House of Commons

Transport Committee

Volkswagen emissions scandal and vehicle type approval

Third Report of Session 2016–17

HC 69

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Transport Committee

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Summary

In the aftermath of the Volkswagen emissions scandal we launched inquiries into VW's conduct and the vehicle type-approval system. Our inquiries took place prior to the referendum on UK membership of the European Union. We do not believe there is any prospect of the UK removing itself from the international automotive regulatory system as a result of the vote to leave the EU. Some of the conclusions and recommendations in this report require the Government to play an influential part in negotiations on vehicle standards and the process for type approval at an EU and global level, while it remains an EU member and after Brexit.

We found much of VW's evidence to be not credible and often an exercise in damage limitation. VW initially apologised for its conduct only to then deny that it had done anything wrong. The company has acted with a cynical disregard for emissions limits which exist solely to protect human health. VW's conduct has severely undermined consumer confidence in vehicle standards. It has not only brought its own integrity into disrepute but also that of the rest of the auto sector.

VW ruled out compensating owners of affected vehicles in Europe but is providing payments to US customers. We believe that to be deeply unfair. We took evidence on the impact of VW's conduct on consumers and what rights those consumers might have to seek redress. We do not accept Volkswagen's justification of its policy on payments and have called upon regulators to ensure that owners are not out of pocket in any way as a result of Volkswagen's technical solution.

We are concerned by the Department for Transport's ambivalence towards assessing the legality of Volkswagen's use of defeat device software despite its condemnation of Volkswagen's actions. In particular, the Department has been far too slow to assess the applicability of its powers to prosecute VW. We are disappointed that regulators have shown little interest in establishing whether VW has broken any laws and we have called upon the VCA to ascertain whether type approval for VW Group vehicles was contingent on the use of defeat device software which is at the question at the heart of this dispute. We have called for the European prohibition on defeat devices to be made stronger. The current regulation prohibiting defeat devices has led to an unacceptable dispute over the legality of VW's actions in Europe as well as the emissions control strategies of a wide-range of other manufacturers. More clearly defined guidance for approval authorities is needed on how to evaluate emissions control strategies and a consistent method to approve or reject claims for exemptions is needed.

Our examination of the wider vehicle type-approval system revealed that a great deal of work must be done to make it fit for purpose. Stronger independence and many more checks and balances are required to restore confidence and competence. Regulators and motor manufacturers have recognised this fact but we have identified a number of additional improvements that are needed urgently. We are concerned by the overlap of so many roles in vehicle testing and certification businesses. A clear separation of functions for designated technical services is required to eliminate any possibility of conflicts of interest. Most importantly the motor industry requires a robust regulator and the VCA must make scrutinising manufacturers and their engineering practices its first priority given the recent revelations that manufacturers misled regulators or

exploited loopholes in regulations on a substantial scale. We welcomed the Government's most recent commitment to conducting in-service surveillance. Future in-service surveillance would be improved by combining it with a commitment to make its results and underpinning data publicly available for scrutiny. The VCA must make it easier for stakeholders to bring questionable practices to its attention so that it can investigate further.

New emissions testing requirements are being introduced to bring a 'real world driving' aspect to measuring emissions. Those requirements have resulted in official emissions limits to rise for the first time but in practice the measures should result in real-world emissions to fall. We were disappointed that the Department for Transport did not strive for stricter emissions limits given scientific evidence that shows that dangerous pollutants could have been cut much faster. We have called on the Department to reduce emissions limits down to their previous official level as soon as possible.

We welcome the Department's efforts to implement the Worldwide Light-vehicle Test Procedure (WLTP). We recognise that global test and certification standards bring savings to vehicle design and development which should in theory reduce prices for consumers. We believe further improvements could be made and have recommended that the Department assess the viability of introducing a real-world element to CO_2 testing. The transition to WLTP will have a number of consequences which must be addressed carefully if they are not to lead to confusion amongst consumers. In particular the Department for Transport and HM Treasury need to examine the impact that the introduction of the WLTP will have on cars' CO_2 emissions and the related Vehicle Excise Duty bands. We have made recommendations that the Government provide motorists with the necessary information and to ensure that motorists are not financially penalised as a result of an improved testing and certification regime.

1 Introduction

1. In September 2015 the automotive sector was plunged into a global regulatory crisis. Volkswagen Group (VW) admitted that it had installed 'defeat device' software[1] in 11 million cars worldwide. Škoda and Audi cars, which are part of the VW Group, were also implicated. VW's deception was identified by the International Council for Clean Transportation, an NGO, which reported its findings to the United States' Environmental Protection Agency. National motoring authorities were criticised for their failure to independently identify the defeat device. The scandal was not just the result of corporate deception; it was also the result of regulatory failure. The EU's vehicle type-approval system has been under scrutiny as a result and this report aims to contribute to the public debate on how it should be reformed as well as consider the implications of the VW scandal.

2. Type approval is the confirmation that the production sample of a design meets specified performance standards. Increasingly standards are set at a global level, which leads to welcome efficiencies in the vehicle design and development process. A system of Whole Vehicle Type Approval has been in existence for over twenty years in the EU. European Community Whole Vehicle Type Approval (ECWVTA) draws on two sets of legislative requirements. One is based on EU regulations and directives and provides for the approval of whole vehicles, vehicle systems, and separate components. The other is based around UNECE regulations which provide for the approval of vehicle systems and separate components but not whole vehicles.[2] Manufactures can choose which set of requirement they comply with and the system allows for a mixture of both EU and UNECE compliance. The Vehicle Certification Agency (VCA) is the UK's approval authority. Manufacturers can seek approval in any member state and certification is then accepted throughout the EU without the need for further testing until a standard is updated or the design of a vehicle changes.[3]

Brexit

3. Our inquiry took place prior to the referendum on UK membership of the European Union. We do not believe there is any prospect of the UK removing itself from the international automotive regulatory system as a result of the vote to leave the EU. A global system for homologation see the UK accept treaty obligations, which will need to be given legislative force. It is desirable that a level playing field is maintained and the UK will have to find ways of influencing the development of UN and EU regulations. We cannot imagine a situation in which the UK will not wish to recognise type approvals granted by EU member states or in which approvals by the VCA are not recognised in other parts of the world. It is important that the UK continues to play an influential role in the negotiations of vehicle standards at a global level, just as it did before it was a member of the EU and even before the EU existed. It will take a significant amount of time before the UK completes its exit negotiations. The conclusions and recommendations in this report are directed to the Department for Transport but inevitably, if those recommendations are to be adopted, the Department will need to work with its European counterparts.

1 See paragraph 19
2 United Nations Economic Commission for Europe. UNECE's aim is to promote pan-European economic integration
3 VCA, European Community Whole Vehicle Type Approval (ECWVTA)

The automotive sector

4. Critics believe that the EU's regulatory framework for limiting emissions is too lenient on the automotive sector and that motoring authorities have turned a blind eye to its flaws because of the sector's importance to the EU economy. The automotive industry's contribution to the EU economy is significant. It directly employs over 2 million people and indirectly a further 12 million. The sector is the EU's largest private research and development investor spending more than €41.5 billion a year. The industry's turnover accounts for 6.3% of EU GDP.[4]

5. The automotive industry is also a large part of the UK's manufacturing sector. It accounts for nearly £7 billion turnover and £15.5 billion value added. 160,000 people are employed directly in manufacturing and more than 799,000 across the wider automotive industry. It accounts for nearly 12% of total UK export of goods and it invests £2.4 billion each year in automotive research and development. More than 30 manufacturers build more than 70 models of vehicle in the UK supported by around 2,500 component providers and some of the world's most skilled engineers.[5]

Emissions

6. Regulators have known for years that the test used to measure emissions is unfit for purpose but there has been little meaningful action. The test, the New European Drive Cycle (NEDC), was introduced in the early 1990s but has become unrepresentative of modern vehicle technology and real-world driving. Emissions detected on the road are now many times higher than those detected in the laboratory which severely undermines the purpose of having limits on emissions.

7. While the specific conduct of VW only accounted for a fractional increase in the level of expected pollutants, the cumulative real-world emissions of all manufacturers is a serious concern and closing the emissions gap between laboratory and road needs to be a public health priority. A growing body of evidence shows that Nitrogen Oxides (NO_x) are a significant hazard to human health. Nitrogen dioxides (NO_2) can cause or exacerbate a number of health conditions such as inflammation of the lungs, increased risk of heart attacks, increased risks of strokes and lower birth weight and smaller head circumference in babies.[6] NO_x contributes to 23,500 deaths annually in the UK according to a December 2015 report by the Department for Environment, Food and Rural Affairs. Many of the sources of NO_x are also sources of particulate matter. Exposure to particulate matter is estimated to contribute to nearly 29,000 deaths annually in the UK. Diesel engines are a significant source of NO_x and particulate matter and are the main focus of this report.[7]

Reforms

8. The VW emissions scandal added impetus to existing plans for improving emissions tests. The European Commission ('the Commission') published proposals to introduce a real-world element to NO_x testing known as Real Driving Emissions (RDE) testing.

4 ACEA, Facts about the Automobile industry
5 SMMT (VTA0011), para 1
6 World Health Organization, Review of evidence on health aspects of air pollution – REVIHAAP Project, 2013
7 Department for Environment, Food and Rural Affairs, Plans to improve air quality in the UK Tackling nitrogen dioxide in our towns and cities, December 2015

There will also be a stricter laboratory test for measuring CO_2 and fuel economy called the Worldwide Light-vehicle Test Procedures (WLTP). The Commission also intends to reform the structure of the type-approval system; the reform aims to sever the financial link between the auto industry and the testing and certification services to remove conflicts of interest. There will be more robust audit and oversight of the certification process by the Commission.

9. We believe consumers should be able to make more informed choices. The reforms to emissions tests must be used as an opportunity to give consumers a better understanding of vehicle standards and to improve the mechanism for reducing dangerous pollutants from vehicles while setting achievable targets for manufacturers. Emissions limits should be gradually tightened in a way that gives manufacturers sufficient time to align their vehicle design and investment strategies. Successive revelations from across the world revealing that manufacturers had broken both the spirit and letter of the law understandably shook consumer confidence in vehicle standards; those infractions by manufacturers would not have been detected under the current framework. Confidence can be best restored by making the certification process more transparent so that it can be subject to both independent scrutiny and to oversight from regulatory authorities.

Inquiries

10. Following an evidence session on the VW emissions scandal on 12 October 2015, we launched an inquiry into vehicle type approval and called for evidence in November 2015. We asked for submissions on:

- the wider vehicle type-approval process on the effectiveness of the current arrangements for type-approval;
- negotiations on World-wide Light-vehicle Test Procedures and Real Driving Emissions;
- the appropriateness of the current drive cycle and how a move to Real Driving Emissions tests will change testing;
- the gap between emissions detected in test and real-world conditions;
- comparisons with other jurisdictions (especially the US and markets in Asia);
- the range of metrics considered in type testing, whether the levels set represent a reasonable level of ambition and a reasonable pace of change, and the evidence base that underpins how levels have been set;
- the role of type-approval in driving change in levels of safety, emissions, and performance; and
- the appropriateness of the overall principles that determine the approach being taken on type-approval

We received 30 submissions of written evidence and held seven oral evidence sessions; five on type approval and two on the VW emissions scandal. Evidence taken in the course of each of those inquiries overlapped and was interdependent. We are grateful to all those

who gave evidence and we would like to give special thanks to Edward Foreman who served as a Specialist Advisor. We would also like to thank Emissions Analytics who gave us a live demonstration of the latest generation of emissions testing equipment.

11. Vehicle type approval is highly regulated and complex. This report focuses on the effectiveness of the emissions testing process and the Commission's proposals for improving it. Our inquiry did not examine other aspects of type approval such as vehicle safety or security.

2 The Volkswagen Group emissions scandal

The scandal

12. On 18 September 2015 the US Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to Volkswagen AG, Audi AG, and Volkswagen Group of America that alleged Volkswagen and Audi diesel cars from model years 2009–2015 included "software that circumvents EPA emissions standards for certain air pollutants" (so called 'defeat devices').[8] VW admitted on 22 September that the relevant engine software affected 11 million vehicles worldwide, amounting to corporate deception on a global scale.[9] Approximately 8.5 million of those vehicles were located in Europe, including nearly 1.2 million registered in the UK. Around 500,000 affected vehicles were located in the United States.[10]

13. VW traced the origin of the scandal back to a decision made in 2005 to launch a large-scale promotion of diesel vehicles in the US. The company found that it was not able to meet the US's NO_x limits, which were stricter than those in the EU, within the required timeframe or budget. VW alleged that a small group of employees decided to cheat by installing software that adjusted NO_x levels according to whether vehicles were on the road or being tested.[11] Bosch, a components manufacturer, provided parts for the VW models named in the reports. Bosch stressed that the manufacturer was responsible for how components were calibrated and integrated into vehicle systems.[12]

14. The International Council on Clean Transportation (ICCT) performed real-world emissions tests on a VW Passat, a VW Jetta and a BMW X5 in collaboration with West Virginia University during 2013 and 2014. The researchers were not looking for deception; they was testing cars that they believed conformed to strict US emissions standards to demonstrate that cleaner cars were viable in the EU. The ICCT found, contrary to expectations, that real-world nitrogen oxide (NO_x) emissions from the Jetta exceeded the US standard by 15 to 35 times in various real-world driving conditions. The Passat's real-world NO_x emissions were 5 to 20 times the standard.[13] When the ICCT ran further tests on a dynamometer in line with official emissions tests, the cars passed.

