group Conference, resolutions were passed by near-unanimous vote committing MAG to campaign against the end of petrol-powered Internal Combustion Engine (ICE) vehicle sales. In 2021 MAG carried out a survey of riders, both members and non-members. The results showed that only 8% of riders supported the proposed phase out of petrol motorcycles and 83% showed support for MAG to campaign with others against the proposals. https://wiki.mag-uk.org/images/2/26/Petrol_Survey_Results_2021.pdf

Later in 2021 FEMA carried out a similar survey of riders across the whole of Europe. The Europe-wide survey found similar results, with 93% of respondence disapproving of a possible ban on the sale of new petrol-powered motorcycles. https://www.femamotorcycling.eu/wp-content/uploads/documents_library/web_results_emissions_survey_fema2021.pdf

1.3 In September 2021, Neil Liversidge was elected to the role of MAG Chair standing on a platform to make opposition to the end of petrol and diesel vehicle sales the key priority for the organisation. This priority extends not just to the proposals in terms of motorcycles, but to all vehicle types. In the 12 months since Neil's election to the role of Chair, MAG's full membership has increased by 20%.

1.4 The views of members on detailed areas of such a broad area of debate are naturally varied. We seek in this response to give an overview of all the arguments in opposition to the proposed phase-out for motorcycles and other road vehicles.

1.5 For brevity we will use the term 'ban' as shorthand for the proposed policy to phase out all petrol- and diesel-powered internal combustion engine vehicles, and the term 'ban for motorcycles' for the specific policy relating specifically to L-category vehicles.

1.6 We would also ask the Department to note that the term 'L-category vehicle' is itself not widely used or understood by the general public. It is thus reasonable to expect that many motorcyclists will not relate the term to motorcycles. MAG has commented to officials on numerous

occasions that the use of the L-category terminology is counterproductive for engaging with the public on this subject. Motorcycles - a term which is widely accepted to include mopeds and scooters - comprise the vast majority of sales in this vehicle category and is the term used in all Government statistical data publications. Other elements of the L-category family are likely to be included under the catch-all term 'other' in these statistical datasets.

2. Justification for phasing out the sale of petrol- and diesel-powered vehicles

2.1 Given the weight of opinion in opposition to the proposed ban for motorcycles, and the fact that the policy is part of a wider policy for transport (which itself is predicated on the 2008 Climate Change Act, and 2019 legal enshrinement of the 2050 Net Zero target), MAG has found it necessary to contemplate the wider - as well as specific - justification for the proposed ban for motorcycles.

2.2 The Transport Decarbonisation plan states "**The need to limit global warming to well below 2°C and to pursue efforts to limiting to 1.5°C means the UK Government is committed to moving as far, and as fast, as possible. This is about the pace of change as well as the destination**."

2.3 Our research demonstrates that the need and justification for pace are far from straightforward or apparent. The mantra of 'following the science' has been shown, with recent revelations over Covid policy-making decisions, not as unbiased a pursuit of truth as the claim suggests.

2a. <u>Sources of evidence</u>

2a.1 With respect to climate science the IPCC is acclaimed as the source of consensus on the science. Translation of science into policy guidance is delivered via the IPCC "Summary for Policy Makers" reports. We would like to point to a concise explanation of how the IPCC allows policy makers opinion to edit scientific research. The below excerpt is taken from Professor William Happer and Professor Richard Lindzen's Comment and Declaration on the SEC's Proposed Rule "The Enhancement and Standardization of Climate-Related Disclosures for Investors" https://www.sec.gov/comments/s7-10-22/s71022-20132171-302668.pdf

> **F. The IPCC is Government Controlled and Only Issues Government Dictated Findings, and Thus Can Provide No Reliable Scientific Evidence for the Proposed Rule**
>
> Unknown to most, two IPCC rules require that IPCC governments control what it reports as "scientific" findings on CO2, fossil fuels and manmade global warming, not scientists. IPCC governments meet behind closed doors and control what is published in its Summaries for Policymakers ("SPMs"), which controls what is published in full reports.
>
> This is not how scientific knowledge is determined. In science, as the Lysenko experience chillingly underscores, and as Richard Feynman emphasized:
>
> "No government has the right to decide on the truth of scientific principles."
>
> The two IPCC rules are:

IPCC SPM Rule No.1: All Summaries for Policymakers (SPMs) Are Approved Line by Line by Member Governments

"IPCC Fact Sheet: How does the IPCC approve reports? 'Approval' is the process used for **IPCC Summaries for Policymakers (SPMs). Approval signifies that the material has been subject to detailed, line-by-line discussion, leading to agreement among the participating IPCC member countries,** in consultation with the scientists responsible for drafting the report."

Since governments control the SPMs, the SPMs are merely government opinions. Therefore, they have no value as reliable scientific evidence.

What about the thousands of pages in the IPCC reports? A second IPCC rule requires that everything in an IPCC published report must be consistent with what the governments agree to in the SPMs about CO2 and fossil fuels. Any drafts the independent scientists write are rewritten as necessary to be consistent with the SPM.

IPCC Reports Rule No. 2: Government SPMs Override Any Inconsistent Conclusions Scientists Write for IPCC Reports

IPCC Fact Sheet: "'Acceptance' is the process used for the full underlying report in a Working Group Assessment Report or a Special Report after its SPM has been approved.... **Changes ...are limited to those necessary to ensure consistency with the Summary for Policymakers**." IPCC Fact Sheet, supra. (Emphasis added).

(Sections 4.4-4.6 of Appendix A to the Principles Governing IPCC Work, the Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports: https://www.ipcc.ch/site/assets/uploads/2018/09/ipcc-principles-appendix-a-final.pdf).

IPCC Factsheet: How does the IPCC approve reports? https://archive.ipcc.ch/news_and_events/docs/factsheets/FS_ipcc_approve.pdf

IPCC governments' control of full reports using Rule No. 2 is poignantly demonstrated by the IPCC's rewrite of the scientific conclusions reached by independent scientists in their draft of Chapter 8 of the IPCC report Climate Change 1995, The Science of Climate Change ("1995 Science Report"). The draft by the independent scientists concluded:

"No study to date has positively attributed all or part (of the climate warming observed) to (manmade) causes." Frederick Seitz, "A Major Deception on Climate Warming," Wall Street Journal (June 12, 1996).

However, the government written SPM proclaimed the exact opposite:

"The balance of evidence suggests a *discernible human influence on global climate*." 1995 Science Report SPM, p. 4.

What happened to the independent scientists' draft? IPCC Rule No. 2 was applied, and their draft was rewritten to be consistent with the SPM in numerous ways:

• Their draft language was deleted.

• The SPM's opposite language was inserted in the published version of Chapter 8 in the 1995 Science Report, on page 439: "The body of statistical evidence in chapter 8 ...now points towards a discernible human influence on global climate."

• The IPCC also changed "more than 15 sections in Chapter 8 of the report ... after the scientists charged with examining this question had accepted the supposedly final text." Seitz, supra.

