

EXPLANATORY MEMORANDUM TO

THE MOTOR VEHICLES (EC TYPE APPROVAL) (AMENDMENT) REGULATIONS 2008

2008 No. 2844

1. This explanatory memorandum has been prepared by the Vehicle Certification Agency, an Executive Agency of the Department for Transport, and is laid before Parliament by Command of Her Majesty.

2. Description

These Regulations amend the Motor Vehicles (EC Type Approval) Regulations 1998 (“the 1998 Regulations”), in order to implement three Directives and two Community Regulations relating to noise, lighting and light signalling devices, mobile air conditioning and emissions.

3. Matters of special interest to the Joint Committee on Statutory Instruments

None.

4. Legislative Background

4.1 This instrument implements:

- (a) Directive 2007/34/EC,
- (b) Directive 2007/35/EC,
- (c) Directive 2007/37/EC,
- (d) Regulation (EC) 706/2007,
- (e) Regulation (EC) 715/2007.

4.2 Directive 70/156/EEC provides for a system of vehicle type approval. Light passenger vehicles (i.e. passenger vehicles with no more than 8 seats, referred to in Directive 70/156/EEC as Category M1) must be of a type approved as conforming to this Directive before being registered, sold or entered into service for the first time. In order to be so approved, a vehicle must comply with technical requirements specified in other European instruments, called the “Separate Community instruments”, listed in an Annex to Directive 70/156/EEC.

4.3 It is a requirement of the EC type approval system that transposition of these Directives must be carried out.

4.4 The 1998 Regulations implement Directive 70/156/EEC in respect of light passenger vehicles, and the related Separate Directives.

4.5 A transposition note is attached in respect of the implementation of Regulation (EC) 715/2007. With regard to the other Community instruments, the Explanatory Note appended to these Regulations incorporates the transposition note.

4.6 All the instruments except Regulation (EC) 715/2007 are European Commission instruments, and are therefore not subject to parliamentary scrutiny. As far as Regulation (EC) 715/2007 is concerned, an Explanatory Memorandum (5163/06) was submitted to Parliament on 26 January 2006, and a Supplementary Explanatory Memorandum (5163/06) with a Regulatory Impact Assessment on 20 April 2006.

4.7 The House of Commons European Scrutiny Committee considered the Explanatory Memorandum on 1 March 2006 (20th Report, Session 2005/2006, 27173), and the other documents on 21 June 2006 (32nd Report, Session 2005/2006, 27173). As it had found the

proposal to be of political importance, the European Standing Committee of the House debated and agreed, on 17 July 2006, a resolution taking note of the proposal and endorsing the Government's support for the package of measures and its undertaking to keep the costs and impacts kept under review.

4.8 The House of Lords Select Committee on the European Union referred all the documents to its Sub-Committee B, the Explanatory Memorandum having been referred to it at the Committee's 1240th sift on 31 January 2006. The further documents were referred to the Sub-Committee on 20 June 2006, at the Committee's 1256th sift. The Chairman of the Select Committee requested to be kept informed of progress in negotiations. Both Houses were kept so informed, in further letters from the Minister of State, Stephen Ladyman, dated 8 August 2006, 7 December 2006 and 9 January 2007, and in a Second Supplementary Explanatory Memorandum (5163/06) in October 2006. The second SEM was referred by the House of Lords Select Committee to Sub-Committee B at its 1627th sift on 20 November 2006. The Chairman of the Select Committee cleared the documents in his letter of 25 January 2007.

5. Extent

This instrument extends to all of the United Kingdom.

6. European Convention on Human Rights

As the instrument is subject to negative resolution procedure and does not amend primary legislation, no statement as to compatibility has been made.

7. Policy background

7.1 Under European law, Member States are required to transpose the type approval requirements by means that are sufficiently clear and legally binding. These requirements are constantly being updated.

7.2 Directive 2007/34/EC aligns the technical requirements relating to noise with those applicable under Regulation 51 of the type approval system established by the UN Economic Commission for Europe (UNECE).

7.3 Directive 2007/35/EC aligns the technical requirements concerning lighting and light signalling devices with those applicable under UNECE Regulation 48.