15. It took considerable commercial pressure from US regulators before VW admitted to cheating emissions tests. Regulators were considering whether to certify VW's 2016 models for sale at the same time as the Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) were considering the ICCT's findings. The regulators said 2016 models would not be approved unless VW provided a satisfactory explanation for its cars' real-world emissions. VW's failure to do so led the regulators to

8 EPA, Volkswagen Light Duty Diesel Vehicle Violations for Model Years 2009–2016

9 VW press notice, 22 September 2015

10 BBC, Volkswagen: The scandal explained, 10 December 2015

11 "Volkswagen making good progress with its investigation, technical solutions, and Group realignment" Volkswagen press release, 10 December 2015

12 Reuters, Bosch's popular diesel engine software was not preprogrammed to cheat, 7 October 2015

13 The BMW X5 generally met US NO_X limits in real-world conditions. It only exceeded limits during rural uphill operating conditions

indicate that 2016 models would not be certified. Only then, on 3 September 2015, did VW admit that it had installed a defeat device in the cars under investigation.[14] The news reached the wider world on 18 September when the EPA, not VW, disclosed it.

Fixing affected cars

16. VW said that it would recall affected cars to correct their emissions characteristics. In Europe the fix would be:

- free of charge;
- installed in less than an hour;
- started in early 2016; and
- capable of being scheduled as part of the owner's annual service or as a separate service[15]

Matthias Müller, Chief Executive, VW, was reported as saying that the recall would be concluded by the end of 2016.[16] 1.2 and 2.0-litre engines were said to require a software upgrade only. 1.6-litre engines also required the installation of a piece of mesh to regulate air flow (a 'flow transformer').[17] The technical solutions required approval from the appropriate approval authorities, including the VCA for certain vehicles.[18]

17. VW's schedule for fixing cars was severely delayed. On 25 April 2016 Robert Goodwill MP, Minister of State, Department for Transport, said that VW had failed to fix any vehicles in the UK[19] and the delay was the result of the German Government's approval authority's (the KBA's) dissatisfaction with VW's technical solution. Testing had shown that the technical solution had resulted in an increase in CO_2 emissions.[20] VW told the Department for Transport (DfT) that it did not expect the delay in fixing vehicles to affect the overall timescale for the technical measures to be completed.[21]

Jones Day investigation

18. VW hired Jones Day, a US law firm, to conduct an internal investigation into the origins of the emissions scandal and to identify those responsible. Deloitte, an audit firm, was appointed to provide operational support.[22] VW UK described the Jones Day investigation as "independent" and "external".[23] Paul Willis said that he was "not sure that the entire report will be given out where there is competitively sensitive information" but also said he found it "implausible that if you employed independent lawyers you would

14 Bloomberg, VW's emissions cheating found by curious clean air group, 20 September 2015
15 Letter from Volkswagen UK, 21 December 2015, para 4.1–4.4
16 Reuters, VW CEO says recall to start in January be completed end-2016, 6 October 2015
17 Letter from Volkswagen UK, 21 December 2015, para 4.1–4.4
18 PQ 27610
19 Vehicle type approval, Q455
20 Letter from the Department for Transport, 23 May 2016
21 Letter from the Department for Transport, 23 May 2016
22 "Volkswagen making good progress with its investigation, technical solutions, and Group realignment" Volkswagen press release, 10 December 2015
23 Letter from Volkswagen UK, 6 November 2015, para 10.1

edit the report" before publication.[24] We noted that Jones Day advertised its services for conducting internal investigations on behalf of companies as including advice on "whether and how to voluntarily disclose criminal conduct to the government".[25]

19. VW committed to provide an update on the investigation by the end of April 2016 but reversed its decision on the basis that publishing results at that time "would present unacceptable risks" and might jeopardise negotiations with US authorities including the Department of Justice. VW was concerned that publishing interim results might cause those employees not yet interviewed as part of the investigation to align their responses to the interim report's conclusions.[26] VW's concern for the integrity of the investigative process did not affect its decision to say the investigation had revealed the scandal was the result of "misconduct and shortcomings of individual employees; weaknesses in some processes; and a mindset in some areas of the Company that tolerated breaches of rules" in December 2015[27] nor to announce that the investigation had not found evidence of "serious and manifest breaches of duty on the part of any serving or former members of the Board of Management" in May 2016.[28] We believe that was inappropriate.

Defeat device

20. VW was accused of cheating emissions tests by using a sophisticated software algorithm known as a 'defeat device'. This detects whether a vehicle is being driven normally or is undergoing a test in a laboratory, and in the latter case alters the engine characteristics to produce a lower level of emissions than usual. Authorities knew of the potential for manufacturers to use defeat devices for many years and US authorities have a long history of prosecuting motor manufacturers for doing so.[29] The United Nations Economic Commission for Europe (which sets worldwide standards for vehicles), the EU's Regulatory Framework and the US EPA all have similar definitions of what constitutes a defeat device and similar provisions for prohibiting their use.[30]

Did VW break the law?

21. VW admitted that it installed an illegal defeat device in the US but disputed that similar software constituted an illegal defeat device in the EU.[31] The ICCT said that was noteworthy because "the language defining and prohibiting defeat devices in the U.S. and EU regulations is nearly identical; the differences are minute and immaterial."[32] The German approval authority, the KBA, disagreed with VW and said that VW's software fitted the legal definition of a defeat device.[33]

24 Volkswagen Group emissions violations, Qq228 & 230
25 Jones Day, Internal investigations
26 "Status of the investigation in connection with the diesel matter" Volkswagen press release, 22 April 2016
27 "Volkswagen making good progress with its investigation, technical solutions, and Group realignment" Volkswagen press release, 10 December 2015
28 "Volkswagen proposes resolutions ratifying the actions of all members of the Board of Management and of the Supervisory Board at the Annual General Meeting" Volkswagen press release, 11 May 2016
29 ArsTechnica, Volkswagen's emissions cheating scandal has a long, complicated history, 8 October 2015
30 Department for Transport, Vehicle Emissions Testing Programme, April 2016, para 2.14
31 Letter from Volkswagen UK, 21 December 2015, para 1.3
32 ICCT (VTA0023) page 1
33 Letter from Volkswagen UK, 21 December 2015, para 3.1

22. When Paul Willis, Managing Director, VW UK, first appeared before us he issued an apology for VW's conduct, "First of all, I would like to apologise sincerely and unreservedly for the fact that Volkswagen has significantly let down its customers and the wider public over the findings of irregularities in some of the diesel-powered vehicles we produce."[34] In a subsequent evidence session Paul Willis robustly denied that VW had done anything wrong under EU regulations and when pressed to explain why he had previously apologised, he described VW's conduct as only "inappropriate".[35]

23. **It is not credible for Volkswagen Group to apologise for its conduct only to then deny that it had done anything wrong. Volkswagen deceived both regulators and their own customers on a global scale and it has shown a cynical disregard for emissions limits which exist to protect human health from dangerous pollutants. VW's conduct has severely undermined confidence in vehicle standards that are relied upon by consumers and it has not only brought its own integrity into disrepute but also that of the auto sector.**

24. The VCA confirmed through its own testing that the Škoda vehicles that it type approved contained defeat device software.[36] We welcome the work the VCA has done to establish that fact but regret that not more work was done to analyse the extent that the software contributed to meeting emissions limits and obtaining type approval. The DfT said that under the EU Regulation "if the defeat device operates during the official emissions test (and the vehicle is still able to meet the required emissions limits) then this can be deemed acceptable."[37] VW told us that "the software did amend the NO_x characteristics in testing. The vehicles did meet [Euro 5] standards, so it clearly contributed to meeting the [Euro 5] standards in testing."[38] VW would not confirm whether the vehicles would have passed emissions tests without the defeat device software stating that it was not possible to confirm that for technical reasons, "If you simply deleted this particular software programme (without amending anything else), the vehicle would not function."[39]

25. We do not believe it is credible for VW to say it is unaware of the exact contribution the defeat device software made to passing type-approval tests. The question of its contribution lies at the heart of the question on whether VW broke the law. When we asked Paul Higgs, Interim Chief Executive, VCA, whether any effort had been made to ascertain whether type approval had been contingent on the defeat device software he replied "We would have to ask Škoda to supply a vehicle without the defeat device but not fix it, so that we can retest it to see how bad it would have been, or if it would have passed […] It seems an odd thing to ask them, because the idea is that they are going to fix the actual device they had fitted by removing it and then recalibrating the engine."[40] While there might be technical difficulties for quantifying the contribution the defeat device software made to meeting emissions limits, it is concerning that the VCA has not made any efforts to do so. Richard Lloyd, Executive Director, Which? said, "We would need to see more data on the actual

34 Volkswagen Group emissions violations, Q2
35 Volkswagen Group emissions violations, Q206
36 2.01 Škoda Superb/Octavia/Yeti; 1.61 Škoda Fabia/Rapid/Octavia/Yeti/Superb—Seat Toledo; and 1.21 Škoda Fabia/Roomster
37 Department for Transport, The Vehicle Emissions Testing Programme, 21 April 2016
38 Letter from Volkswagen UK, 21 December 2015
39 Letter from Volkswagen UK, 21 December 2015
40 Vehicle type approval, Qq414 & 415

impact of the defeat device prior to the modification. All we have had are assertions from VW. We have had none of this from any independent source."[41]

26. The question of whether VW broke the law in the EU needs to be answered urgently. Throughout our inquiry we sought to identify who was responsible for resolving that dispute. We did not receive a definitive answer. The Secretary of State was initially relaxed about describing VW's software in the terms of an "illegal" defeat device[42] but in a later evidence session Robert Goodwill MP, Minister of State, said the software was "outside the regulation" but was at pains not to define it as illegal. The Minister said the question of legality was a matter for the courts but he was not able to tell us for certain which authority would be responsible for initiating court proceedings. The Minister said, "to tell you whether that is illegal it would need to come before the courts, and it may well be the European Commission that takes that action"[43] but the Commission said that it:

> does not have enough evidence on the legality or illegality of the VW emission control software. All such information lies with the relevant Type-approval authorities, who have the authority and obligation to investigate any such cases and act accordingly. The Commission will carefully analyse the results of the national investigations before deciding on possible next steps.[44]

Under the current legislation the power to impose sanctions for non-compliance rests with member states.[45]

27. The Secretary of State said that in the UK, VW could face action from the Serious Fraud Office (SFO), the Competition and Markets Authority (CMA) and himself under the Road Vehicles (Approval) Regulations 2009. In practice little action has been taken.