As to the full IPCC reports, hundreds of world-class scientists draft some very good science. What to do? Use a presumption that anything in IPCC reports should be presumed to be government opinion with no value as reliable scientific evidence, unless independently verified by scientific method.

Stop for a moment. Just imagine what would have happened if the IPCC accurately reported the science. The scientists concluded there was no science that attributed all or most of the climate warming observed to manmade causes.

There would be no Massachusetts v. EPA, Green New Deal," Net Zero" regulation, efforts to eliminate fossil fuels, huge subsidies of renewable energy and electric cars. For whatever reason, the IPCC as a government-controlled organization did not, and has never, followed the science if the science contradicts the theory of catastrophic global warming caused by fossil fuels and other human emissions.

In conclusion, none of the IPCC SPMs, models, scenarios and other findings asserting that dangerous climate warming is caused by human CO2 and GHG emissions and fossil fuels are reliable scientific evidence; they are merely the opinions of IPCC governments.

Thus, the IPCC SPMs, models, scenarios and other findings provide no reliable scientific evidence that there is any climate-related risk caused by fossil fuels; nor do they provide any reliable scientific evidence to support the proposed rule.

2a.2 MAG therefore asserts that the justification for the Government's overarching target of achieving Net Zero carbon emissions by 2050 is questionable. We would want to see due diligence performed by the UK Government in ascertaining the validity of the IPCC conclusions as communicated in the Summary for Policy Makers.

2a.3 The Government may point to the Climate Change Committee for the due diligence aspect of its responsibilities. The 2008 Climate Change Act made provision for the formation of the Climate Change Committee. Recent legal action pursued by Client Earth produced a court ruling which leads MAG to question the role and suitability of the CCC in carrying out transparent and unbiased work in this area. Due diligence requires a sceptical review of the science, but the CCC remit has been extended to include "Reaffirming the science and countering misinformation about climate change action and policy rapidly and accurately." https://www.theccc.org.uk/wp-content/uploads/2020/10/Committee-on-Climate-Change-Corporate-Plan-2020-2023.-2.pdf

2a.4 This statement suggests that the CCC is simply accepting the IPCC position which appears to be susceptible to bias. In short, misinformation can only be challenged by open debate, but such debate is clearly being suppressed.

2a.5 The IEA report "Hot Air: A critique of the UK's Climate Change Committee" states:

> "The Committee has faced several allegations of conflicts of interest and its governance arrangements with sponsoring departments are out of date. It has expanded its remit and adopted an active public profile, which undermines its independence and indicates that it has become a political actor, rather than delivering balanced advice."

https://iea.org.uk/publications/hot-air-a-critique-of-the-uks-climate-change-committee/

2a.6 The issues here have been clearly demonstrated in the Citizens Assembly exercise that allowed a careful curation of expert opinions to comply with IPCC SPMs and total lack of challenge. In an analysis of the process published by the Global Warming Policy Foundation, Ben Pile wrote:

> "The Climate Assembly was convened in order to overcome a series of misjudgements, and took for granted the necessity, urgency and legitimacy of an agenda to which public opinion and democracy have been mere afterthoughts. [….] the problems that produced the democratic deficit were merely reproduced in the Assembly. A small political movement, with a radical, unscientific and alarmist interpretation of climate change that demanded Net Zero and citizens' assemblies, was welcomed and indulged by the Government rather than challenged. And rather than debating the problems that had led to the existence of a democratic deficit, the Assembly was instead convened in the hope of sampling what public opinion might be, if it were possible to control the information to which the public was exposed; in other words, by excluding perspectives critical of any aspect of the Net Zero agenda"

https://www.netzerowatch.com/content/uploads/2021/01/Climate-Assemblies.pdf

2b The need to limit global warming to well below 2°C and to pursue efforts to limiting to 1.5°C

2b.1 The statement in the Transport Decarbonisation Plan is that there is a need to limit global warming. This statement is predicated on an ability to limit global warming which is claimed to arise from the ability to reduce CO2 emissions. Further, the statement is based on the predictions that Climate Change will have severe detrimental impacts on humanity and that CO2 is the dominant driver of average global temperatures and thus climate change.

2b.2 Predicted levels of global warming are based on models which fail to accurately match observed changes in temperatures. We cite the work of John Christy, PhD, Professor of Atmospheric Science at the University of Alabama who compared the outputs of 32 CMIP5 models with observational data and concluded:

> "When the 'scientific method' is applied to the output from climate models of the IPCC AR5, specifically the bulk atmospheric temperature trends since 1979 (a key variable with a strong and obvious theoretical response to increasing GHGs in this period), I demonstrate that the consensus of the models [red line] fails the test to match the real-world observations by a significant margin. As such, the average of the models is considered to be untruthful in representing the recent decades of climate variation and change, and thus would be inappropriate for use in predicting future changes in the climate or related policy decisions."
>
> https://science.house.gov/imo/media/doc/Christy%20Testimony_1.pdf Id., p. 13 .

2b.3 CMIP5 modelling has now been superseded by a new generation of models referred to as CMIP6

Steven Koonin, Phd., a Cal-Tech physicist, professor at New York University and author of Unsettled (2021), concluded:

> "One stunning problem is that … the later generation of [CMIP] models are actually more uncertain than the earlier one[s]."
>
> "The CMIP6 models that inform the IPCC's upcoming AR6 [Climate Change reports] don't perform any better than those of CMIP5." Id. pp. 87, 90.

2b.4 Exaggeration within the media and political rhetoric is endemic. One recent high-profile example is previous reports regarding the Great Barrier Reef suggesting that "by 2050, estimates predict nearly all of the reefs will be threatened, with 75% facing high, very high, or critical threat levels." A report published by the Australian Institute of Marine Science was published on 3rd August 2022 carried headlines stating "Continued coral recovery leads to 36-year highs across two-thirds of the Great Barrier Reef" https://www.aims.gov.au/sites/default/files/2022-08/AIMS_LTMP_Report_on%20GBR_coral_status_2021_2022_040822F3.pdf

2b.5 Terms such as "the world is on fire" are repeated by politicians without challenge on mainstream news outlets. At COP26 in November 2021 the BBC and other broadcasters signed up to The Climate Content Pledge. Commitment 3 of this pledge states "We will ensure that our efforts are informed by the science." The terminology "the science" in the context of a pledge signed at COP26 suggests that this reflects the IPCC SPMs which, as discussed above, are more reliably classed as a reflection of government opinion than of the level of uncertainty as demonstrated in our comments above.

As the website proclaims, the Climate Content Pledge signatories include: BBC, BBC Studios, Britbox International, Channel 4, Channel 5 / Viacom CBS, Discovery UK and Eire, ITV, RTE, S4C, Sky, STV, UKTV, "who represent over 70% of time UK audiences spend watching TV and film".

https://wearealbert.org/2021/11/03/broadcasters-and-streamers-sign-up-to-the-climate-content-pledge/

2b.6 MAG contends that media and political portrayal of the scientific uncertainties are biased and often take the form of misinformation. This is comparable to state propaganda and is not acceptable.