7.4 Directive 2007/37 amends Directive 70/156/EEC, to update the information documents required, following the publication of Directive 2006/40/EC on air conditioning.

7.5 EC Regulation 706/2007/EC implements Directive 2006/40/EC by laying down the leakage detection test to be used for the purposes of the approval of air conditioning systems.

7.6 EC Regulation 715/2007/EC makes various provisions for emissions limits and access to repair and maintenance information; in particular, it provides for the emissions limits, dates of application and other requirements for the "Euro 5" and "Euro 6" emissions programmes for light vehicles, and will repeal earlier EC instruments concerning emissions.

7.7 By inserting a reference to the EC instruments in the appropriate place in a Schedule to the 1998 Regulations, these Regulations ensure that they will be taken into account as far as the type approval of M1 vehicles is concerned.

7.8 Representatives of the Industry participate actively in the development of European legislation, and close contact has been maintained during the decision-making process that led to the adoption of the Directives and Community Regulations. Although implementation of those

instruments is mandatory, and it is considered that there is no alternative option but to amend the 1998 Regulations, it has become usual to advise the United Kingdom's automotive industry of the necessary changes and ask for their opinions. Following this practice, a consultation letter was circulated by the Vehicle Certification Agency on 8 August 2008 to the Society of Motor Manufacturers and Traders (SMMT) in order to advise of the imminent transposition and to invite any comment. None were received.

7.9 The Vehicle Certification Agency does post regular information notices on its website which inform stakeholders about new standards coming in and status in relation to transposition. VCA also offers a subscription service to VISTA (VCA's Information System for Type Approval) which is a library of type approval standards and information on the technical requirements.

7.10 Following the repeal and replacement of Directive 70/156/EEC by Directive 2007/46/EC, the 1998 Regulations will be repealed and replaced within the next twelve months. However, to meet the deadlines imposed by EC law, it is still necessary to amend them in the meantime.

8. Impact

8.1 An Impact Assessment is attached to this memorandum in respect of Directive 2007/34/EC and Regulation (EC) 715/2007/EC. No Impact Assessments have been produced in respect of Directives 2007/35/EC, 2007/37/EC and Regulation (EC) 706/2007/EC as they have no impact on business, charities or voluntary bodies.

8.2 There should be no impact on the public sector.

9 Contact

Mohammed Farooq of the Vehicle Certification Agency of the Department for Transport, 1 Eastgate Office Centre, Eastgate Road, Bristol BS5 6XX (Tel: 01179 524119; e-mail mohammed.farooq@vca.gov.uk) can answer questions regarding this instrument.

Summary: Intervention & Options

Department /Agency: Department for Transport	Title: Impact Assessment of Euro 5 and 6 Light Duty Vehicle Emission Standards	
Stage: Implementation	Version: 1	Date: 26 June 2008
Related Publications:		

Available to view or download at:

Contact for enquiries:

Telephone:

What is the problem under consideration? Why is government intervention necessary?

As part of a Europe-wide strategy to address air pollution, the European Commission has proposed a new Regulation setting tighter emission standards for future light duty vehicles. The UK has air quality targets which it is both committed to and legally obliged to meet. It is unlikely that the actions of the market, even supported by voluntary initiatives, would result in these air quality targets being met.

What are the policy objectives and the intended effects?

The objective is to establish a common European emissions standard for light duty vehicles that delivers real savings in pollutant emissions without undesirable economic consequences.

The intended effect is an improvement in air quality in the United Kingdom, and the rest of Europe, with consequent benefits to public health.

What policy options have been considered? Please justify any preferred option.

This Impact Assessment only assesses the final content of the Euro 5 [and Euro 6] EU Regulation. However, during negotiations on the Regulation a range of different emissions limit scenarios were considered by the Department. Assessment of these scenarios was included in the Partial Regulatory Impact Assessment which accompanied the consultation on this Commission proposal <http://www.dft.gov.uk/consultations/archive/2006/emissionstandardseuro5/>. The Government's objectives during negotiations were based on the emissions limits which gave the maximum environmental benefit, whilst remaining net beneficial, bearing in mind technical feasibility and duration of benefits. The emissions limits in the final Regulation closely reflect those sought by the Government during negotiations.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

Review of the actual costs and benefits will be possible once vehicles complying with the new emissions standards are in the marketplace (post 2011 for Euro 5, post 2015 for Euro 6).