Serious Fraud Office & the Competition and Markets Authority

28. In the UK the CMA and the SFO have considered investigating VW which could be prosecuted on the following grounds:

> The Competition and Markets Authority and local weights and measures authorities (Trading Standards) (or in Northern Ireland, the Department of Enterprise, Trade and Investment in Northern Ireland (DETINI) can prosecute for prohibited commercial practices under the Consumer Protection from Unfair Trading Regulations 2008, e.g. unfair commercial practices and misleading actions and omissions. The maximum penalty on conviction on indictment is 2 years imprisonment or an unlimited fine or both.
>
> The Serious Fraud Office may prosecute for fraud where a person knowingly makes a false representation or knowingly fails to disclose information that he is under a duty to disclose with the intention of making a gain or causing a loss (Fraud Act 2006). The maximum penalty on conviction on indictment is 10 years imprisonment or an unlimited fine or both.[46]

41 Vehicle type approval, Q379
42 Volkswagen Group emissions violations, Q87
43 Vehicle type approval, Q495
44 Letter from the European Commission, 18 May 2016
45 Letter from the European Commission, 18 May 2016
46 Letter from the Department for Transport, 10 November 2015

UK authorities have taken a softer approach to investigating VW compared to European counterparts. French and German authorities raided VW's national headquarters to seize evidence for criminal investigations but Paul Willis, Managing Director, VW UK, said he had not received any representations from the CMA or the SFO.[47] The CMA said that it had not opened a formal investigation[48] but was assessing the allegations and VW's response.[49] The DfT told us that the CMA were not able to seek compensation for consumers in the VW case.[50] The SFO said that it was working with UK and European bodies to assess whether any alleged criminal offence, involving serious or complex fraud, falls within its remit.[51] The DfT said, "Prosecuting authorities from 16 Member States (plus Norway, Switzerland and OLAF (European Anti-Fraud office)) are coordinating their investigations through Eurojust." DfT officials are taking part in those discussions.[52]

Road Vehicles (Approval) Regulations 2009

29. The Secretary of State for Transport has the power to prosecute manufacturers who obtain type approval in the UK under false pretences. The VCA granted the emissions type approval for Škoda vehicles installed with defeat devices so it is possible that the Secretary of State's powers are applicable.[53] The Secretary of State said:

> For VCA approvals, the Secretary of State may prosecute the manufacturer providing he has sufficient evidence that, as a person supplying information or producing a document for obtaining type-approval or any other purpose under the Road Vehicles (Approval) Regulations 2009, the manufacturer knew or was reckless as to it being materially false. The maximum penalty on conviction is an unlimited fine.[54]

The Minister of State, Robert Goodwill MP, assured us that the use of those powers was under "consideration" by the DfT.[55] The Secretary of State needed to "establish that Škoda officials had knowledge of the use of a prohibited defeat device in VW diesel engines and made false statements in that regard when they presented the vehicles to VCA for type approval." Criminal counsel has been advising the DfT on the evidence base for a successful prosecution and the procedural steps required for such a prosecution since February 2016.[56] We noted the Secretary of State's description of VW's actions as "appalling" and his view that the company deserved to "suffer very substantial damage as a result".[57]

30. **It is not credible for VW to say that it does not know the exact contribution that the defeat device made to meeting EU emissions limits. We are concerned by the Department for Transport's ambivalence towards assessing the legality of Volkswagen's use of defeat device software despite its condemnation of Volkswagen's actions to us and in the media. The Department for Transport was too slow to assess the use of its powers**

47 Volkswagen Group emissions violations, Q275
48 The CMA does not always make its investigations public
49 Letter from the CMA, 1 March 2016
50 Letter from the Department for Transport, 23 May 2016
51 Letter from the SFO, 25 February 2016
52 Letter from the Department for Transport, 23 May 2016
53 Department for Transport, Vehicle Emissions Testing Programme, April 2016, para 5.5
54 Letter from the Department for Transport, 10 November 2015
55 Vehicle type approval, Q466
56 Letter from the Department for Transport, 23 May 2016
57 Volkswagen Group emissions violations, Q87

under the Road Vehicles (Approval) Regulations 2009 to prosecute Volkswagen for its deception. It took five months before the DfT took even preliminary legal advice on a prosecution. It is deeply concerning that the Department is relying on the European Commission to act even though the Commission does not hold the necessary evidence or have powers to prosecute. We are also concerned that regulators have shown little interest in establishing whether Volkswagen Group has broken any laws. *The Vehicle Certification Agency has evidence that defeat devices were installed in vehicles that it type approved but it has not attempted to conduct any tests to prove that type approval was contingent on the use of the defeat device software. The VCA must measure the exact contribution that the software made to meeting Euro 5 emissions standards. That would facilitate investigations and court actions in the UK and across Europe.*

Compensation and goodwill payments

31. VW has taken contrasting approaches in providing redress to customers in Europe and the US which has led to anger over the fairness of its response. VW initially said it would give US car owners $500 and a further $500 of credit vouchers. VW subsequently worked with US officials on a deal under which it would buy back affected cars. In Europe VW has ruled out goodwill payments or compensation altogether. Paul Willis, Managing Director, VW UK, said US customers were offered goodwill payments because they "will have to wait considerably longer for the technical measures to be implemented than UK customers" and because VW was concerned that there had been a significant drop in trust in diesel engines amongst US consumers as a result of the scandal.[58] VW stated that UK customers had not suffered a financial loss from the scandal or as a result of the fix to their cars; on that basis there was no justification for compensation or goodwill payments.[59] The RAC and motoring journalists who monitor the resale value of cars told us it was too soon to know whether the value of affected cars had been reduced as a result of the scandal. [60]

32. There would be a further case for compensation if there was any reduction to vehicle performance as a result of VW's fix. The VCA said it will "ensure that after the fix is applied the vehicles meet all the legal requirements, including emissions, and that other vehicle characteristics are unchanged or improved, including fuel consumption and engine noise".[61] Approval authorities have emphasised the importance of ensuring that fuel economy is not reduced as a result of VW's fix. Equal consideration should be given to all aspects of vehicle performance, including component reliability and durability which are less easy to measure in laboratories but can prove costly for owners when they are impaired. There were concerns that VW's technical solution was developed at the lowest possible cost for the purpose of satisfying emissions standards and the maintenance of fuel economy but at the expense of component durability—particularly components that comprise the emissions control system. Engine design requires trade-offs between many factors such as fuel consumption, emissions, reliability, and durability.[62] We believe that approval authorities should ensure that owners affected by the VW emissions scandal are not out of pocket as a result of VW's fix, including from any adverse trade-off between fuel consumption and emissions on one side and component durability on the other.

58 Letter from Volkswagen UK, 21 December 2015, para 9.7
59 Letter from Volkswagen UK, dated 21 December 2015, para 9.1–9.7
60 Vehicle type approval, Qq43–45
61 Letter from the Department for Transport, 23 May 2016
62 Martin Maynard (VTA0016)

Sale of Goods Act 1979

33. There is a case for car owners affected by the emissions scandal to be compensated under the Sale of Goods Act 1979.[63] A partial refund is a possible option.[64] Any refund would be subject to a deduction to reflect the use the owner has already had of the car.[65] Owners could recover further damages if it was shown that their cars had depreciated in value as a result of the emissions scandal or if VW's technical solution resulted in the loss of fuel economy or any other financially quantifiable impairment. Owners who purchased cars under hire-purchase might have been able to terminate contract and recover instalments already paid had action been taken in the immediate aftermath of the emissions scandal. Those who did not take action at that time could still examine the case for damages in the same way as those with a sales contract.

34. The Sale of Goods Act 1979 takes into account "any public statements on the specific characteristics of the goods made about them by the seller, the producer of his representative particularly in advertising and labelling."[66] It is obvious that owners believed their cars complied with the emissions standards under which they were sold. Professor Christian Twigg-Flesner, Professor of Commercial Law, University of Hull, said:

> If there were such statements, e.g., in brochures or general advertising, then these would be given a high degree of importance in assessing whether the cars were of satisfactory quality. If actual emissions significantly exceed the advertised values, then this would be a strong indicator that the car is not of satisfactory quality. It seems likely that a court would consider the extent to which advertised and actual values differ. Although there is no clear guidance, it might be assumed that anything beyond a minor discrepancy would be in the consumer's favour.[67]

Consumers who bought new vehicles after 1 October 2014 could instead take a separate course of action under the Consumer Protection from Unfair Trading Regulations 2008, which takes account of "results and material features of tests or checks carried out on the product".[68] Under those Regulations it is necessary for it to be shown that the average consumer would have been affected by the misleading information and that correct information about emissions compliance was a significant factor in an individual's decision to purchase a vehicle.[69]

35. The fact that emissions could be brought into line with legal emissions limits as a result of VW applying a technical solution is unlikely to have a bearing on whether the cars were of satisfactory quality as defined under the Act. "In consumer cases, in particular, courts have disregarded the possibility of being able to repair matters easily. What matters is the state and condition of the car when delivered."[70] Provisions in the Sale of Goods Act 1979 stipulate that repairs can be provided as a means of compensating owners but must be provided within a reasonable period of time and without significant

63 We heard that the Consumer Rights Act 2015 was unlikely to be of help to affected owners as news of the VW emissions scandal was revealed prior to it coming into force.
64 Professor Christian Twigg-Flesner (VTA0032) page 5
65 Professor Christian Twigg-Flesner (VTA0032) page 5
66 Professor Christian Twigg-Flesner (VTA0032) page 2
67 Professor Christian Twigg-Flesner (VTA0032) page 3
68 Consumer Protection from Unfair Trading Regulations 2008
69 Professor Christian Twigg-Flesner (VTA0032) page 5
70 Professor Christian Twigg-Flesner (VTA0032) page 4

inconvenience.[71] As noted above, the schedule for fixing affected cars is already delayed and approval authorities rejected some proposed fixes on the basis that they have resulted in higher CO_2 emissions.

36. **Volkswagen's treatment of customers in Europe compared to its treatment of customers in the US is deeply unfair. Volkswagen said it was justified in providing goodwill payments to US customers, but not European customers, on the grounds that US customers would face delays to fixing their vehicles. The delay to fixing vehicles in Europe is now creating a great deal of uncertainty over whether cars will be fixed, their residual values and their compliance with regulations. We do not accept Volkswagen's justification of its policy on payments and see nothing to justify their refusal to offer comparable payments to customers in Europe. Volkswagen must provide goodwill payments to European vehicle owners equal to offers that have been made to US vehicle owners. The Sale of Goods Act 1979 might also offer owners some recourse for compensation.**

37. ***We welcome the work that approval authorities have done to ensure that there is no adverse impact on fuel economy and other aspects of vehicle performance. For consumers to have confidence in any technical solution, approval authorities must be mindful that component reliability and durability are not impaired either, as that could lead to high repair costs for owners. The VCA must ensure that owners are not out of pocket in any way as a result of Volkswagen's technical solution; Volkswagen must meet those costs.***

71 Professor Christian Twigg-Flesner (VTA0032) page 5

3 European Whole Vehicle Type Approval

The type-approval system

38. European Whole Vehicle Type Approval is the process that ensures vehicles meet relevant environmental, safety and security standards. Manufacturers have to comply with the process before bringing a car to market. Tests are performed on a production specification vehicle that is representative of the 'type' that will go on sale. The test methodology is outlined in EU and UN regulations. There are four main stakeholders in the type-approval system:

i) Approval authorities (certifies vehicles are safe to be sold in Europe)

ii) Technical Services (designated by type-approval authorities for witnessing tests and collating the necessary information to submit to approval authorities)

iii) Manufacturers (produces vehicles, systems and components)

iv) Test facilities (authorised laboratories approved by approval authorities as being able to undertake testing)[72]

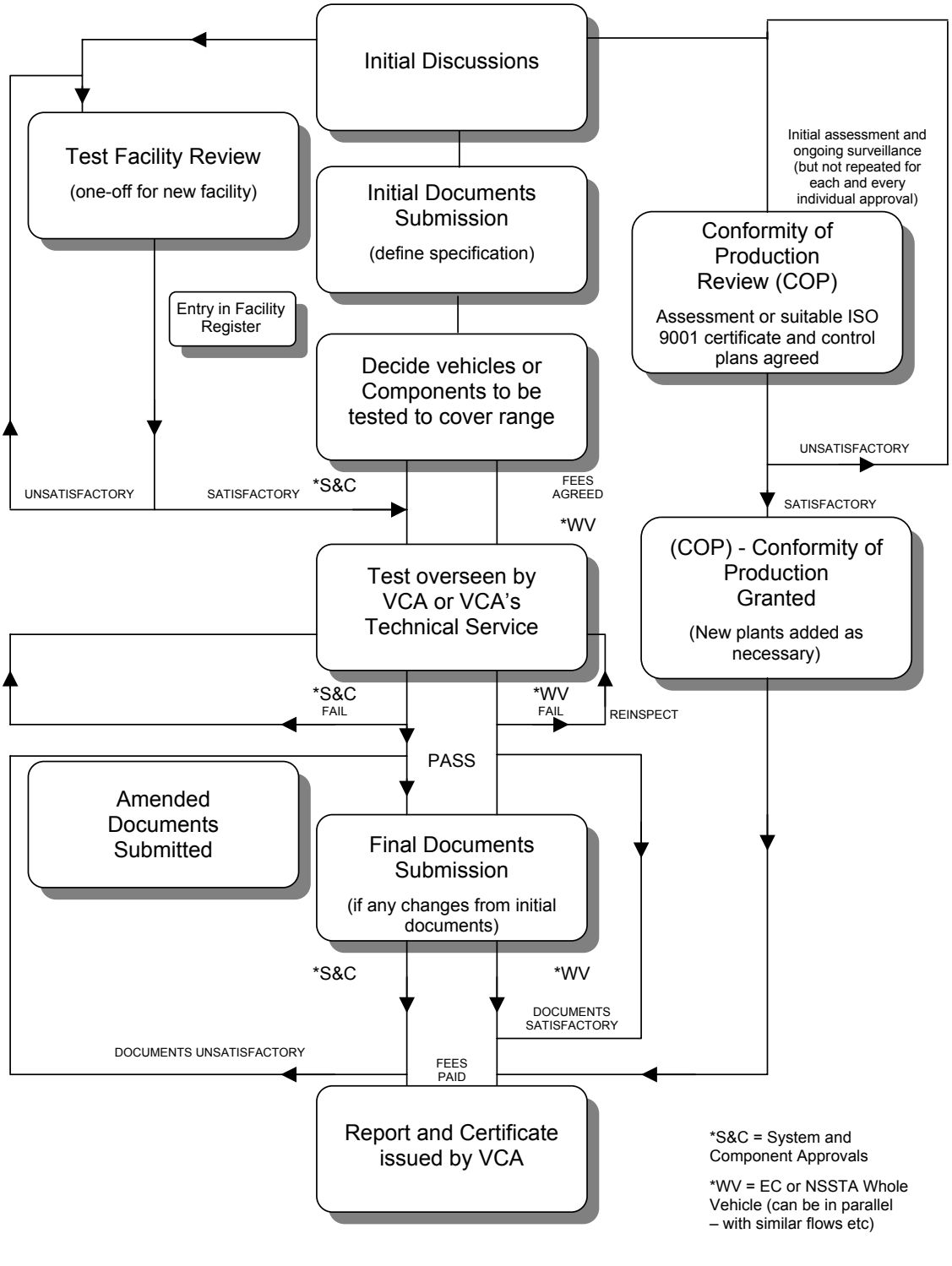
Each member state has an approval authority either as part of government or representing government. The manufacturer decides which approval authority to work with and that approval authority does not have to be based in the same country as the manufacturer. Once a car's individual system and component approvals are in place they are reviewed as part of a whole vehicle inspection and then approved as an entity by an approval authority. The VCA is a technical service as well as the approval authority for the UK. The VCA can designate laboratories to act as a technical service when the VCA does not possess the technical competence to conduct certain tests. Tony Soper, Technical Specialist for Homologation,[73] Millbrook, said that the VCA usually allocates electro-magnetic compatibility testing to a designated technical service but for most other tests the VCA acts as the technical service.[74]