2c The UK Government is committed to moving as far, and as fast, as possible

2c.1 Whilst it may be claimed that there is sufficient scientific belief in sufficiently extreme impacts, the job of policymakers is to make value judgements in terms of policy outcomes. The inevitable costs of policies to promote decarbonisation are largely dependent on the pace of transition.

2c.2 The fact that the UK Government has committed to moving as far and as fast as possible tends to indicate that either the exaggerated representation of the impacts of Climate Change has not been recognised, or that the potential costs of these policies has been grossly underestimated. We believe that both possibilities are equally plausible and, in all probability, both scenarios are likely to be driving poor policy decisions.

2c.3 The impacts of climate change are commonly reported as devastating, yet the IPCC reports themselves show that human welfare will improve by 450% by 2100 if Paris Agreement commitments are met as opposed to improving by 434% with business as usual. In a recent study, "Welfare in the 21st century: Increasing development, reducing inequality, the impact of climate change, and the cost of climate policies" Bjorn Lomborg comments:

> "Climate-economic research shows that the total cost from untreated climate change is negative but moderate, likely equivalent to a 3.6% reduction in total GDP. Climate policies also have costs that often vastly outweigh their climate benefits. The Paris Agreement, if fully implemented, will cost $819–$1,890 billion per year in 2030, yet will reduce emissions by just 1% of what is needed to limit average global temperature rise to 1.5°C. Each dollar spent on Paris will likely produce climate benefits worth 11¢."

https://doi.org/10.1016/j.techfore.2020.119981

2c.4 With respect specifically to UK policy costs, the Climate Change Committee has been criticised for not publishing costs. The IEA report "Hot Air: A critique of the UK's Climate Change Committee" states:

> "The quality of the CCC's advice is questionable, in particular with respect to the 'net zero' target for 2050. It advised that this target was feasible but refused to disclose the

calculations on which its costs figures were based, and it became clear that the scale of the challenge of net zero was not well understood when the target was passed into law."

https://iea.org.uk/publications/hot-air-a-critique-of-the-uks-climate-change-committee/

2c.5 The current extreme energy and cost of living crises being experienced in the UK can be credited in large part to environmental policies and their impact on energy supply. It cannot be claimed that warnings were absent. For example, the Institute of Mechanical Engineers published a report over six years ago in January 2016 stating:

> "The loss of coal by 2025, along with growth in demand and the closure of the majority of our nuclear power stations will therefore be significant, leaving a potential supply gap of 40%–55%, depending on wind levels."
>
> "Given electricity demand is also almost certainly set to increase, due to, among other things, population growth and the greater use of electric vehicles, the conclusion is that we have neither the time, resources, nor the sufficient number of skilled people to build enough CCGTs [combined cycle gas turbines] to plug this gap."

https://www.imeche.org/docs/default-source/position-statements-energy/imeche-ps-electricity-gap.pdf

2c.6 The logic cited for the UK to move as far and as fast as possible is based on the stated desire of the Government to provide world leadership on decarbonisation. Whilst this positioning may be seductive on a geopolitical stage, the current energy crisis is demonstrating that this desire comes at a significant cost.

3. Transport Decarbonisation Plan Approach

3a Absolute zero

3a.1 The Net Zero goal for 2050 is defined as UK domestic emissions having a net zero impact on global anthropogenic CO2 emissions. This is not, therefore, a goal of absolute zero emissions. A level of emissions is consistent with Net Zero if these emissions are balanced by removal of CO2 from the atmosphere. This process is described as carbon capture, usage and storage (CCUS)

3a.2 The Government's CCUS Investor Roadmap published in April 2022 estimates the UK has 78Gt CO2 storage capacity, enough to support the UK's demands for 100s of years. The plan sets a commitment to capturing 20-30MtCO2 per year.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1068444/ccus-roadmap.pdf

3a.3 At the proposed rate of carbon capture the capacity would last 2,600 years. There is clearly capacity for far more capture and storage than is currently planned.

3a.4 A report by the International Energy Organisation states:

> "There are currently 19 direct air capture (DAC) plants operating worldwide, capturing more than 0.01 Mt CO2/year, and a 1Mt CO2/year capture plant is in advanced development in the United States. The latest plant to come online, in September 2021, is capturing 4 kt CO2/year for storage in basalt formations in Iceland. In the Net Zero Emissions by 2050 Scenario, DAC is scaled up to capture more than 85 Mt CO2/year by 2030 and ~980 Mt CO2/year by 2050. This level of deployment will require several more large-scale demonstrations to refine the technology and reduce capture costs."
>
> "Most large-scale opportunities to use the captured CO2 would result in its rerelease into the atmosphere, such as when synthetic fuel is burned. This would not create negative emissions but could still generate climate benefits, for example if synthetic fuels replace conventional fossil fuels."

https://www.iea.org/reports/direct-air-capture

3a.5 It is clear that the CCUS Investor Roadmap sees these technologies being applied to manufacturing industries, stating plans for deploying CCUS in industrial clusters. However, the Transport Decarbonisation Plan comments on carbon capture purely in terms of carbon offsetting:

> "Carbon offsetting enables individuals and organisations to compensate for any emissions they cannot avoid or reduce by ensuring an equivalent amount of emissions is reduced or removed elsewhere. These emissions savings are generated through the implementation

of a wide variety of projects, which range from planting trees and installing solar panels, to technologies which can capture and store atmospheric carbon, such as BECCS and DACCS. To meet net zero across the economy, any residual greenhouse gas emissions in 2050 must be offset. This includes any remaining emissions from transport. In 2019, the Government ran a call for evidence on Carbon Offsetting in Transport, including asking for views on whether travel providers should be required to provide offsets. Many respondents, from a wide range of organisations, suggested that Government should focus on direct emissions reductions, and not on offsetting. Some respondents did support offsetting, while noting that it should only be used while the sector also attempts to reduce its own emissions, and not as an alternative. As set out in this document, our primary aim is to reduce and eliminate emissions wherever possible, and having considered responses to the call for evidence, the Government does not consider it appropriate at this time to introduce a requirement for travel providers to offer offsets. This position will be kept under review to ensure it reflects the latest developments in technology and offsetting schemes."

3a.6 The SMMT Trade reports clearly demonstrate that the UK is a net importer of vehicles. In 2020 (a year which will have seen Covid impacts) the UK export deficit for vehicles was £13.8 billion. By focusing on zero tailpipe emissions the UK is exporting manufacturing CO2 emissions. https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Trade-report-2021.pdf

3a.7 The Transport Decarbonisation plan thus places unjustified focus on tailpipe emissions rather than Net Zero transport. In effect, transport is being denied a net zero target and is facing an absolute zero target. This policy is not consistent with the Net Zero 2050 legislation.