Ministerial Sign-off For final proposal/implementation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) the benefits justify the costs.

Signed by the responsible Minister:

Jim Fitzpatrick.....

Date: 31st October 2008

Summary: Analysis & Evidence

Policy Option: 1

Description:

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' Increased technology cost = £7,354m to £51,927m Increased fuel usage = £2,020m; Other costs (includes carbon and welfare impacts) = £1,536m
	One-off (Transition)	Yrs	
	£ 0		
	Average Annual Cost (excluding one-off)		
£ 364m to £1,849m		Total Cost (PV)	£ 10,910m to £55,484m
Other key non-monetised costs by 'main affected groups' Durability aspects of Directive requirements. Removal of heavy passenger car derogation for off-road vehicles.			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' Reduction in particulate matter = £21,014m to £30,499m Reduction in NOx = £2,768m to £4,036m
	One-off	Yrs	
	£ 0		
	Average Annual Benefit (excluding one-off)		
£ 798m to £1,158m		Total Benefit (PV)	£ 23,782m to £34,535m
Other key non-monetised benefits by 'main affected groups' Provision of repair information to independent operators should have a positive impact on small firms and therefore competition. Reduced acid and nitrogen deposition on ecosystems.			

Key Assumptions/Sensitivities/Risks The costs have been assessed over a 100 year period and have not been assumed to decline over time. No assumption has been made that fuel efficiency will improve over time. Annual costs presented here have been discounted.

Price Base Year 2007	Time Period Years 100	Net Benefit Range (NPV) £ - 31,702m to £23,625m	NET BENEFIT (NPV Best estimate) £ 8,829m
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What is the geographic coverage of the policy/option?	UK			
On what date will the policy be implemented?	03/01/09			
Which organisation(s) will enforce the policy?	VCA			
What is the total annual cost of enforcement for these organisations?	£0			
Does enforcement comply with Hampton principles?	Yes			
Will implementation go beyond minimum EU requirements?	No			
What is the value of the proposed offsetting measure per year?	£0			
What is the value of changes in greenhouse gas emissions?	£35m			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro N/A	Small N/A	Medium £210k	Large £18m
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)
Increase of	£ 0	Decrease	£ 0
Net Impact		£ 0	
Kev:		Annualised costs and benefits: discounted	(Net) Present Value

Evidence Base (for summary sheets)

FINAL IMPACT ASSESSMENT - SUPPORTING INFORMATION

EURO 5 and EURO 6 LIGHT DUTY VEHICLE EMISSIONS STANDARDS

CONTENTS

Annex A - Regulation tailpipe emission limit values

Annex B - Projected Baseline Road Transport Emissions Inventories

1. **Title**

Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and 6) and on access to vehicle repair and maintenance information.

2. **Purpose and intended effect**

2.1 *Objective*

Regulation (EC) No 715/2007¹ of the European Council and Parliament was published in June 2007 and has two objectives. The first is to reduce tailpipe emissions of air pollutants from light duty vehicles, and the second to give independent vehicle repairers the same access to repair and maintenance information that manufacturers give their franchised repairers.

The emissions reductions from light duty vehicles (cars, and light commercial vehicles) are aimed to assist meeting legally binding air quality targets set by the European Commission's Clean Air for Europe (CAFÉ) process and hence improve health and the environment, while maintaining the single market in the EU for these vehicles. The Regulation is, essentially, a two-stage standard comprising reductions in limit values in two phases the first termed "Euro 5", and the second, termed "Euro 6". An interim stage, termed "Euro 5+", is introduced to reinforce the Euro 5 standard with new emissions measurement techniques and On-Board Diagnostic monitoring requirements.

Repair and maintenance information that is currently solely in the preserve of manufacturers and their franchised dealers and workshops will have to be made available to independent operators. This should improve competitiveness for the independent operators and for consumers.

This final impact assessment has been produced to quantify the costs and benefits of Regulation (EC) No 715/2007 and its implementing measures Regulation² and to accompany the UK regulations transposing elements of these into UK law.