72 Horiba Mira (VTA0028) page 2

73 Homologation is the process of certifying or approving a product to indicate that it meets regulatory standards and specifications

74 Vehicle type approval, Q104

The VCA type-approval process[75]



75 VCA, Visual overview of the type-approval process

39. There is a great deal of overlap between the stakeholders in the type-approval process and it is inaccurate to consider them as separate bodies acting as a system of checks and balances against one another. Test facilities can be designated technical services; manufacturers can have their own laboratories accredited as test facilities; the VCA is both an approval authority and a technical service.[76] Each body that conducts or scrutinises type-approval work receives income from manufacturers.

Conflicts of interest?

40. The VCA charges manufacturers for the work it does as a technical service and for certification work, leading to accusations that it is not sufficiently independent. Manufacturers were said to select which technical service and approval authority to use on the basis of which would provide the most favourable, or most lenient, service. Transport & Environment, an NGO, said:

> Since type approval can be undertaken anywhere within the EU (and once approval is issued it must be accepted in all Member States) there is competition between Approval Authorities and Technical Services throughout the EU for the business of type-approving vehicles and auditing to ensure the conformity of production requirement (since manufacturers will be charged for providing the type-approval services). The need to win business from vehicle manufacturers calls into question the independence of testing and approving authorities in the way they perform tests, and represents an obvious incentive for authorities to generate test results that are advantageous to the clients.[77]

41. The VCA and technical services claimed manufacturers chose to work with UK testing and certification services for logistical reasons and not because they were more lenient or cheaper than their competitors. Paul Higgs, Interim Chief Executive, VCA, was reluctant to say that the VCA had a significant commercial motivation to attract type-approval business from manufacturers.[78] He said, "We are not after their business. They come to the VCA because normally within Europe it usually comes down to a question of logistics. Manufacturers in the UK will tend to use the type approval authority and/or technical services in the UK."[79] Paul Higgs was more explicit about the competitive realities of attracting type-approval work in his foreword to the VCA's latest Annual Report and Accounts:

> Many of our services compete with European public sector and international private sector providers.
>
> I am pleased to announce that our core Product Certification activities increased significantly this year in response to growing demands from the industry sector for our services, a strong performance indeed given the competitive nature of the automotive sector.[80]

76 Vehicle type approval, Q113
77 Transport & Environment, Mind the Gap!, page 21
78 Vehicle type approval, Q509–514
79 Vehicle type approval, Q515
80 VCA, Annual Report and Accounts 2015–16, 16 July 2015

42. The VCA has received over £80 million from type-approval services since 2005, according to Greenpeace. The proportion of VCA income derived from manufacturers through type-approval work rose from 52 per cent to 70 per cent over the last 10 years.[81] The VCA is obviously reliant on manufacturers for a large proportion of its income. Transport & Environment found that three quarters of a 'Dirty 30' list of cars with suspicious emissions behaviour were approved in Europe by approval authorities based in the same country as the manufacturer. The VCA approved most of those cars with questionable emissions practices. The implication was that there is an economic incentive for national governments not to robustly challenge manufacturers based in their own countries. Greg Archer, Director of Clean Vehicles, Transport & Environment, said, "Countries are protecting their car industries from effective regulation at the cost of citizens' health. Instead of playing the blame game, ministers should dig deeper in their investigations to unveil all types of defeat strategies."[82]

43. As the VCA is both a technical service and an approval authority it could be argued that it effectively marks its own homework. Paul Higgs, interim Chief Executive, VCA rejected the idea that its dual role was a conflict of interest on the grounds that there was a clear demarcation between the technical service and the approval authority sides of the business and the granting of type-approval certification was sufficiently regulated. He said, "The team that actually checks and monitors the test reports that come in is separate from the test engineers. They ultimately issue the approvals based on the information presented—evidence presented that a vehicle has passed and met the regulatory requirements."[83] Alex Burns described the VCA as responsible for maintaining the "integrity of the system"[84] but we believe the VCA's failure to identify cheating by Škoda has damaged that integrity.

44. Test facilities and designated technical services rely on revenue from manufacturers for their services in a similar way to the VCA. Engineering and testing businesses such as Horiba Mira test vehicles for certification purposes but also have a role in vehicle development: "We are an engineering business. That is around 45% of our business. We design and engineer vehicles for companies around the world. We test vehicles and we run a technology park."[85] Manufacturers are based at their site: "We have 30 organisations already based at MIRA and that includes major vehicle manufacturers, plus tier ones—people like Bosch and TRW, and so on."[86] Millbrook also run a technology park and host manufacturers at their site.[87] Technical services and test facilities said that it was not in their interests to be lenient during tests despite their close relationship with manufacturers. Paul Higgs said that the VCA did not operate a no pass, no fee system, "You get charged whether the test is passed or otherwise."[88] Tony Soper, said "It is in our interest as a testing organisation for the vehicle to fail, because then we would do more tests."[89] Both Horiba Mira and Millbrook said there was no advantage to any stakeholder in the type-approval process from substandard vehicles passing certification tests.[90] We

81 Greenpeace, Dieselgate' scandal: Government regulator receives over £80 million from auto industry in the last ten years, 12 October 2015
82 Transport & Environment, 'Dirty 30' diesel cars mostly approved in carmakers' home countries – report, 6 June 2016
83 Vehicle type approval, Q507
84 Vehicle type approval, Q161
85 Vehicle type approval, Q117
86 Vehicle type approval, Q111
87 Vehicle type approval, Q111
88 Vehicle type approval, Q507
89 Vehicle type approval, Q153
90 Vehicle type approval, Qq126–129

believe the recent spate of revelations on widespread test cheating demonstrated that has not stopped manufacturers from trying to do so. In Europe the absence of a deterrent to manufacturers has helped to enable that.

45. The concentration of multiple roles within highly competitive certification and testing businesses has led to further concerns over conflicts of interests. Dr George Gillespie, Chief Executive Officer, Horiba Mira, said, "In theory, you could say that the engineering business is in conflict with doing certification".[91] He said that potential conflict of interest was prevented by separate reporting lines on the technical service side and the engineering side: "We bring UKAS[92] in to audit what we do; we ensure that we have a separate audit to make sure that we have that independence."[93] Those businesses not only work alongside manufacturers to develop vehicle technology, they also offer consultancy services to manufacturers on how to pass type-approval tests. That means they are working with manufacturers to develop vehicle technology, advising manufacturers on how to pass tests, and then in some cases, conducting those same tests.[94] Dr George Gillespie said consultancy work was conducted by staff within the engineering department but when "a vehicle turns up to be tested, it is [tested by] an entirely different group of people."[95] Alex Burns said, "You would not get the same person advising on how to pass a test and then doing the test itself. You would always make sure that there was clear delineation between those responsibilities."[96] The Commission is less relaxed about the concentration of roles held by technical services. It has published a proposal that contains stricter rules regulating the independence of technical services, including the "separation of testing/consulting activities".[97]

46. The Commission also intends to remove the power to designate technical services from member states. Designation would be based on the results of regular audits by experts from other member states and the Commission which will have the power to oppose the designation of a technical service. The Commission will have the power to suspend, restrict or withdraw the designation of technical services that are underperforming and too lax in applying the rules.[98] The Commission wants to change how manufacturers pay for the services of technical services. Under the new regulation technical services will no longer receive direct payments from manufacturers. Instead manufacturers will pay approval authorities (on the basis of what is charged today by the technical services) and the funds will then be reallocated to technical services.[99] The stated aim is to sever the financial link between manufacturers and technical services.

47. **We are concerned by the overlap of so many roles in designated technical services and vehicle testing and certification businesses. It is now recognised that more independence and a great many more checks and balances are required to restore confidence and competence in the type-approval process. The automotive sector has failed to acknowledge this problem. *The Department for Transport must act to create***

91 Vehicle type approval, Q117
92 UKAS is recognised by Government to assess against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services.
93 Vehicle type approval, Q117
94 Vehicle type approval, Q158
95 Vehicle type approval, Q159
96 Vehicle type approval, Q120
97 Letter from the European Commission, 18 May 2016
98 "Car industry: European Commission tightens rules for safer and cleaner cars" European Commission press release, 27 January 2016
99 Letter from the European Commission, 18 May 2016

a clear separation of functions for designated technical services to eliminate any possibility of conflicts of interest. At the very least, designated technical services must not be allowed to offer consultancy services to manufacturers while also conducting and witnessing certification tests. Failure to make this change would perpetuate a conflict of interest.

In-service surveillance

48. Confidence in the type approval system will be achieved only when the remit of approval authorities, including the VCA, is reinterpreted so that they become industry regulators rather than industry partners. That would best be achieved by prioritising in-service surveillance in a similar way as the US EPA.

49. In-service surveillance is the process of spot-checking vehicles to ensure they still have a pollution performance that is within a certain margin of the type-approved values. The US vehicle certification system is based on conducting in-service surveillance on vehicles that are self-certified by manufacturers. We do not believe that the self-certification model should be replicated in Europe but lessons should be learnt from the EPA's method of random sampling and its reaction to complaints by conducting investigative testing. Nick Molden described the US system as "far superior to the current European system."[100] He said reforms to strengthen the type-approval systems would be most successful if they focused on introducing strong independent in-service surveillance which "to all intents and purposes does not exist today".[101] Regulations only stipulate that manufacturers spot-check their own vehicles and then hand the results to the relevant approval authority under the Conformity of Production system.

50. Some European approval authorities have performed additional spot-checks in addition to those conducted by manufacturers, including in Netherlands, Sweden and Germany.[102] The VCA itself conducted an in-service surveillance programme for emissions up until 2011. Millbrook, a testing service, had the contract to carry out that work.[103] Between 2005 and 2011 the VCA tested around 10 different models per year.[104] 227 individual tests were completed (76 petrol and 151 diesel) and 87 vehicles failed to achieve a "pass" for all pollutants (14 petrol and 73 diesel) between 2005–06 and 2010–11.[105] When any cars failed the VCA carried out more tests on the same models and took an average.[106] As a result the DfT found just two model failures in a decade, a Mitsubishi Carisma Petrol, (2005–06 test) and a BMW Mini One D (2008–09 test). In the case of the BMW Mini the VCA told the KBA, "to enable them to take action". The Government did not say what action was taken subsequently. In the case of the Mitsubishi the manufacturer was contacted directly and they found "a number of anomalies in the test vehicle that could account for the failed result". After further talks with the manufacturer, "no further action was taken".[107] Some of the cars that were tested could have contained defeat devices but the VCA was not looking for such cheating. The VCA retested cars under the same emissions tests used for the purposes of type approval. The focus of the in-service surveillance

100 Vehicle type approval, Q27
101 Vehicle type approval, Q33
102 Letter from the European Commission, 18 May 2016
103 Vehicle type approval, Q201
104 PQ 23023
105 PQ 22742
106 PQ 22742
107 PQ 23024

programme from 2011 was to examine "aftermarket alteration" of vehicles. Expenditure on in-service surveillance then dropped substantially from £200,000 in 2010–2011 to £40,000 in 2012–13. In 2014–15 the VCA allocated a budget of £150,000 for aftermarket alteration in-service surveillance but only £42,300 was spent.[108]

51. The DfT said that it will now start a more robust in-service surveillance programme based on the Emissions Testing Programme (ETP) that it launched in response to the VW emissions scandal.[109] A new unit, which includes staff from the VCA and DVSA, is being established to conduct that work. The DfT is providing a budget of £1,000,000 this year. The Commission is also introducing new requirements for in-service surveillance under the auspices of the fourth Real Driving Emissions test package. It will consist of two elements:

> a) In-service-conformity (ISC) testing to be done by the manufacturer and the authority responsible for issuing the type approval, which is first of all intended to assess the durability of emission control systems over a certain period of use. This work can largely follow the principles for the current ISC testing, even though the participation of the type-approval authority must be strengthened and the specific statistical conditions of the PEMS testing must be taken into account.
>
> b) Market surveillance testing that may be done by either the Member State or a "third party", i.e. an authority not involved in the initial type approval process or independent parties like NGOs or the manufacturers' peers. The possibility of such independent surveillance testing is particularly important, if not decisive, for the effectiveness of the RDE test procedures, since the latter contain random elements and are based on the legal requirement that conformity factors are not exceeded for a whole variety of different PEMS trips.[110]

The Commission said a robust in-service surveillance programme should in future comprise a "comprehensive yearly testing programme" that contained both of those elements.[111] The Commission is planning to adopt powers to carry out ex-post verification testing through its Joint Research Centre (JRC) and initiate recalls when necessary.[112]

52. We believe the ETP report would make a good model for a future annual release on the results of the ongoing in-service surveillance programme provided that the DfT publishes additional data that is required for independent scrutiny. A recurring complaint from independent researchers was that the type-approval system was not transparent. That was one reason why manufacturers had been able to pass emissions tests in ways that were not foreseen until now. Professor James Tate, Institute for Transport, Leeds University, said that in 15 years of studying emissions testing he had not seen any data from the manufacturers or the VCA.[113]

108 PQ 22741
109 The results of the DfT's Vehicle Emissions Testing Programme are examined in the next chapter
110 Letter from the European Commission, 18 May 2016
111 Letter from the European Commission, 18 May 2016
112 Letter from the European Commission, 18 May 2016
113 Vehicle type approval, Q2

53. **The Vehicle Certification Agency is both an industry partner and industry tester. That is inappropriate and has harmed the integrity of the type-approval system. The motor industry requires a robust regulator and the VCA must make scrutinising manufacturers and their engineering practices its first priority given the recent revelations that manufacturers misled regulators or exploited loopholes in regulations on a substantial scale.**

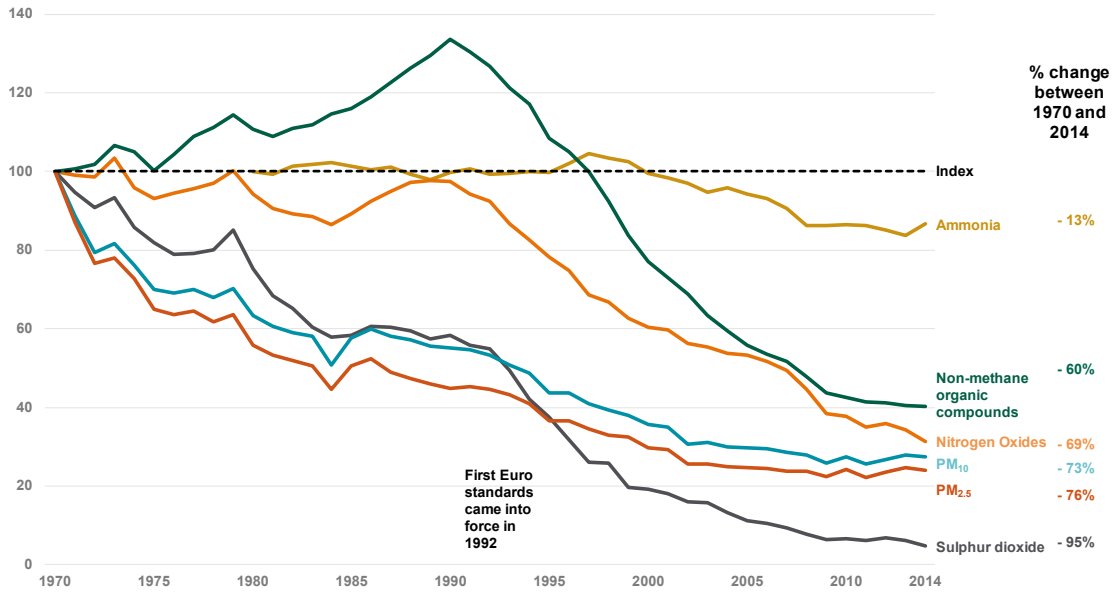
54. **We welcome the Government's most recent commitment to conducting in-service surveillance. The in-service surveillance work that the VCA conducted before 2011 was inadequate and underfunded, and even when it revealed questionable practices by manufacturers its results were not followed up.** ***The Government's most recent in-service surveillance work was considerably better and we recommend that the VCA publish an annual report of its in-service surveillance results in the style of the Emissions Testing Programme report. That future work should be improved by combining it with a commitment to make its results and underpinning data publicly available for further scrutiny. We believe this can be done within the budget that has been set. We acknowledge concerns about commercial confidentiality and believe that can be managed. The Department for Transport must consult on what would constitute a robust in-service surveillance system and what data it should release and how it should do so. The VCA must make it easier for stakeholders to bring questionable practices to its attention so that it can investigate further.***

4 Emissions tests

Euro emissions standards

55. The EU periodically reduces the legal limits on emissions through the introduction of new 'Euro' emissions standards. Euro standards were introduced in 1992 to reduce pollutants from vehicles and have been a successful mechanism for improving air quality, leading to reductions in NO_x, particulates and hydrocarbon emissions.[114] The official Euro 6 NO_x limit is over 90% lower than the first Euro standard introduced in 1992. Real-world test data from Emissions Analytics indicated NO_x emissions from the latest Euro 6 diesel cars had been reduced by 49% relative to Euro 5 cars.[115] Meeting NO_2 limits close to busy roads continues to be a challenge. In some areas transport is responsible for 80% of roadside NO_x on average.[116]

UK National emissions of air pollutants[117]



The emissions gap

56. The Government found that air quality had not improved at the expected rate despite reductions in the official emissions limits. The Department for Environment, Food and Rural Affairs commissioned a report in 2013 that found that NO_x emissions from diesel cars peaked around the year 2000 but there has been little change since.[118] One reason for that is the NEDC's failure to keep pace with vehicle technology and real-world driving conditions. Dr James Tate, Institute for Transport Studies, Leeds University, said "It is quite

114 Department for Transport (VTA008) para 23
115 Emissions Analytics, EU decision on emissions testing sets route to cleaner, healthier cities, May 2015
116 Department for Transport, Vehicle Emissions Testing Programme, April 2016, para 2.2
117 Department for Transport, Vehicle Emissions Testing Programme, April 2016, para 2.2
118 King's College London & Newcastle University, Remote sensing of NO2 exhaust emissions from road vehicles, 18 July 2013, page 9

surprising how there can be a test that is so unrepresentative of real-world driving."[119] That has led to a substantial 'emissions gap' where vehicles in the real-world emit considerably more NO_x than they do when tested in the laboratory. Nick Molden, Chief Executive Officer, Emissions Analytics, explained the scale of the emissions gap for NO_x and CO_2:

> On average, across 400 vehicles tested, NO_x emissions are four times the regulated level, at around 300 mg/km for Euro 6 in real-world driving.
>
> […] CO_2 emissions are on average 31% above the official level, across 700 vehicles tested, which implies that fuel economy (MPG) is 24% lower than customers are being led to expect.[120]

Real-world emissions are not currently regulated so those excesses are not illegal although they are misleading for consumers, regulators and for Governments that need to model pollution levels accurately.

57. Emissions Analytics said that the principal reasons for the disparity were threefold:

i) The New European Driving Cycle has a much gentler driving profile than real-world driving and tends to generate better fuel economy and lower emissions;

ii) The loopholes in the test protocol, particularly around the coast-down test and other tolerances, mean that an official dynamometer-based NEDC test may get a better result than the same NEDC cycle on the real road;

iii) As the overlap in engine load characteristics between the NEDC and real-world driving is relatively limited, the engine calibration can be set to meet NO_x limits when officially tested but with better fuel economy (and likely higher NO_x emissions) in real-world driving.[121]

Flexibilities in the test procedure were the result of how the EU framework Regulation was drafted. Greg Archer, Clean Vehicles Manager, Transport & Environment, said "that framework was drafted in a way that simply was not rigorous enough. It said things like the type-approval authority—the people who check that the car is legal—'may' do this and 'could' do that".[122] That enabled manufacturers to engineer cars specifically to pass the narrow parameters of the NEDC without regard for how cars performed in the real world.

58. Manufacturers are able to submit cars to undergo the NEDC that have been optimised to perform well in test conditions. Greg Archer said the industry called such cars 'golden vehicles' although the use of that term was rejected by figures from within the motor industry.[123] Greg Archer said there were approximately 20 different ways that manufacturers optimised test cars. Mike Hawes, Chief Executive, Society of Motor Manufacturers & Traders (SMMT), said that he had not heard of some of the more substantial optimisations that manufacturers are alleged to have employed.[124] Tony Soper, Technical Specialist for Homologation, Millbrook, said that some permissible optimisations were to "the letter

119 Vehicle type approval, Q2
120 Emissions Analytics (VTA0009)
121 Emissions Analytics (VTA0009)
122 Vehicle type approval, Q9
123 Vehicle type approval, Qq135–140
124 Vehicle type approval, Qq 39–42

of the regulation, not necessarily the spirit".[125] Those included charging the battery so there was less parasitic loss from the engine and using high pressure tyres which reduced frictional losses.[126] He said:

> To give you an example, it may be prepared such that the oil level is at the lower end, at the bottom of the dipstick rather than at the top of the dipstick. That is perfectly acceptable within the emissions regulations, and it will result in a small advantage in frictional losses. Those are the sorts of special preparations that have been made in the past to such vehicles.[127]

Dr George Gillespie, Chief Executive Officer, Horiba Mira, said that "Because of the vagaries of testing there are plus and minus limits on various parameters. Yes, you could have a vehicle tested at one end and you could buy a vehicle at the other end."[128]

59. Witnesses pointed out that the extent to which test vehicles could differ from vehicles on sale was restricted by the 'Conformity of Production' system.[129] Conformity of Production is the means of demonstrating the ability to mass produce a vehicle according to the specification certificated in type-approval documentation. It is mandatory that manufacturers have a Conformity of Production system in place before type approval is granted. A Conformity of Production assessment takes place at a manufacturing facility which has the appropriate equipment, testing environment and quality processes to ensure test vehicles are representative of the final manufactured vehicles.[130] Technical services conduct conformity of production testing on a regular basis for manufacturers, "where a random vehicle is selected from the end of the production line and brought to [its facilities] to be tested."[131]

EU reforms

60. The Commission had known of the emissions gap since at least 2011.[132] The motor industry itself recognises the need to replace the NEDC.[133] New test rules will take time to formulate but by any standard the rate of progress has been slow. It has taken the VW emissions scandal before any meaningful action to begin.[134] The Commission is now legislating for a real-world test to complement laboratory testing called a Real Driving Emissions (RDE) test. RDE will ensure that NO_x measured during the laboratory test is confirmed in real-world conditions. Test cars will be driven on a road according to random acceleration and deceleration patterns. Emissions will be measured by Portable Emission Measuring Systems (PEMS) installed within the car. RDE testing will reduce the difference between emissions measured in the laboratory and those measured on the road. It will reduce the risk of cheating with defeat devices.[135]

125 Vehicle type approval, Q150
126 Vehicle type approval, Qq145 & 146
127 Vehicle type approval, Qq139–140
128 Vehicle type approval, Q164
129 Q143
130 Horiba Mira (VTA0028) page 2
131 Q174
132 Q306
133 SMMT (VTA0011) para 22
134 Q306
135 "Commission welcomes Members States' agreement on robust testing of air pollution by cars" European Commission press release, 28 October 2015

61. RDE testing will be introduced through four packages, the first and second of which have been agreed by member states and the European Parliament. The first RDE package introduced the concept of RDE procedures with PEMS. The use of PEMS applied from 1 January 2016 and national motoring authorities should now be using RDE for monitoring purposes. EU rules require the manufacturer and the approval authority to provide RDE test results to any interested party but the Commission plans to propose relevant legislation making that information publicly available, possibly through a database, without the need to contact manufacturers.[136] The second RDE package provided for additional margins for emissions under RDE and the dates for their implementation. The third RDE package will address PEMS testing for particle numbers, the inclusion of the cold start[137] and after-treatment system regenerations in the RDE test, special provisions for RDE hybrid testing and the inclusion of the Conformity Factors in the Certificate of Conformity. The text is due to be voted at the Technical Committee on Motor Vehicles (TCMV) in the fourth quarter of 2016. The fourth RDE package will include measures for in-service surveillance testing by independent parties such as other approval authorities not involved in the initial type approval or by NGOs. Its preparation will begin in September 2016 and the TCMV should vote on it in the first half of 2017.[138]

62. The current Euro 6 legal NO_x limit is 80mg/km. The Commission has introduced not-to-exceed (NTE) NO_x limits above the existing Euro 6 limit under the second RDE package to take account of variabilities that arise from testing with on-board PEMS equipment. The NTE limit is the legal NO_x limit plus a margin called the 'conformity factor'. The Commission is introducing a temporary higher conformity factor before introducing a lower conformity factor a few years later. This means:

i) car manufacturers will have to bring down the discrepancy between lab and real world tests to a conformity factor of a maximum 2.1 (110%) for new models by September 2017 (for new vehicles by September 2019);

ii) this discrepancy will be brought down to a factor of 1.5 (50%), taking account of technical margins of error, by January 2020 for all new models (by January 2021 for all new vehicles)

Nick Molden, Chief Executive, Emissions Analytics, said a 2.1 conformity factor is "much greater than the inherent variability in PEMS testing". He said a more realistic conformity factor would be about 1.2 to 1.3.[139] The Commission itself originally proposed setting the temporary and final conformity factors at 1.6 and 1.2 respectively. That would have resulted in NTE NO_x limits in real-world conditions of 128mg/km followed by 96mg/km but the agreed limits are substantially less stringent than that—168mg/km and 120mg/km. The agreed NTE limits resulted in rules that effectively raised official emissions limits for the first time. In practice, cars are exceeding official limits by 400% on average, so the new limits should result in a real-world NO_x reduction.