3a.8 Even the CCC's 6th Carbon budget allows for a non-zero tailpipe emission transport system allowing for 1MtCO2e emissions from transport. The report states:

"In our Balanced Pathway, options to reduce emissions, including take-up of zero-emission technologies and reduction in travel demand, combine to reduce surface transport emissions by around 70% to 32 MtCO2e by 2035 and to approximately 1 MtCO2e by 2050" *Emphasis added.*

This is double the current emissions from motorcycles. https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf

3b Technology neutrality and carbon neutral fuels

3b.1 Despite claiming "sustainable low carbon fuels offer major industrial benefits", the Transport Decarbonisation Plan views low carbon fuels as merely a short- to medium-term subject:

> "In the short term, low carbon fuels will continue to be an available and flexible resource to deliver immediate emissions savings in all road vehicles. The medium-term need is expected to shift to long-haul HGVs in the road sector with increasing demand also from aviation and maritime which are likely to need the largest proportion of low carbon liquid or gaseous fuel in the longer term."

3b.2 Given the focus on zero tailpipe emissions and restriction of opportunities provided by application of carbon capture in achieving net zero emissions, the decarbonisation plan has moved away from any ability to claim technology neutrality.

3b.3 This desire for legislators to pick winning technologies is demonstrated clearly in the plan's comments on research and development. At page 174 the below comment demonstrates that policy is indeed predicated on a single technological solution for cars and motorcycles:

> "Our dedicated R&D funding and support is now focussed on rail, maritime, aviation and heavy road freight: sectors where there is not yet a proven 'winning' technology, where hydrogen offers in-use advantages and the largest global market potential."

3b.4 Battery electric cannot be claimed as a proven winning technology without applying the narrowed context of zero tailpipe emissions. Whilst there is a clear recognition for a diverse portfolio of energy production technologies, the desirability of a diverse range of transport technologies is being rejected. On this basis a legislative mandate to end the sale of alternative technologies is poorly considered.

3b.5 The Transport Decarbonisation Plan recognises the importance of research and development and innovation as a "decarbonisation enabler". The Plan commits to "coordinate transport's investment in R&D, collaborating with key stakeholders through our Transport Research and Innovation Board (TRIB)". The plan goes on to commit to "update our Areas of Research Interest (ARIs) and publish our new DfT Science Plan by summer 2021". The Science Plan and Areas of Research Interest give a demonstration of how the internal combustion engine will be marginalised in terms of R&D. The ARI document lists three specific battery related areas of interest, but just one specific ICE area (which is unrelated to CO2 emissions):
Battery:

174. What is the potential for battery recycling and how can this potential be reached?

175. What are the factors that affect electrified vehicle battery performance and degradation? What are the methods for assessing battery health?

178. Will 'vehicle to grid' reverse charging impact on electric vehicle battery life?

ICE:

170. How can nitrogen oxides (NOx) emissions of hydrogen internal combustion engines (ICE) technologies be minimised and what is the lowest it could be?

There is one additional ARI listed covering user behaviour which includes both ICE and Battery:

176. How does user behaviour affect the environmental impact of Internal Combustion Engines (ICE), Hybrid Electric Vehicles (HEV), Plug-in Hybrid Electric Vehicles (PHEV) and Battery Electric Vehicles (BEV) including driving, storage, maintenance and fuelling or charging?

There is no ARI for carbon neutral synthetic fuels.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009521/areas-of-research-interest-2021.pdf

3b.6 The policy proposal to end the sale of one type of technology through policy intervention removes the natural benefits of a free market approach to solving problems. By removing the development of transport technologies from the general overall goal of Net Zero emissions, the policy is picking a winner (BEV). In so doing, the incentive to provide competitive results in terms of cost and practicality in comparison with ICE technology is removed.

3b.7 It is notable that ACEM have recently joined the eFuel Alliance. This announcement clearly shows that excluding the option of these fuels via the proposed zero tailpipe emission stance is not considered the best approach. The six political demands of that organisation are:

1. Openness to technology in climate protection policy.
2. Holistic economy for hydrogen-derived products in Europe.
3. Change of the energy taxation.
4. Recognition of eFuels in the EU fleet targets.
5. Strengthening international cooperation to set up global production.
6. Promoting the industrial production of eFuels.

https://www.efuel-alliance.eu/political-demands

3b.8 In 2018 Concawe published a report by Ricardo - "Impact Analysis of Mass EV Adoption and Low Carbon Intensity Fuels Scenarios" https://www.concawe.eu/wp-content/uploads/RD18-001538-4-Q015713-Mass-EV-Adoption-and-Low-Carbon-Fuels-Scenarios.pdf . The report supports the view that including e-fuels as part of the solution may well be the cheapest way to decarbonise. The executive summary states:

"• The impacts of three scenarios in the European light duty vehicle market to 2050 have been analysed, versus a European Commission Business As Usual (BAU) scenario, as follows:

– High EV scenario representing mass EV adoption to ~90% BEV parc by 2050

– Low Carbon Fuels scenario representing use of significant proportions of biofuels and eFuels

– Alternative scenario representing use of more PHEVs together with increased use of bio- and eFuels

• Total parc life cycle GHG emissions reduce to less than 13% of 2015 value by 2050 for all three scenarios, and the annual parc total costs to the end user are similar for the High EV and Low Carbon Fuels scenarios

• In the High EV scenario the cost of EV charging infrastructure alone could reach €30 Billion p.a. by 2040, and a cumulative cost of ~€630 Billion by 2050, versus ~€326 Billion for the Low Carbon Fuels scenario

• There are potential risks associated with the availability of key resources and increased battery production rates required to serve a complete transition to BEVs by 2040

• In addition, major shifts to electrified transport in the High EV scenario would certainly require alternative approaches to tax revenue generation, due to substantial (up to 66 €Billion p.a.) reductions in net fiscal revenue

• The modelling suggests an optimal solution from the perspective of cost-effective GHG reduction may lie somewhere in-between the scenarios evaluated

• Due to the rapid rate of change in this area, there are significant uncertainties on the future evolution of battery technology and costs and on the infrastructure requirements to support a wholesale shift to BEVs"

4 Ethical and security battery supply chain issues

4.1 As stated by a recent 2021 editorial article in the journal Nature there are significant ethical concerns with mining of lithium and cobalt. The article states: "the work takes place in mines where workers — including children as young as seven — often face unsafe conditions." https://www.nature.com/articles/d41586-021-01735-z

4.2 The same article also covers the environmental impacts of such mining operations stating:

> "Around one-third of the world's lithium — the major component of the batteries — comes from salt flats in Argentina and Chile, where the material is mined using huge quantities of water in an otherwise arid area. Battery-grade lithium can also be produced by exposing the material to very high temperatures — a process used in China and Australia — which consumes large quantities of energy."