2.2 *Vehicle emission standards*

The current emissions standard for light duty vehicles is "Euro 4"³ that all light duty vehicles (cars and light commercial vehicles) registered after 1 January 2007 must meet. This is the

¹ http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_171/l_17120070629en00010016.pdf

Type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, 20 June 2007

² Publication in the Official Journal of the European Union pending at the time of writing

³ For convenience, the standards are generally referred to as "Euro" standards. To avoid confusion between light duty and heavy duty regulations, the Commission has standardised on Arabic numerals for light duty vehicle legislation and Roman numerals for legislation relating to heavy duty vehicles. So, where the partial RIA referred to, for example, a "Euro V light duty vehicle", this is now referred to as a "Euro 5 light duty vehicle".

latest update of European Directive 70/220/EEC⁴ that mandates emission standards for new light duty vehicles (i.e. cars and other passenger vehicles with up to 8 seats, plus driver, ie, 9 seats total, and light commercial or goods vehicles of up to 3.5 tonnes maximum laden weight).

This new Regulation consolidates into one document all of the amendments to Directive 70/220/EEC, which itself will be repealed in 2013.

Regulated pollutants are carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NO_x) (measured as nitrogen dioxide - NO₂) and, currently in the case of diesel-engined vehicles only, the mass of particulate matter (PM).

Different standards apply to vehicles powered by petrol or diesel engines, as they do to different categories of vehicle, namely, cars, and vans / light goods vehicles (LGV) by each of several weight classes. The standards define the maximum permissible mass of pollutants that may be emitted per kilometre travelled when the vehicle is tested to a regulatory driving cycle. This same test procedure provides the value of CO₂ / km that the UK's DVLA (Driver and Vehicle Licensing Agency) uses to determine the excise duty of cars.

Previously, ahead of the introduction of Euro 4, to speed up improving air quality, Member States were permitted to provide fiscal incentives for the early introduction of vehicles whose emissions were lower than the then current emissions standards. Many Member States notified the Commission that they were considering incentivising the adoption of Diesel Particulate Filters (DPFs) on diesel vehicles to combat the adverse effect on health caused by the emission of particulate matter (PM). This adverse effect on health was, and still is, compounded by the growing popularity of diesel vehicles. As an interim measure, the Commission issued guidance⁵ that from 2005, national incentive measures for adopting DPFs on vehicles should be based on compliance at 5 mg/km PM to avoid a multitude of different national incentive schemes that might have distorted the market.

Similarly now, Member States are permitted to give fiscal incentives for the early uptake of vehicles built to Euro 5 while Euro 4 is still the current standard, and to Euro 6, but only after Euro 5 becomes the current standard. The delay in incentivising Euro 6 vehicles aims to minimize any market distortions.

In addition, to support free competition, the Regulation mandates making available to independent operators the same repair and maintenance information that manufacturers offer their own dealerships. Information will be made available through formats and protocols that are common across the industry. To ensure the UK's downward trend in theft of vehicles is not compromised, the Regulation includes provisions to ensure access to vehicle security features be made available only to accredited practitioners and only via a secure link.

2.3 *Health Effects of Air Pollution*

The motivator for reduced tailpipe emission limits is the CAFÉ programme of technical analysis and policy development that underpinned the development of the Thematic Strategy on Air Pollution under the Sixth Environmental Action Programme, adopted by the Commission on 21 September 2005⁶.

4 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31970L0220:EN:NOT> Internet link to the text of Directive 70/220/EEC, consolidated versions and amendments

5 http://ec.europa.eu/enterprise/automotive/pagesbackground/pollutant_emission/sec_2005_43.pdf Commission Staff Working Paper Fiscal Incentives For Motor Vehicles In Advance Of EURO 5

6 <http://ec.europa.eu/environment/air/cafe/index.htm> The CAFE Programme Implementation of the Thematic Strategy on Air Pollution

2.3.1 Short term health effects

Air quality has serious implications for people's health. The Department for Health's (DH) Committee on the Medical Effects of Air Pollutants (COMEAP) estimated the number of deaths and hospital admissions for respiratory diseases affected per year (in 1996) by PM₁₀ (particulate matter with a diameter of 10 micron), NO₂ and O₃. The estimates were:

Particulate Matter (PM₁₀)

Deaths brought forward: 8,100 (Great Britain urban).