63. Critics of the conformity factors argued that the proposals should have been rejected on the grounds that they are illegal under the EU's own legislation. It was argued that the size of the proposed conformity factors had been made for political reasons—to protect the

136 Letter from the European Commission, 18 May 2016
137 See paragraph 63
138 Letter from the European Commission, 18 May 2016
139 Q35

interests of Europe's motor industry—and not for reasons based upon scientific evidence. Transport & Environment said, "the Commission and member states' decision exceeds the powers of implementing legislation and is therefore illegal. Implementing legislation can only take uncertainty in the testing procedure into account when revising limits". ClientEarth, an environmental advocacy group, said:

> The European Parliament has the power to oppose the implementing measures adopted by the Commission, if they exceed the implementing powers granted by the EU legislature or are not compatible with the aim or the content of the Euro 6 Regulation.
>
> In setting the temporary and final conformity factors applicable to RDE tests, the Commission has taken a political decision to favour the commercial interests of car manufacturers over the protection of the health of European citizens. This decision therefore exceeds the implementing powers granted by the EU legislature and is incompatible with the Euro 6 Regulation's aim to progressively reduce vehicle emissions and achieve air quality objectives.
>
> The decision is therefore illegal and should be vetoed by the European Parliament.[140]

The Commission said the proposed conformity factors were set on the basis of an in-depth analysis of several 'error sources' that arise from the use of PEMS. "The analysis provides a range of [conformity factors], which are considered to be compliant with the legal requirements set by Regulation (EC) 715/2007. The [conformity factors] voted by the TCMV[141] are within this range."[142] Ian Yarnold, Head of the International Vehicle Standards Division, DfT, said the Government agreed with the conformity factors and that their basis was a "judgement call" based on "DEFRA's modelling about where we are, where they need to be for the ambient air quality issues and how quickly we felt we could get there."[143]

64. There was a great deal of criticism about the extent to which motor manufacturers were able to shape the Commission's proposals for RDE tests. The Corporate Europe Observatory, an advocacy group, used EU Freedom of Information rules to publish communications between ACEA, a car industry trade association, and the Commission. ACEA made a number of requests of the Commission, some of which were accepted, partially accepted or rejected.[144] ACEA successfully lobbied for the removal of 'cold-starts' from the recent RDE packages.[145] 'Cold starts' refers to measuring emissions that occur during starting and warming up a car when the engine is cool which typically results in high emissions. Removing cold-starts from the test made it much less representative of real-world driving. As noted above the Commission has now said that it still intends to develop a plan to measure cold starts in future addendums to the regulation.[146]

140 Client Earth, Legality of the Conformity Factors in the RDE tests, December 2015, p3
141 Technical Committee on Motor Vehicles (TCMV) is comprised of officials from EU Member States
142 Letter from the European Commission, 18 May 2016
143 Vehicle type approval, Qq560 & 561
144 Corporate Europe Observatory, Scandal hit car industry in the driving seat for new emissions regulations, 29 January 2016
145 New York Times, VW argued for easing new EU tests on emissions, 1 December 2015
146 See para 60

65. The Commission has committed to an annual revision clause to examine the case for reducing the final conformity factor. The aim is to bring the conformity factor down to 1 as soon as possible and at the latest by 2023.[147] Reductions should reflect decreasing measurement uncertainties from the PEMS based on increased experience and improvements over time due as a result of technical progress.[148] The Commission only has the power to propose a reduction in the conformity factor. Any reduction would still need to be agreed upon by member states.[149] There is no certainty that member states would be more receptive to new evidence presented by the Commission than they were to the evidence presented in advance of the conformity factors that were agreed previously.

66. **The agreed conformity factors are a step in the right direction. Remaining RDE test measures are still to be agreed but once RDE testing is implemented it should result in lower real-world NO_x emissions. We were disappointed that the Department for Transport did not strive for stricter conformity factors given scientific evidence that shows NO_x could have been cut much faster.** ***We call on the Department to influence negotiations in favour of a conformity factor of 1.2 or 1.3 at the next available opportunity and to bring the conformity factor down to 1 as soon as possible.***

World-wide Light-vehicle Test Procedures

67. The Commission is introducing a new test procedure known as the Worldwide Light-vehicle Test Procedures (WLTP) which will be used to measure CO_2 emissions and fuel economy. The development of the WLTP began at the United Nations in 2007. The UN aimed to develop a testing regime that better reflected actual driving conditions and was harmonised globally to make it easier and cheaper for manufacturers to offer the same models in different markets without the need for separate type approvals. This should represent a significant cost saving to manufacturers which should, in large part, be passed on to consumers. The Government has been right to encourage and shape the implementation of the WLTP. The Commission anticipates that the WLTP will be mandatory for new vehicle models from September 2017.

68. There is a substantial gap between CO_2 emissions detected under the NEDC and those detected in the real world which the WLTP will help to reduce. Greg Archer from Transport & Environment said:

> the problem has been getting worse and worse year on year. We have seen the gap between the test results and the real world performance of the vehicles increasing. Going back to 2000, the gap was just 8% on average; in 2014, it was 40% on average.[150]

The WLTP is conducted in a laboratory but the test parameters are stricter and are a better reflection of real-world driving conditions when compared to the NEDC. Horiba Mira said that it is important that the WLTP is not seen as "a test to fully answer and offer solutions to the discontent and questions raised by consumers. To develop a testing regime which

147 European Commission Statement, 3 February 2016
148 Letter from the European Commission, 18 May 2016
149 Vehicle type approval, Q309
150 Vehicle type approval, Q7

fully reflects all driving styles, road conditions and vehicle technology and at the same time offers a robust and repeatable test is unfeasible."[151] Emissions Analytics challenged the idea that CO_2 emissions could not also be measured in real-world conditions:

> On the CO_2 side, the same on-road element is not being introduced in the test. There is a very strong argument that it should be. Nevertheless, […] In our calculations, it will reduce that gap of about 31% today down to about 15%.[152]

Greg Archer also said that real world CO_2 testing was needed despite acknowledging that the WLTP was a step in the right direction.[153]

69. **We welcome the Department's efforts to implement the Worldwide Light-vehicle Test Procedure. We recognise that global test and certification standards bring savings to vehicle design and development which should in theory reduce prices for consumers. *We recommend that the Department assess the viability of introducing a real-world element to CO_2 testing.***

Transition

70. The transition to WLTP requires a number of important issues to be addressed including the impact that the WLTP will have on Vehicle Excise Duty (VED) bands. According to the SMMT VED bands will need to be updated to avoid market distortion.[154] That is because VED is based on car engine size, official CO_2 emissions and the date of first registration. A car's official CO_2 emissions are likely to be higher when tested under the WLTP than when tested under the NEDC which will affect which VED band applies. The DfT said that once WLTP had been implemented "decisions will be taken about VED bands".[155]

71. The SMMT also said that there will need to be a significant lead time to accommodate the changes that manufacturers and the DfT will have to make to databases so that cars approved on WLTP can be registered by the DVLA. The SMMT said that discussions have begun on how to transition from NEDC to WLTP.[156]

Car labelling

72. In addition, the SMMT said that discussions have begun with the Commission about how to transition from the NEDC to the WLTP for consumer labelling purposes.[157] The introduction of the stricter WLTP will make it difficult for consumers to compare vehicle performance between newer and older models. The Commission launched an evaluation of the Car Labelling Directive in 2015 to examine its implementation and achievements compared to what was expected. The Car Labelling Directive[158] aimed to raise consumer awareness on the fuel use and CO_2 emission of new passenger cars so that consumers could be incentivised to purchase or lease cars which used less fuel and emit less CO_2. The

151 Horiba Mira (VTA0028) page 4
152 Vehicle type approval, Q35
153 Vehicle type approval, Q36
154 SMMT (VTA0011) para 28
155 Letter from the Department for Transport, 23 May 2016
156 SMMT (VTA0011) para 29
157 SMMT (VTA0011) para 29
158 Directive 1999/94/EC

evaluation is expected to be concluded in July 2016 with the publication of a Commission Staff Working Document that will summarise the main findings of the evaluation and identify any potential follow-up work. Before the end of 2016, independently of the evaluation results, the Commission said that it might provide guidance on how to address the introduction of the WLTP in the context of the Car Labelling Directive.[159] Graham Hope, Editor, Auto Express and Carbuyer, said the US car labelling standards were a useful model that could be used in Europe: "There is a much more transparent labelling system over there, and the average mpg is displayed very prominently. There is an average fuel cost and also a figure displayed that shows how much more or less you would spend on fuel over five years compared with the average car."[160]

73. **The transition to WLTP will have a number of consequences which must be addressed carefully if they are not to lead to confusion amongst consumers. In particular the Department for Transport and HM Treasury need to assess the impact that the introduction of the WLTP will have on cars' CO_2 emissions and the related VED bands.** ***That information must be provided to motorists as soon as possible and we call upon the Government to publish that information. Motorists must not be financially penalised as a result of an improved testing and certification regime. The Department for Transport should consider publishing information on gov.uk to explain how vehicles tested under WLTP compare with those tested under the NEDC by including a 'conversion factor' allowing motorists to compare emissions standards and performance.***

74. ***The Department for Transport should examine ways of standardising and optimising the format of vehicle labelling to ensure consumers are provided with information that is intuitive and user-friendly allowing for simple and accurate comparisons between cars. The DfT must take examples of best practice from other jurisdictions. During the period of transition to the WLTP and RDE car labelling will require additional information so that consumers can compare standards on a like for like basis between newer and older vehicles.***