4.3 Supply of minerals for the production of batteries faces serious issues of scale long before the proposed dates to end the sale of alternative technologies. Commentary from the IEA in January 2022 stated:

> "As highlighted in last year's IEA special report on The Role of Critical Minerals in Clean Energy Transitions, the world faces potential shortages of lithium and cobalt as early as 2025 unless sufficient investments are made to expand production. Further growth of EVs requires not only an expansion of the extraction of key minerals – but also of the entire EV value chain."

https://www.iea.org/commentaries/electric-cars-fend-off-supply-challenges-to-more-than-double-global-sales

4.4 Combined with issues of scarcity of supply the recent world events place into stark relief the need to consider supply chain security. The IEA have also reported on the security issues with the EV battery supply chain, stating "China dominates the entire downstream EV battery supply chain". https://iea.blob.core.windows.net/assets/4eb8c252-76b1-4710-8f5e-867e751c8dda/GlobalSupplyChainsofEVBatteries.pdf

5 Cost Implications

5.1 The fact that plug-in grants - which lasted over a decade - have not triggered a more rapid transition to BEVs demonstrates that the product is yet to achieve anything approaching parity with the overall benefits of ICEVs. Zero emission vehicle sales accounted for just 11.35% of all UK vehicle sales in 2021. (Source: table VEH0256 https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables)

5.2 Jato Dynamics reported in December 2019 that the price of BEVs in Europe has increased by 42% over the previous eight years. In the UK the increase was 56%. They stated:

> "Perhaps the most worrying finding in the shift towards electrification, is that prices are not falling as expected. Our data indicates that China is the only market where pure electric cars became more affordable during the last few years. In contrast, the situation in the US and Europe is looking less hopeful. […]
> To put this price disparity in context, in China a Battery Electric Vehicle (BEV) costing the equivalent of $1 in 2011 would now cost $0.52. This improvement is mostly due to incentives granted by the central government, and the launch of electric city-cars and very cheap models. In addition to this, the manufacturers in China do not have to meet the difficult safety regulations imposed on their counterparts in Europe and the US. However, the situation in Europe and the US is the opposite. The same car priced at $1 in 2011 would now cost $1.42 in Europe and $1.55 in the US. While BEV prices have halved in China during the last eight years, they have increased by 42%-55% in the West. The focus of Western manufacturers has been on premium, more expensive cars. This leaves very few offerings in the entry-level segments." *Emphasis added.*

https://www.jato.com/ev-prices-have-been-growing-during-the-last-8-years/

5.3 Jato Dynamics also considered the price of BEVs in comparison with average price of all vehicles. They found that in Europe the most popular BEV model prices were between 3% over and three times the price of the average vehicle on the road. The comment:

> "The high prices of electric cars goes some way to explain their low popularity. In H1 2019, the average retail price of cars registered in Europe (plus Israel and Turkey) totaled $34,091 per unit, whereas the average price of the most popular BEV oscillated between $35,000 and $103,000. This is the second highest average and is only surpassed by the average retail price of cars in USA-Canada where the current market demand favours SUVs which are typically more expensive than hatchbacks and sedans."

https://www.jato.com/electric-cars-cost-double-the-price-of-other-cars-on-the-market-today/

5.4 Sales of electric motorcycles are far lower than for cars. Zero emission motorcycles accounted for just 4.63% of all UK motorcycle sales in 2021. (Source: table VEH1153 https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables)

5.5 The motorcycle market suffers a lack of mid-priced models. In a March 2021 article for Bennetts Bike Social, Ben Purvis wrote:

> "Cheap-and-cheerful electric mopeds have proliferated, and no bike show is complete without the launch of another ultra-expensive piece of battery-powered vapourware from a start-up that inevitably disappears as quickly as it emerged, but for anyone shopping in the middle part of the market, which accounts for the vast majority of bike sales, there are few viable electric options yet."
>
> "Sales figures show that the cheap-n-cheerful electric offerings are the only machines really making a mark on the market at the moment. In the UK, 2459 new electric bikes were registered in 2020, but of those 1598 were under 4kW (5hp) and a further 613 fell into the 'unknown' category in terms of power, suggesting they're also small, cheap machines. Just 94 electric bikes with between 4-11kw (5-15hp) were registered, along with 58 in 11-35kW (15-47hp) class and 96 with more than 35kW (47hp)/"

https://www.bennetts.co.uk/bikesocial/news-and-views/features/electric-motorcycles/prices

5.6 MAG has attempted a similar calculation to Jato Dynamics using MCIA registration data for July 2022 (https://www.mcia.co.uk/downloads/download/935) and RRP prices from internet searches. We accept that the result is of low confidence, but our finding was that the weighted average price of all UK motorcycle sales is approximately £5,100 per unit. The most popular electric motorcycle in the 11-15kw power band (BMW CE 04) retails for £11,700. In the 15-35kw band the most popular electric motorcycle (Zero FXE) retails for £12,600 and in the over 35kw band the most popular model (ZERO SR/S) retails for £20,200.

5.7 The vastly elevated costs associated with battery and motor technology is currently playing out in terms of overall engineering quality erosion. This is driven by the need to meet an acceptable market price point. The massive scale of unregulated e-scooters is a clear demonstration of this effect where the market is flooded with cheap, poorly made and consequently unsafe vehicles. Whilst the barrier-to-entry argument is valid, the price is likely to be a more significant driving factor, especially in the current economic climate. The demand for e-scooters has far outstripped the demand for regulated small electric motorcycles by orders of magnitude. Applying an aggressive timescale for a phase-out of cheaper ICE technologies has significant potential to drive a cost-cutting approach in key areas such as build quality and safety.

5.8 The Motorcycle Action Group is co-funding a report from the CEBR covering the economic impacts of the proposed ban. The publication of the report has been delayed by recent events, but we would like this report to be fully considered as part of the evidence base supplied by us as our consultation response.

6 Life Cycle Analysis and Modal Shift

6.1 The TDP refers briefly to whole-life carbon in transport infrastructure, but the reference demonstrates an essential problem with the zero tailpipe emission model of the TDP approach. The TDP states:

> "Alongside this plan, the Department for Transport (DfT) has initiated a Carbon Management Programme to embed an integrated system for managing whole-life carbon of infrastructure projects at a portfolio level. The framework will include capital carbon, i.e., emissions associated with the creation or major modification of an infrastructure asset and be guided by the principles of PAS 2080 – the foremost industry-wide standard for carbon management.
> This change programme will support high-level decision-making and project development within the Department to ensure transport plays its fullest role in the economy reaching net zero. It will guide DfT's Arm's Length Bodies' existing and future plans for carbon management and be delivered in close collaboration with key initiatives and partners, such as the Transport Infrastructure Efficiency Strategy. This is complemented by wider Government efforts to reduce emissions from construction, as set out in the National Infrastructure Strategy and Construction Playbook. Reducing the embodied emissions associated with transport, for example, the materials used in construction and the manufacture of vehicles, is being informed by the Industrial Decarbonisation Strategy, and Defra's upcoming review of the End-of-Life Vehicles Regulations. In Defra's 2021 Waste Prevention Programme, Government also set out plans to explore means of increasing reuse, repair and remanufacture, in addition to design considerations such as light weighting, to further reduce waste and emissions in respect of road vehicles."

The mention of consideration of light weighting thus comes in the context of materials and design of the infrastructure and mentions the vehicles only in passing. In an environment where focus is on vehicle tailpipe emissions the embedded emissions of vehicle manufacture are largely overlooked. MAG believes that this bypasses an essential benefit that can be derived from vehicle choice behaviours. Motorcycles provide the benefits of motorised transport combined with massive savings in vehicle weight in comparison with cars. Modal shift from cars to motorcycles for current single user car trips is an opportunity that has been consistently absent from all plans to reduce emissions.