Hospital admissions (respiratory) additional or brought forward: 10,500.

Nitrogen Dioxide (NO₂)⁷

Hospital admissions (respiratory) additional or brought forward: 8,700.

Ozone (O₃)⁸

Death brought forward: between 700 and 12,500 depending on threshold for health effects.

Hospital admission (respiratory) additional or brought forward: between 500 and 9,900 depending on threshold for health effects.

COMEAP has also concluded that PM₁₀ is associated with cardiovascular illness and that the magnitude of these effects is more significant than the respiratory impacts.

2.3.2 Long term/chronic health effects

Whilst air pollutant emissions from road transport have decreased substantially since 1996, COMEAP have also said that long-term exposure to air pollutants is likely to damage health. Such effects are not included in the above figures and would substantially increase the magnitude of the health effects of air pollution.

Evidence from the United States⁹ suggests that long term exposure to particulate air pollution is associated with a decrease in life expectancy. In 2001 COMEAP published a report on the long-term effects of particles on mortality¹⁰. COMEAP concluded that long-term exposure to particles was more likely than not to reduce life expectancy. Hence, since 2001 the UK Government's Interdepartmental Group on Costs, Benefits and Air Quality (IGCB) has followed the COMEAP recommendation¹¹ and quantifies the long-term mortality effects from reductions in PM₁₀ emissions in any benefits assessment. A third update of the IGCB report¹² to inform the UK Air Quality Strategy¹³ (AQS) was published in July 2007.

2.4 EU and UK Air Quality Objectives

Due to the significant impact of air pollution on health, European and international legislation set legally binding health- and ecosystem-based objectives. The UK Government has to meet legally-binding limit values set in European Directives and Regulations because failure to comply would lead to the European Commission instituting infraction proceedings against the defaulting Member State.

7 The reliability of the estimate for NO₂ is very much less certain and ought to be considered with care.

8 Estimates for O₃ are presented as NO₂ is a precursor for O₃. It should be noted that a large component of O₃ has a transboundary nature. EU wide measures to reduce emissions of precursors, such as Euro standards, would eventually benefit the UK as well. Latest health studies indicate that no threshold might exist for O₃. If this is confirmed the top figure of the range given above will apply.

9 <http://www.advisorybodies.doh.gov.uk/COMEAP/statementsreports/longtermeffects.pdf> COMEAP Statement On Long-Term Effects Of Particles On Mortality

10 http://www.dh.gov.uk/en/Publicationsandstatistics/Pressreleases/DH_4010744 COMEAP report on particles in air pollution

11 An Economic Analysis to inform the review of the Air Quality Strategy Objectives for Particles, A second report of the IGCB group, Defra, September 2001.

12 <http://www.defra.gov.uk/environment/airquality/publications/stratreview-analysis/index.htm> - An Economic Analysis to inform the Air Quality Strategy, Updated Third Report of the Interdepartmental Group on Costs and Benefits, July 2007.

13 <http://www.defra.gov.uk/environment/airquality/strategy/index.htm> - The UK Government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007

For the UK to meet the air quality objectives that are described in the UK AQS, emissions from transport, including light duty vehicles, must be reduced. The latest projections produced to support the UK AQS, including the effects of all emissions reduction measures that have already been agreed, predict that the UK will not meet EU legally binding air quality objectives for nitrogen dioxide (NO₂) and particulate matter (PM₁₀) in a number of areas in the UK, mostly urban areas and busy roads. The objective for ozone (O₃), of which oxides of nitrogen (NO_x) are one of the two main precursors, is also unlikely to be met in a large part of England.