Emission Testing Programme

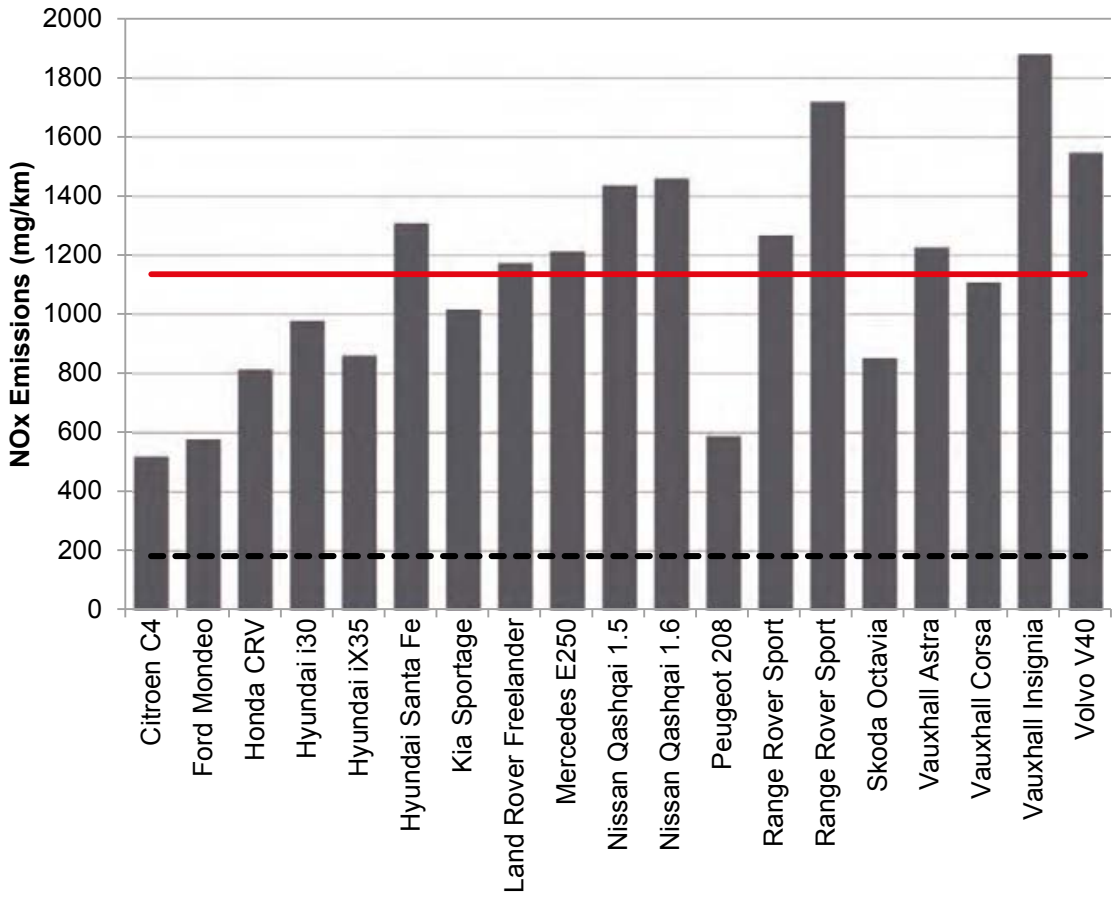
75. On 10 November 2015 the Secretary of State announced a Vehicle Emissions Testing Programme (ETP) to look for the use of defeat devices by other manufacturers and to improve its understanding of the real-world emissions performance of diesel vehicles in the UK. The DfT funded the programme to ensure the testing would be seen as independent and neither the cars nor the testing facilities were provided by the vehicle industry, although tests on VCA type approved Škoda vehicles was paid for by Škoda.[161] The Secretary of State said the programme was conducted in collaboration with France and Germany to reduce duplication of effort and to generate savings.[162] The ETP had an initial budget of £650,000 but that rose to approximately £1,000,000 as of April 2016.[163]

76. The ETP did not detect evidence that any other manufacturer had used the same test cycle manipulation strategy as VW. Nevertheless all the vehicles that were tested emitted higher NO_x levels in real-world driving conditions compared to the laboratory with results

159 Letter from the European Commission, 18 May 2016
160 Vehicle type approval, Q88
161 PQ 27119
162 Letter from the Department for Transport, 10 November 2015
163 Vehicle type approval, Q476

varying between different makes and models. The following graph shows the real-world emissions performance for a range of Euro 5 diesel cars. The black dotted line represents the Euro 5 legal NO_x limit (180mg/km). The red line represents the average NO_x emissions for all vehicles. The vehicles that performed worst were about ten times the legal limit. The best performing vehicle was still three times the legal limit.

Real driving NO_X emissions – Euro 5 vehicles (note: direct comparisons should not be made between vehicles as test conditions varied)[164]



77. The ETP found one reason for the discrepancy between laboratory and real-world emissions was related to how manufacturers used Exhaust Gas Recirculation (EGR) strategies—a system used to reduce NO_x emissions from vehicles. Manufacturers used temperature dependent strategies to regulate the amount of EGR that was used. Some EGR systems were programmed to stop operating, or switch to a less powerful mode, at temperatures just below those specified for the NEDC but are normal ambient temperatures in European countries.[165] The result was lower NO_x emissions in the laboratory than on the road. The EU's prohibition on defeat devices covers any element or design that senses temperature and "reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal vehicle operation and use". Recognising temperature to restrict the emissions control strategy is exactly what many manufacturers have been doing. Manufacturers told the DfT that it was necessary

164 Department for Transport, Vehicle Emissions Testing Programme, April 2016, para 5.21
165 Transport & Environment have said the average ambient temperature is 9 degrees centigrade

to make the EGR system less effective at lower temperatures to protect the engine from damage, which constitutes a legal exemption from the defeat device prohibition. While those EGR strategies might be interpreted as legal, some manufacturers are using them to exploit loopholes in the NEDC and Framework Regulation; they are a defeat device by another name. The DfT has not published any record of its discussions with manufacturers on their reasoning on the necessity of their temperature-dependent EGR strategies but appears to be accepting that reasoning at face value. The DfT wrote to the Commission to draw its attention to manufacturers' practices and called for regulations "to be updated quickly to ensure there is complete transparency in how these systems operate and their effect on emissions in different conditions (such as temperature)."[166]

78. The Commission's reforms to type approval have left the wording of the prohibition on defeat devices unchanged. The Commission said, "The current definition of defeat devices in the European legislation is adequate." Manufacturers will be required to declare their emission strategies to approval authorities in the future and the Commission believes that will help to identify emission strategies that are not permitted, although it did not rule out revisiting definitions in the future.[167] The DfT said that it did "not believe the EU's definition of a defeat device is too narrow" and it supported the introduction of requirements to disclose alternative emissions strategies.[168] The ICCT highlighted differences that remain between the stricter US reporting requirements for emission control strategies and those that will be implemented in Europe. The obligation for manufacturers to disclose emission control strategies in both jurisdictions will be similar but in Europe the regulation "does not give unequivocal guidance to Member States concerning the technical evaluation of the provided information; it does not enumerate criteria that should be used to approve or reject claimed exceptions to the defeat device prohibition; and it does not indicate how to determine which components are part of the emission control system."[169]

79. **We disagree with the European Commission and the Department for Transport on the contention that the regulations for prohibiting defeat devices is adequate. It has led to an unacceptable dispute over the legality of VW's actions in Europe as well as the emissions control strategies of a wide-range of other manufacturers; we believe some of those strategies are defeat devices by another name. We welcome the DfT's support for plans to introduce requirements for manufacturers to disclose their emissions control strategies which will go some way to reduce the flaws in the prohibition but we have not seen evidence that the European Commission's plans go far enough.** ***We recommend that the DfT work with the Commission to ensure that the prohibition on defeat devices is strengthened with guidance for approval authorities on how to evaluate claims that emissions control strategies constitute a viable exemption to the prohibitions on defeat devices, introduce a consistent, method to approve or reject claims for exemptions and to introduce a requirement on manufacturers to prove to approval authorities that alternative emission control strategies are necessary and that no viable alternative exists.***

80. The ETP report published high-level results only. The DfT committed to publishing the underpinning data available in a format that was intelligible for the public at the earliest opportunity on gov.uk. The DfT had hoped it would be able to publish that information

166 Letter from Robert Goodwill MP to Commissioner Elzbieta Bienkowska, 25 April 2016
167 Letter from the European Commission, 18 May 2016
168 Letter from the European Commission, 18 May 2016
169 ICCT (VTA0023) page 16

in May 2016 but that did not happen. The DfT said that it possesses a further data set that shows "second-by-second emissions readings for all of the vehicles during the testing." They said that it was impractical to publish those files on gov.uk because of their size. Those files would be made available on request using an external storage device such as a memory stick or a CD instead.[170]

81. **We welcome the Department for Transport's Vehicle Emissions Testing Programme report. We were disappointed that the DfT did not publish the underpinning data in May 2016.** ***The DfT must make all the underpinning data it holds available for independent scrutiny at the earliest opportunity. The DfT must ensure that the larger data sets are easy to request and the mechanism for doing so is well signposted on gov.uk. The DfT must publish records of its discussions with manufacturers on their temperature-dependent EGR strategies including the reasons provided by each manufacturer for high emissions in ambient temperatures with reference to the manufacturers' descriptions of the influence of temperature on the emission control strategy and the temperature below which the EGR is switched off or reduced for each vehicle.***

170 Letter from the Department for Transport, 23 May 2016

5 Conclusion

82. **The Volkswagen emissions scandal has brought the integrity of the auto sector into disrepute. VW's conduct since the scandal has only served to further damage its reputation. It has communicated poorly with customers which has led to confusion over when and how affected vehicles will be fixed. Furthermore, VW has not been open about the nature of the defeat device software that it installed in millions of vehicles worldwide. Instead of answering many of our questions directly, VW asked us to await the results of an internal investigation by Jones Day. We do not believe that the internal investigation will provide the answers that are needed urgently. VW has used the investigative process to make announcements that only served to exonerate senior management. Approval authorities and regulators cannot depend on VW to co-operate and in this report we have called upon the Department for Transport to use its powers and resources to properly investigate VW which we believe it has failed to do, so far.**

83. **The type-approval framework requires a great deal of improvement before it can be considered fit for purpose. We welcomed the introduction of Real Driving Emissions Testing and the implementation of the Worldwide Light-vehicle Test procedure. Standards agreed globally are worth pursuing. It is important that the negotiations are transparent and open and that the genuine concerns of motor manufacturers are balanced against the importance of safety and environmental policy goals of a global testing system. We are concerned the EU's method of policy making has not had that level of transparency and the motor industry has had too much influence over how emissions limits are set and the timescales for implementation.**

84. **The fine detail of the new emissions tests is still to be agreed and the Department for Transport must do everything in its power to ensure that they are implemented with sufficient stringency. Little was done to address the emissions gap before the Volkswagen Group emissions scandal drew public attention to the deficiencies in current tests. The emissions gap was the result of a failure to keep pace with vehicle technology. The only way to overcome that problem in future is through rigorous scrutiny by approval authorities operating in a system of consistent standards that has opportunities to share information and report the impact of new vehicle technologies on the effectiveness of existing regulation. A failure to do that will only result in the stringency of the new reforms becoming obsolete in years to come.**

85. **The Volkswagen emissions scandal would not have been revealed by any of the approval authorities or technical services under the current framework. It is apparent that the potential for manufacturers to use defeat device software or other dubious emission control strategies were known for many years. Since the VW scandal broke other questionable practices by a range of manufacturers have come to light. Testing can only ever be a sampling approach and it is vital that there is a system of effective in-service surveillance that will detect where tested vehicles are not performing as they should in real-world conditions. As vehicle technology becomes increasingly complex in-service surveillance must become a far greater priority for approval authorities. Had approval authorities made greater efforts to be seen to be looking for cheats, the current regulatory crisis could have been avoided or at least significantly reduced.**

Conclusions and recommendations

The Volkswagen Group emissions scandal

1. It is not credible for Volkswagen Group to apologise for its conduct only to then deny that it had done anything wrong. Volkswagen deceived both regulators and their own customers on a global scale and it has shown a cynical disregard for emissions limits which exist to protect human health from dangerous pollutants. VW's conduct has severely undermined confidence in vehicle standards that are relied upon by consumers and it has not only brought its own integrity into disrepute but also that of the auto sector. (Paragraph 23)

2. It is not credible for VW to say that it does not know the exact contribution that the defeat device made to meeting EU emissions limits. We are concerned by the Department for Transport's ambivalence towards assessing the legality of Volkswagen's use of defeat device software despite its condemnation of Volkswagen's actions to us and in the media. The Department for Transport was too slow to assess the use of its powers under the Road Vehicles (Approval) Regulations 2009 to prosecute Volkswagen for its deception. It took five months before the DfT took even preliminary legal advice on a prosecution. It is deeply concerning that the Department is relying on the European Commission to act even though the Commission does not hold the necessary evidence or have powers to prosecute. We are also concerned that regulators have shown little interest in establishing whether Volkswagen Group has broken any laws. *The Vehicle Certification Agency has evidence that defeat devices were installed in vehicles that it type approved but it has not attempted to conduct any tests to prove that type approval was contingent on the use of the defeat device software. The VCA must measure the exact contribution that the software made to meeting Euro 5 emissions standards. That would facilitate investigations and court actions in the UK and across Europe.* (Paragraph 30)

3. Volkswagen's treatment of customers in Europe compared to its treatment of customers in the US is deeply unfair. Volkswagen said it was justified in providing goodwill payments to US customers, but not European customers, on the grounds that US customers would face delays to fixing their vehicles. The delay to fixing vehicles in Europe is now creating a great deal of uncertainty over whether cars will be fixed, their residual values and their compliance with regulations. We do not accept Volkswagen's justification of its policy on payments and see nothing to justify their refusal to offer comparable payments to customers in Europe. Volkswagen must provide goodwill payments to European vehicle owners equal to offers that have been made to US vehicle owners. The Sale of Goods Act 1979 might also offer owners some recourse for compensation. (Paragraph 36)

4. *We welcome the work that approval authorities have done to ensure that there is no adverse impact on fuel economy and other aspects of vehicle performance. For consumers to have confidence in any technical solution, approval authorities must be mindful that component reliability and durability are not impaired either, as that could lead to high repair costs for owners. The VCA must ensure that owners are not out of pocket in any way as a result of Volkswagen's technical solution; Volkswagen must meet those costs.* (Paragraph 37)