6.2 The benefits of individual trip emissions savings from modal shift to smaller, lighter vehicles is enhanced by system benefits recognised from reduced congestion. This is an area that receives little consideration despite being significant in its effect. A study carried out by TM Leuven showed that a 10% modal shift from single occupancy cars to motorcycles could yield a 40% reduction in congestion. The authors calculated that this would yield an overall 7.5% reduction in CO2 emissions. https://www.tmleuven.be/en/project/motorcyclesandcommuting/projectfile/273

6.3 MAG's analysis of motorcycle carbon emissions demonstrated that modest increases in commuting by motorcycle would have yielded significant CO2 emissions savings. The report states:

> "Our analysis of tailpipe carbon emissions from cars and motorcycles on a distance travelled basis reveals that, kilometre for kilometre, the average motorcycle on the road emits around 30% less CO2 than the average car on the road. This is a comparison of all cars and motorcycles, and thus includes zero emission as well as conventionally powered vehicles. Time series analysis shows that emissions from both vehicle types have reduced at a broadly comparable rate over the last 20 years…. Carbon savings across trips for all purposes as a result of modal shift from cars to motorcycles would be far higher. Based on Carbon emissions savings calculated by TM Leuven in 2011, the UK carbon emission saving of a 10% modal shift from cars to motorcycles would have equated to a saving of 8.85 million tonnes of Carbon in 2017 alone."

https://wiki.mag-uk.org/images/3/39/Motorcycle_Carbon_Emissions_v1.pdf

6.4 The TDP points to a contribution of 0.5MtCO_2e emissions from motorcycles (page 15), which indicates a total CO2 reduction from electrification of all motorcycles. However, the above study indicates that the effect of 10% modal shift (achievable today with petrol-powered motorcycles) would reduce overall road transport emissions by around 17 times as much as replacing existing motorcycles with electric motorcycles.

6.5 Despite this vastly more impactful approach to reducing emissions, when checking the TDP-generated Areas of Research Interest (ARIs) we find four research areas relating to modal shift to cycling, but not a single research area relating to modal shift to motorcycling:

> 20. How can we invest in rail, cycling, walking and an improved bus network to improve connectivity within small towns and cities, and enable access to economic opportunities by connecting people with employment centres and key services at a local level?
>
> 21. How can we target improvements for longer term resilience and ensuring that the fastest movement of the most people is prioritised by delivering bus priority infrastructure and cycling links?
>
> 211. Why do other countries have higher levels of cycling? How is it related to history, socio-economic and demographic factors and financial and other incentives? What is the role of culture in facilitating / obstructing shift towards active travel (and particularly cycling)?
>
> 212. How can we encourage those who have begun walking and cycling more during the pandemic (when traffic levels were lower) to feel safe as traffic levels return to normal?

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009521/areas-of-research-interest-2021.pdf

6.6 A life-cycle analysis conducted by ZEMO Partnership shows that in many scenarios the total lifecycle carbon emissions for motorcycles is below that for even battery electric cars. The report states:

> "In almost every scenario examined in the study, the L-category vehicle produces a lower lifetime GHG emission per km travelled than the comparison passenger car and van

performing the same task. This is found to apply even where a shorter operational lifetime is assumed for the L-category vehicle."

https://www.zemo.org.uk/assets/reports/Zemo_PLV_Life_Cycle_Analysis_Study_2021.pdf

6.7 Lifecycle analysis for cars is perhaps more advanced and plentiful. A recent report issued by Volvo demonstrated that the equivalent ICE and BEV versions of one particular model showed a mere 5% carbon saving over the whole vehicle life cycle, and this is attributed mainly to aerodynamic savings that could presumably be applied to the ICE version.
https://www.volvocars.com/images/v/-/media/Market-Assets/INTL/Applications/DotCom/PDF/C40/Volvo-C40-Recharge-LCA-report.pdf

6.8 The Ricardo report 'Lifecycle Analysis of UK Road Vehicles' prepared specifically for the Department for Transport and published in November 2021 fails to make any attempt to analyse the figures for motorcycles or any other form of L-category vehicle. It is also notable that the report specifically states "The analysis did not include biomass plus carbon capture and storage (CCS)". This again shows that transport decarbonisation policy is out of step with overall Net Zero policy.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1062603/lifecycle-analysis-of-UK-road-vehicles.pdf

6.9 The Lifecycle Analysis of UK Road Vehicles report also makes an important point in its disclaimer:

> "We emphasise that the forward-looking projections, forecasts, or estimates are based upon interpretations or assessments of available information at the time of writing. The realisation of the prospective financial information is dependent upon the continued validity of the assumptions on which it is based. Actual events frequently do not occur as expected, and the differences may be material. For this reason, we accept no responsibility for the realisation of any projection, forecast, opinion or estimate." *Emphasis added.*

6.10 The 'Net Zero Strategy: Build Back Greener' published in October 2021 by The Department for Business, Energy and Industrial Strategy, states: "By 2035 the UK will be powered entirely by clean electricity, subject to security of supply." *Emphasis added.*
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

6.11 We would assert that the current energy crisis is demonstrating in a very clear and immediate manner the problems associated with picking winning technologies and restricting availability of solutions that may not fit the current direction of travel and rigid schedule.

7 Charging infrastructure

7.1 The Government's strategy for electric vehicle infrastructure, 'Taking Charge', published March 2022 states: "We will remove charging infrastructure as both a perceived, and a real, barrier to the adoption of electric vehicles (EVs)." Brief comments recognise the need for "considering" provision; however, the strategy is entirely silent on the volume of provision or need for dedicated motorcycle charging infrastructure. There is no acknowledgement of the challenges faced by motorcyclists or recognition of any difference in the design requirements of such infrastructure. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1065576/taking-charge-the-electric-vehicle-infrastructure-strategy.pdf

7.2 The Taking Charge strategy states that 75% of charging is estimated to be home charging. Annex 5 outlines the charge point demand model and shows access to off-street parking as a 'static input'. The Ministry of Housing, Communities & Local Government's National Planning Policy Framework refers to parking standards for residential developments stating:

> "Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport".

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

Given the priorities of 'managing the local road network' and pursuing 'opportunities to promote walking, cycling and public transport use', it is clear that residential off-road parking is set to decline over time.

7.3 The charge point demand model acknowledges high uncertainty in its estimations of charge point requirements by 2030. The modelling Annex 5 states:

> "The results from our scenarios indicate that between 280,000 and 720,000 public charge points could be needed to support ambitious EV sales trajectories by 2030."

7.4 The modelling constraints are extensive and listed as below:

> "Below is a list of technical modelling constraints that should be considered alongside these estimates:
> •There is no spatial component to the model. As such, it assumes perfect geographical distribution of charge points, where drivers can always access charge points at the locations they want, when they need to. Accounting for this element would likely increase the number of charge points required.