Where air quality does not meet the minimum legally binding objectives, Local Authorities (LAs) are legally obliged to declare an "Air Quality Management Area" (AQMA), must prepare action plans to reduce the pollution, and must implement those plans. By 2007 approximately 200 LAs in Great Britain had declared AQMAs, of which the vast majority are for NO₂ and / or PM₁₀. More than 95% of the AQMAs relate to transport pollution only, or where transport plays a major role. To combat poor air quality caused by road transport, LAs are permitted to put measures in place to ensure a minimum vehicle emissions standard for access into defined areas to reduce the negative impact of vehicles on air quality. Examples include the London Low Emission Zone¹⁴ that concentrates on heavy vehicles, and several cities in other Member States where low emission zones also include cars^{15 16}.

The EU has adopted limit values for the concentrations of all key pollutants in the proposed CAFÉ Directive 2008/50/EC¹⁷ updating the Air Quality Framework Directive 96/62/EC. PM₁₀ and O₃ are "no-threshold" pollutants meaning that, all else being equal, the health benefits generated by reducing their concentrations by a given quantity would be the same irrespective of their original concentrations. This concept of "exposure reduction" has been accepted to supplement target and limit values for some non-threshold pollutants.

2.5 *Contribution of Road Transport Emissions*

Road transport continues to be a significant contributor to emissions of air pollutants. UK estimates show that, despite significant improvements in this sector, road transport accounted for 37% of the total NO_x emissions in 2004 of which 15% was from light duty vehicles¹⁸. The contribution of road transport will still account for 31% of total UK NO_x emissions in 2010, with 16% of the UK total being attributable to light duty vehicles.

Road transport accounted for 22% of the UK's total of PM₁₀¹⁹, of which light duty vehicles contributed 12%. The contribution is forecast to be 13% of total UK emissions in 2010, with light duty vehicles being responsible for 10%.

Furthermore, the contribution of vehicle emissions is even higher in urban areas compared to their contribution to the UK total. Within the road transport sector, the contributions that the different vehicle types make towards NO_x and PM₁₀ emissions are illustrated in Annex B.

There is growing evidence that particles finer than PM₁₀, for example, PM_{2.5}, PM₁ and PM_{0.1}, are responsible for respiratory and cardiac health effects. For this reason, exposure reduction targets have been adopted for PM_{2.5} in the CAFÉ Directive. In addition, the World Health Organisation has recently advised that health guidelines²⁰ should be set for PM_{2.5}, but these values should be taken as advisory and not limits. In the UK in 2004, the transport sector contributed 30% of total UK emission of PM_{2.5} (the second largest source to stationary fuel combustion), 32% of total UK emission of PM₁ (1 micron size) and 52% of total UK emission of PM_{0.1} (0.1 micron size) (these last two being by far the biggest sources in the UK)²¹.

14 <http://www.tfl.gov.uk/roadusers/lez/default.aspx> - Website of Transport for London, Low Emission Zone

15 <http://www.trendsetter-europe.org/index.php?ID=486> Trendsetter is a cooperation between five European cities; Graz, Lille, Pecs, Prague and Stockholm, setting trends for sustainable urban mobility and supported by the European Commission.

16 http://www.civitas-initiative.org/docs1/CIVITAS_D8_Final.pdf CIVITAS - Cleaner and better transport in cities initiative

17 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF> Directive 2008/50/EC on ambient air quality and cleaner air for Europe

18 http://www.airquality.co.uk/archive/reports/cat07/0701221151_Full_Report_NAEI_2004.pdf UK Emissions of Air Pollutants 1970-2004, published by NAEI December 2006

19 This figure excludes estimates of PM10 from re-suspension, ca. 20 kilotonnes, or 13% of 2004 total PM10 from all sources.

20 <http://www.euro.who.int/Document/E87950.pdf> WHO air quality guidelines global update 2005

21 http://www.airquality.co.uk/archive/reports/cat07/0701221151_Full_Report_NAEI_2004.pdf UK Emissions of Air Pollutants 1970 to 2004, December 2006

Based on data from roadside monitoring stations, Table 1 shows the transport sector contribution to ambient concentrations of NO₂ and PM₁₀ (rather than emissions) in London. Even with current measures, road transport will still be the largest single contributor to background (and roadside) concentrations of NO₂ in 2010. The situation is likely to be similar in other large urban areas.