European Whole Vehicle Type Approval

5. We are concerned by the overlap of so many roles in designated technical services and vehicle testing and certification businesses. It is now recognised that more independence and a great many more checks and balances are required to restore confidence and competence in the type-approval process. The automotive sector has failed to acknowledge this problem. *The Department for Transport must act to create a clear separation of functions for designated technical services to eliminate any possibility of conflicts of interest. At the very least, designated technical services must not be allowed to offer consultancy services to manufacturers while also conducting and witnessing certification tests. Failure to make this change would perpetuate a conflict of interest.* (Paragraph 47)

6. The Vehicle Certification Agency is both an industry partner and industry tester. That is inappropriate and has harmed the integrity of the type-approval system. The motor industry requires a robust regulator and the VCA must make scrutinising manufacturers and their engineering practices its first priority given the recent revelations that manufacturers misled regulators or exploited loopholes in regulations on a substantial scale. (Paragraph 53)

7. We welcome the Government's most recent commitment to conducting in-service surveillance. The in-service surveillance work that the VCA conducted before 2011 was inadequate and underfunded, and even when it revealed questionable practices by manufacturers its results were not followed up. *The Government's most recent in-service surveillance work was considerably better and we recommend that the VCA publish an annual report of its in-service surveillance results in the style of the Emissions Testing Programme report. That future work should be improved by combining it with a commitment to make its results and underpinning data publicly available for further scrutiny. We believe this can be done within the budget that has been set. We acknowledge concerns about commercial confidentiality and believe that can be managed. The Department for Transport must consult on what would constitute a robust in-service surveillance system and what data it should release and how it should do so. The VCA must make it easier for stakeholders to bring questionable practices to its attention so that it can investigate further.* (Paragraph 54)

Emissions tests

8. The agreed conformity factors are a step in the right direction. Remaining RDE test measures are still to be agreed but once RDE testing is implemented it should result in lower real-world NO_x emissions. We were disappointed that the Department for Transport did not strive for stricter conformity factors given scientific evidence that shows NO_x could have been cut much faster. *We call on the Department to influence negotiations in favour of a conformity factor of 1.2 or 1.3 at the next available opportunity and to bring the conformity factor down to 1 as soon as possible.* (Paragraph 66)

9. We welcome the Department's efforts to implement the Worldwide Light-vehicle Test Procedure. We recognise that global test and certification standards bring savings to vehicle design and development which should in theory reduce prices for consumers. *We recommend that the Department assess the viability of introducing a real-world element to CO_2 testing.* (Paragraph 69)

10. The transition to WLTP will have a number of consequences which must be addressed carefully if they are not to lead to confusion amongst consumers. In particular the Department for Transport and HM Treasury need to assess the impact that the introduction of the WLTP will have on cars' CO_2 emissions and the related VED bands. *That information must be provided to motorists as soon as possible and we call upon the Government to publish that information. Motorists must not be financially penalised as a result of an improved testing and certification regime. The Department for Transport should consider publishing information on gov.uk to explain how vehicles tested under WLTP compare with those tested under the NEDC by including a 'conversion factor' allowing motorists to compare emissions standards and performance.* (Paragraph 73)

11. *The Department for Transport should examine ways of standardising and optimising the format of vehicle labelling to ensure consumers are provided with information that is intuitive and user-friendly allowing for simple and accurate comparisons between cars. The DfT must take examples of best practice from other jurisdictions. During the period of transition to the WLTP and RDE car labelling will require additional information so that consumers can compare standards on a like for like basis between newer and older vehicles.* (Paragraph 74)

12. We disagree with the European Commission and the Department for Transport on the contention that the regulations for prohibiting defeat devices is adequate. It has led to an unacceptable dispute over the legality of VW's actions in Europe as well as the emissions control strategies of a wide-range of other manufacturers; we believe some of those strategies are defeat devices by another name. We welcome the DfT's support for plans to introduce requirements for manufacturers to disclose their emissions control strategies which will go some way to reduce the flaws in the prohibition but we have not seen evidence that the European Commission's plans go far enough. *We recommend that the DfT work with the Commission to ensure that the prohibition on defeat devices is strengthened with guidance for approval authorities on how to evaluate claims that emissions control strategies constitute a viable exemption to the prohibitions on defeat devices, introduce a consistent, method to approve or reject claims for exemptions and to introduce a requirement on manufacturers to prove to approval authorities that alternative emission control strategies are necessary and that no viable alternative exists.* (Paragraph 79)

13. We welcome the Department for Transport's Vehicle Emissions Testing Programme report. We were disappointed that the DfT did not publish the underpinning data in May 2016. *The DfT must make all the underpinning data it holds available for independent scrutiny at the earliest opportunity. The DfT must ensure that the larger data sets are easy to request and the mechanism for doing so is well signposted on gov.uk. The DfT must publish records of its discussions with manufacturers on their temperature-dependent EGR strategies including the reasons provided by each*

manufacturer for high emissions in ambient temperatures with reference to the manufacturers' descriptions of the influence of temperature on the emission control strategy and the temperature below which the EGR is switched off or reduced for each vehicle. (Paragraph 81)

Conclusion

14. The Volkswagen emissions scandal has brought the integrity of the auto sector into disrepute. VW's conduct since the scandal has only served to further damage its reputation. It has communicated poorly with customers which has led to confusion over when and how affected vehicles will be fixed. Furthermore, VW has not been open about the nature of the defeat device software that it installed in millions of vehicles worldwide. Instead of answering many of our questions directly, VW asked us to await the results of an internal investigation by Jones Day. We do not believe that the internal investigation will provide the answers that are needed urgently. VW has used the investigative process to make announcements that only served to exonerate senior management. Approval authorities and regulators cannot depend on VW to co-operate and in this report we have called upon the Department for Transport to use its powers and resources to properly investigate VW which we believe it has failed to do, so far. (Paragraph 82)

15. The type-approval framework requires a great deal of improvement before it can be considered fit for purpose. We welcomed the introduction of Real Driving Emissions Testing and the implementation of the Worldwide Light-vehicle Test procedure. Standards agreed globally are worth pursuing. It is important that the negotiations are transparent and open and that the genuine concerns of motor manufacturers are balanced against the importance of safety and environmental policy goals of a global testing system. We are concerned the EU's method of policy making has not had that level of transparency and the motor industry has had too much influence over how emissions limits are set and the timescales for implementation. (Paragraph 83)

16. The fine detail of the new emissions tests is still to be agreed and the Department for Transport must do everything in its power to ensure that they are implemented with sufficient stringency. Little was done to address the emissions gap before the Volkswagen Group emissions scandal drew public attention to the deficiencies in current tests. The emissions gap was the result of a failure to keep pace with vehicle technology. The only way to overcome that problem in future is through rigorous scrutiny by approval authorities operating in a system of consistent standards that has opportunities to share information and report the impact of new vehicle technologies on the effectiveness of existing regulation. A failure to do that will only result in the stringency of the new reforms becoming obsolete in years to come. (Paragraph 84)

17. The Volkswagen emissions scandal would not have been revealed by any of the approval authorities or technical services under the current framework. It is apparent that the potential for manufacturers to use defeat device software or other dubious emission control strategies were known for many years. Since the VW scandal broke other questionable practices by a range of manufacturers have come

to light. Testing can only ever be a sampling approach and it is vital that there is a system of effective in-service surveillance that will detect where tested vehicles are not performing as they should in real-world conditions. As vehicle technology becomes increasingly complex in-service surveillance must become a far greater priority for approval authorities. Had approval authorities made greater efforts to be seen to be looking for cheats, the current regulatory crisis could have been avoided or at least significantly reduced. (Paragraph 85)

Formal Minutes

Tuesday 5 July 2016

Members present:

Mrs Louise Ellman, in the Chair

Mary Glindon	Will Quince
Karl McCartney	Martin Vickers
Huw Merriman	

Draft Report (*Volkswagen emissions scandal and vehicle type approval*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 85 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Third Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Monday 11 July at 4.00pm

Witnesses

Vehicle type approval

The following witnesses gave evidence. Transcripts can be viewed on the inquiry publications page of the Committee's website.

Monday 14 December 2015

Question number

Nick Molden, Chief Executive Officer, Emissions Analytics, **Dr James Tate**, Institute for Transport Studies, Leeds University, and **Greg Archer**, Clean Vehicles Manager, Transport & Environment — Q1–38

Monday 11 January 2016

David Bizley, Chief Engineer, RAC Motoring Services, **Graham Hope**, Editor, Auto Express and Carbuyer, and **Jim Holder**, Editorial Director, What Car? — Q39–93

Monday 29 February 2016

Alex Burns, Chief Executive Officer, Millbrook, **Tony Soper**, Technical Specialist, Homologation, Millbrook, and **Dr George Gillespie**, Chief Executive Officer, HORIBA MIRA — Q94–219

Monday 14 March 2016

Mike Hawes, Chief Executive, Society of Motor Manufacturers and Traders — Q220–304

Antti Peltomäki, Deputy Director-General in the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, European Commission — Q305–343

Monday 25 April 2016

Richard Lloyd, Executive Director, Which?, **Christian Twigg-Flesner**, Professor of Commercial Law, University of Hull, and **Peter Shears**, Professor of Consumer Law and Policy, Plymouth University; — Q344–395

Paul Higgs, Interim Chief Executive, Vehicle Certification Agency, **Robert Goodwill MP**, Minister of State, and **Ian Yarnold**, Head of the International Vehicle Standards Division, Department for Transport — Q396–564

Volkswagen Group emissions violations

The following witnesses gave evidence for the Volkswagen Group emissions violations inquiry. Transcripts can be viewed on the inquiry publications page of the Committee's website.

Monday 12 October 2015

Paul Willis, Managing Director, Volkswagen Group UK, and **Mike Hawes,** Chief Executive, SMMT — Q1–85

Rt Hon Patrick McLoughlin MP, Secretary of State, Department for Transport, **Michael Hurwitz,** Director of the Energy, Technology & International Directorate, Department for Transport, **Ian Yarnold,** International Vehicle Standards, Department for Transport, and **Paul Higgs,** Chief Executive, Vehicle Certification Agency — Q85–142

Monday 25 January 2016

Paul Willis, Managing Director, Volkswagen UK, and **Oliver Schmidt,** Engineer, Volkswagen AG — Q143–320

Published written evidence

The following written evidence was received and can be viewed on the inquiry publications page of the Committee's website.

VTA numbers are generated by the evidence processing system and so may not be complete.

1 Brake (VTA0003)
2 Brian Edmonds (VTA0002)
3 Department for Transport (VTA0008)
4 Emissions Analytics Ltd (VTA0009)
5 Help Rescue the Planet (HRTP) (VTA0030)
6 HORIBA MIRA (VTA0028)
7 Institute of Air Quality Management (VTA0005)
8 Mr Edward Foreman (VTA0001)
9 Mr John Cieslik (VTA0007)
10 Mr Martyn Maynard (VTA0016)
11 Mr Martyn Maynard (VTA0019)
12 Mr Martyn Maynard (VTA0021)
13 Mr Martyn Maynard (VTA0022)
14 Mr Martyn Maynard (VTA0024)
15 Mr Martyn Maynard (VTA0025)
16 Mr Martyn Maynard (VTA0026)
17 Mr Martyn Maynard (VTA0027)
18 Mr Martyn Maynard (VTA0031)
19 Mr Martyn Maynard (VTA0033)
20 Mr Martyn Maynard (VTA0034)
21 Mr Martyn Maynard (VTA0035)
22 Mr Roy Holmes (VTA0010)
23 Next Green Car Ltd (VTA0006)
24 Professor Christian Twigg-Flesner (VTA0032)
25 Richard Daniel (VTA0013)
26 Society of Motor Manufacturers and Traders (SMMT) (VTA0011)
27 Society of Motor Manufacturers and Traders (SMMT) (VTA0029)
28 The International Council on Clean Transportation (VTA0023)
29 Transport for London (VTA0012)
30 ULEMCo Ltd (VTA0004)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the publications page of the Committee's website.

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2016–17

First Report	Operation Stack	HC 65
Second Report	All lane running	HC 63
First Special Report	Road traffic law enforcement: Government Response to the Committee's Second Report of Session 2015–16	HC 132

Session 2015–16

First Report	Surface transport to airports	HC 516 (HC 995)
Second Report	Road traffic law enforcement	HC 518 (HC 132)
Third Report	Airport expansion in the South East	HC 784
First Special Report	Investing in the railway: Network Rail Response to the Committee's Seventh Report of Session 2014–15	HC 347
Second Special Report	Motoring of the future: Government Response to the Committee's Eighth Report of Session 2014–15	HC 349
Third Special Report	Smaller airports: Government Response to the Committee's Ninth Report of Session 2014–15	HC 350
Fourth Special Report	Strategic river crossings: Government Response to the Committee's Tenth Report of Session 2014–15	HC 348
Fifth Special Report	Strategic river crossings: Greater London Authority Response to the Committee's Tenth Report of Session 2014–15	HC 558
Sixth Special Report	Surface transport to airports: Government Response to the Committee's First Report of Session 2015–16	HC 995