•No investment or planning foresight has been assumed. Charge points are required to meet the direct charging needs of EV drivers rather than to incentivise uptake or minimise installation or energy system costs. Accounting for this element would likely increase our projections in the short term (e.g., 2021-2035) and reduce our projections in the long term (e.g., 2035+).

•Modelling has been based on current known and widely used charge point technologies, future technology solutions are likely to enter the charge point/EV market that may transform current assessments of consumer charge point demand.

•Estimates have been provided at a national level. Further analysis utilising area-specific inputs would be required to forecast requirements at a more granular (i.e., local) level.

•Energy demand is averaged equally across all days of the year. As such, the projections reflect the number of charge points required to meet peak demand on an average day; they do not reflect the number of charge points to meet peak demand on the busiest day of the year. Accounting for this element would likely increase the number of charge points required.

•Vehicle licencing data has been used to create rural and urban-based EV driver groups. It is known that some vehicles are licenced to the business address rather than an individual driver's address which could lead to an under or over-estimation of charge point requirements. For example, an increase in the number of rural-based EVs would increase public charge point requirements as these drivers are assumed to have higher mileage. However, this would be offset to some extent by the assumption that rural drivers have greater access to off-street parking, relative to urban-based drivers."

7.5 Despite the uncertainty, issues with modelling and very wide range of possible estimates, the Government plan states: "We expect around 300,000 public chargers as a minimum by 2030." We contend that the plans are not sufficiently ambitious and will provide little, if any, confidence to consumers.

7.7 There is wide evidence to show that charging infrastructure is not being installed equally across all parts of the UK. Statistics from Zap Map show that the London region has 34% of all chargers in the UK. https://www.zap-map.com/statistics/ . However, London only accounts for 7.4% of all licensed vehicles in the UK. At the other end of the scale Northern Ireland has 1% of the chargers but still accounts for 3% of the licensed vehicles.

7.8 In December 2019, the Bike Shed in Shoreditch, London, announced the installation of the first public UK dedicated motorcycle charging station. (https://www.energylivenews.com/2019/12/05/uks-first-motorbike-only-charging-point-lands-in-shoreditch/). We contacted Zap Map in September 2022 – their Data Analytics Manager responded saying "Great that a location has opened that's marketed specifically for electric motorbike users, first I've heard of it." He confirmed that Zap Map has no way to flag dedicated motorcycle chargers. It is safe to say that dedicated motorcycle charging facilities do not exist in any meaningful numbers.

7.9 There are various estimates for the total electricity demand for electric vehicles by 2050. The Taking Charge report suggests "road transport could represent approximately 15% of total

electricity demand in 2050". The Climate Change Committee 6th Carbon Budget shows approx. 110-120TWh demand out of a total electricity demand of approx. 750TWh. The National Grid's Future Energy Scenarios 2022 report (https://www.nationalgrideso.com/document/263951/download page 68) shows four scenarios but with an average of around 120 TWh road transport energy demand. This is in contrast to a current energy demand in 2021 of around 410 TWh.

7.10 BEVs are accepted to be more energy efficient than ICEVs. Working on an approximate 50% energy efficiency gain (30% for ICE vs. 80% for EV) the energy demand calculations would seem to suggest a further 20 – 25% energy saving is needed to make the estimated energy demand plausible.

7.11 CCC 6th carbon budget claims they are basing their figures on a 17% reduction by 2050:

> "Compared to baseline growth, we assume that approximately 9% of car miles can be reduced (e.g., through increased home-working) or shifted to lower-carbon modes (such as walking, cycling and public transport) by 2035, increasing to 17% by 2050." *Emphasis added.*

https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf

7.12 The latest DfT Road Traffic Forecasts for traffic published in 2018 state:

> "Traffic in England and Wales is forecast to increase across all scenarios, but the size of that growth depends on the assumptions made about the key drivers of future road demand. From 2015 traffic is forecast to grow by between 17% and 51% by 2050."

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873929/road-traffic-forecasts-2018-document.pdf

If these are the baseline growth estimates referred to by the CCC, then predictions suggest that absolute traffic miles will remain at, or increase from, current levels. Thus, any predicted energy savings are not absolute savings compared to current transport energy demands.

7.13 We would suggest that the increased electricity demand for the proposed switch to zero tailpipe emission transport is being routinely underestimated.

7.14 Widespread media reports of potential blackouts this winter has increased the focus of all parties on the reasonable concerns over continuity of energy supply. The resultant impact on mobility at a national level cannot be ignored. On 9th August 2019, over 1 million customers were affected by a major power disruption that occurred across England and Wales and some parts of Scotland. The potential for similar issues applied to an entirely electric vehicle fleet raises serious questions about the vulnerability caused by universal electrification of all transport. This is a substantive threat to national security and disaster resilience.

8 Practical user issues with BEVs

8.1 Charging infrastructure availability is a reasonable and significant concern for those opposed to being coerced into electric vehicles. Interestingly, an April 2022 Britain Thinks survey (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1078871/dft-ev-driver-survey-summary-report.pdf) showed that 95% of EV owners have access to off-street parking. This demonstrates that those without the ability to charge at home (predicted to account for 75% of all charging requirements) are not voluntarily switching to EVs, and will suffer adverse effects if charging infrastructure provision is not expanded far beyond the current stated ambitions of the Government

8.2 When it comes to motorcycles, as previously discussed, dedicated facilities for motorcyclists are not available, nor even considered in infrastructure plans. Motorcyclists forced to make a switch to electric motorcycles will be adversely impacted by this complete lack of provision.

8.3 A recent study carried out by thisismoney.co.uk (https://www.thisismoney.co.uk/money/electriccars/article-11148861/Is-cheaper-run-electric-car-petrol-energy-prices-rising.html) showed that EV owners without access to home charging will pay more to recharge than to run the equivalent ICE vehicle. "It means that unless you have a driveway or garage with a homecharger installed, an electric car could make less financial sense than a petrol powered one after 1 October." Concerns over the true costs of running EVs once all subsidies and incentives end are legitimate and not considered in the proposed phase-out of ICE vehicles.

8.4 Considerable concern exists about battery lifespan and replacement cost. EVBox.com say "the battery pack of an EV is by far the most expensive part of the vehicle and can cost £5,500 on average and even as much as £9,400 per battery in some cases." And "The majority of manufacturers give between five to ten years warranty on their batteries or up to 62,000 miles." (https://blog.evbox.com/uk-en/ev-battery-longevity) It is likely that battery replacement costs will continue to impact resale value of EVs for the foreseeable future.

8.5 Harley Davidson and Zero Motorcycles offer a 5-year warranty on batteries. The Harley Davidson Livewire has only been on the market since 2019. Costs for replacement batteries are not readily available.

8.6 Insurance costs for BEVs are higher than for ICEVs. Admiral Insurance state:

"If you're looking to go green, you'll probably spend a little extra on your insurance. The national average annual car insurance premium for electric cars is £764, which is 20% more than the national average across all car types."

https://www.admiral.com/car-insurance/car-insurance-pricing-index

8.7 Range anxiety remains a major concern for many. ZapMap claim:

"With an ever-increasing number of electric models to choose from, the majority of BEVs available to buy new have a real-world driving range of 200-250 miles on a single charge, depending on the model."

https://www.zap-map.com/electric-vehicles/ev-basics/

A Harley Davidson Livewire has a range of just 95 miles on a mixed test route.

8.8 Cold temperatures exacerbate range concerns. Cold temperatures can reduce an unplugged EV's range by about 20 percent, according to testing by the Norwegian Automobile Federation, and recharging takes longer than in warm weather.

8.9 Battery weight is a particular issue for motorcycles due to the challenges of weight distribution on a two-wheeled vehicle.

8.10 BEV fires are an area of considerable concern. There may be an argument that the likelihood of a fire is lower, but unquestionably the severity of outcome is far higher than for a conventional ICE vehicle fire.

8.11 For most motorcyclists the experience of riding is as important - if not more important - as the utility of riding the machine. Many riders consider motorcycling to be a lifestyle choice. For many the electric motorcycle does not provide the same level of connection between man and machine. Simply adding sound effects and vibration or even simulation of clutch and gear choice are not the answer for purists. For many, being a biker is an identity and that identity is interwoven with the internal combustion engine. The moral case for ignoring this identity and its needs and rights should be considered with no less gravity than any other identity.

9. L-category vehicles Consultation Survey Question Responses

Question 1: Do you agree or disagree with our approach to end the sale of all new non-zero emission L-category vehicles by 2035 at the latest? Please explain your answer.

• Agree

• Disagree

• Don't know

MAG strongly disagrees with the premise that there should, or needs to be, an enforced end to the sale of non-zero emission L-category vehicles by any date.

The justification for a transition to net zero is questionable in both extent and schedule. We do not believe that such an inflexible and panicked policy for carbon emissions should have been enacted without far greater debate and due diligence by the UK Government in terms of the IPCC guidance as presented in its SPM reports. We do not oppose decarbonisation as a direction of travel and ambition, but do oppose the policy choices which are blinkered, economically poor and are being carried out at a pace that lacks sufficient balance between justification and cost. We are keen to work with the Government to achieve decarbonisation in a measured, evidence-based and economically responsible manner.

Within the current legislated Net Zero target the transition does not specify an absolute approach with respect to road transport emissions. Carbon Capture, Usage and Storage technology is in operation, can be developed and rolled out at greater scale. The distribution of offset from atmospheric CO2 reduction is a policy decision. The TDP has chosen to take an absolute zero approach rather than utilising any part of the offset generated by CCUS. Applying a proportion of carbon offset to transport operational emissions will allow for a far broader range of technologies within the transport sector. The need for this breadth of technologies is recognised in the power generation sector and should be applied to the transport sector.

Allowing a broad range of technologies will allow continued market choice and avoid damaging price distortions generated by removal of market signals.

The current contribution of motorcycles to transport emissions is 0.41%. Yet a 10% modal shift from single occupancy car trips to even petrol-powered motorcycle trips has been modelled to produce a 7% overall reduction of current transport emissions (8.85 $MtCO_2e$). By the Government's own figures, simply converting all current motorcycles to zero emission motorcycles will yield just a 0.41%, or 0.5 MtCO2e, reduction in emissions.

We fully support macro-scale electrification of and increased use of public transport. The deliverability of electrification for fixed-route mass transit is clear. With power supplied via tracks or overhead wires there is no requirement for portable energy storage. This is not the case in the micro-scale personal vehicles which carry one or two passengers on variable routes. High energy-density liquid fuels are the best solution for personal vehicles and must not be arbitrarily removed from the portfolio of acceptable solutions included in policy. BEVs may have some niche areas where they outperform conventional ICEVs, but market signals will be the most effective way to find these niches, not clumsy policies to enforce a 'one size fits all' technology solution.

Question 2a: Do you agree or disagree with our approach to end the sale of new non-zero emission L-category vehicles in the L1, L2, L3e-A1, L6 and L7 subcategories by 2030? Please explain your answer.

• Agree

• Disagree

• Don't know

MAG strongly disagrees with the premise that there should, or needs to be, an enforced end to the sale of non-zero emission L-category vehicles by any date.

In particular, the inclusion of L3e-A1 in an earlier date creates safety and licencing issues. ICE motorcycles are generally geared, whereas electric versions are exclusively twist and go. During the period following 2030 there will rapidly appear situations where new riders will not be able to achieve a full licence status using a geared motorcycle. This is both a barrier to entry and a substantial safety concern.

The explanation for this answer is the same as for question 1.

Question 2b: What are your views on ending the sale of new non-zero emission L1 vehicles before 2030?

MAG strongly disagrees with the premise that there should, or needs to be, an enforced end to the sale of non-zero emission L-category vehicles by any date.

There is strong evidence to suggest that this category will achieve a full transition without legislation. There will, however, be a danger that a ratcheting of policy will use this as justification for an inappropriate policy choice for larger motorcycles.

The explanation for this answer is the same as for question 1.

Question 3: Should there be or should there not be derogations as part of the phase out of new non-zero emission L-category vehicles and if so what?

• Yes, there should be derogations

• No, there should not be derogations

• Don't know

This question is irrelevant based on our answer to questions 1, 2a and 2b.

If the policy is to be applied to L-category vehicles, then the derogation must apply to all categories except L6 and L7.

Question 4: What role, if any, do you think alternative fuels have to play in the transition period to zero emission L-category vehicles?

The current TDP has made a mistake by focusing on absolute zero tailpipe emissions. This decision limits the potential and efficacy of any alternative fuels by creating an unnecessarily brief window of opportunity that will stunt investment and research into viable alternatives to traditional fossil fuels.

Alternative fuels should be allowed to compete to become a long term, as opposed to merely transition, solution. This free-market approach will help to ensure that real winners emerge as opposed to making similar mistakes such as the promotion of diesel fuels did.

The role of alternative fuels is thus largely undervalued, but that does not necessarily mean that they will emerge as a better solution than petrol.

Question 5: What are your views on regulating L-category vehicles using a ZEV mandate target for manufacturers and/or introducing CO_2 emissions targets for Lcategory vehicles, as is currently done for new cars, vans and HGVs?

Given MAG's position on the ban of all ICE vehicles, we naturally are opposed to any policy or regulation that is proposed to implement the ban.

Question 6: What other support might be needed to encourage the uptake of zero emission L-category vehicles as part of a transformation of last mile deliveries?

It is clear that the DTP Science Plan and Areas of Research Interest have singularly failed to cover any form of research into the benefits of motorcycles. The Government needs to ensure comprehensive rigour is first applied to gathering motorcycle data. In far too many data sets motorcycle use is not measured, or estimates rely on too-small sample sets to make extrapolation meaningful. This needs to be resolved in order to enable sensible research and analysis that should be applied to far more than simply last-mile deliveries. In short, motorcycling - currently the vast majority of all L-category vehicles - needs to be taken seriously by transport policymakers.