Table 1: Transport Sector Contributions to ambient concentrations

	% of total ambient concentration	
	2001	2010
NO₂ roadside	85/90%	80%
NO₂ background	65/70%	40/45%
PM₁₀ roadside	55/60%	40%
PM₁₀ background	20/25%	10/15%

Source: Defra

2.6 *Simplification Measures & Administrative Burdens*

Existing vehicle emissions Directives have been simplified through the introduction of Regulation (EC) No 715/2007 that consolidates and repeals the existing Directives on the subject (Directive 70/220/EEC and amendments). In addition, it incorporates and repeals Directives on fuel consumption & CO₂ emissions testing (Directive 80/1268/EEC as amended) and incorporates diesel smoke requirements (Directive 72/306/EEC and amendments).

This new Regulation consolidates all light duty vehicle emissions requirements, restating much of it and making understanding the requirements easier. The existing requirements are not discussed in this Impact Assessment. Instead, this Impact Assessment focuses solely on the effects of changes in emissions limit values that this Regulation introduces.

This new Regulation does not require any changes to existing administrative provisions for demonstrating compliance with vehicle emissions requirements that are currently conducted as part of the vehicle Type Approval process. Instead, from the dates specified in Regulation (EC) No 715/2007, the vehicle would simply be tested against a tighter set of exhaust tailpipe emission limit values than those currently in place, using, largely, the same equipment as before.

To supplement measuring the mass of particulate matter, a new metric for characterising particles has been developed and will be introduced. In this development, where currently just the mass is measured, in future, the number of particles will also be counted, and a limit is being introduced at an interim stage by the Euro 5 implementing measures. Manufacturers will require new equipment to ensure their vehicles meet the new particle number limit. This equipment is not currently used in the Type Approval process, and therefore manufacturers will incur costs in purchasing new measurement equipment.

3. **Consultation**

3.1 *Within Government*

The Department has developed this impact assessment in close co-operation with other Government Departments that have a key interest in vehicle emissions standards, principally BERR (Department for Business, Enterprise, and Regulatory Reform, formerly DTI), and Defra.

3.2 *Public Consultation*

The Department consulted with a number of industry stakeholders in developing the first issue of its initial impact assessment and the UK's initial position on Euro 5 standards^{22 23}.

The European Commission conducted two rounds of public consultation to develop their proposal²⁴. The final Regulation contains a number of amendments over the proposal. These resulted from negotiations in the European Council and European Parliament.

The Department for Transport conducted a formal consultation on the Commission's proposal and the Government's view from 15th September to 8th December 2006 during negotiations on the proposal. 411 individuals and organisations were consulted and the Department received 23 responses.

The responses were overwhelmingly positive to the proposals, although some respondents thought the reductions in limits for some pollutants, notably NO_x, as proposed by the Commission, were not sufficiently ambitious or technology-forcing. The Regulation adopted substantially tightens diesel vehicle NO_x limits relative to those initially proposed by the Commission, largely by the introduction of the Euro 6 stage.

Now that the European Council and Parliament have adopted the Regulation, DfT has conducted a final impact assessment to determine the costs and benefits of implementation.

4. ***The Regulation***

4.1 *Implementation Dates*

The Euro 5 and Euro 6 emissions standards are described in Regulation (EC) No 715/2007, and in the implementing measures Regulation, the publication of which was pending at the time of writing.

The Euro 5 standards become mandatory for all new Type-Approvals after 1st September 2009, and for all cars first registered after 1st January 2011. The dates for compliance for heavier (class II & III) light commercial vehicles are one year later. Certain heavy diesel passenger vehicles are allowed to be treated as light commercial vehicles for the purposes of the Regulation e.g. ambulances, motorhomes, minibuses, and "black" cabs. The derogation for diesel-powered off-road vehicles ceases from 1st September 2012, and the derogation for other heavy passenger cars ceases on the introduction of Euro 6.

A particle number count standard is included in the regulations, and will become mandatory for new Type Approvals from 1 September 2011, and from 1 September 2013 for all registrations. Note that there is no delay in introducing the standard for the heavier class II and III commercial vehicles.

The Euro 6 standards become mandatory for all new car Type Approvals from 1st September 2014 and all first registrations after 1st September 2015, and one year later for class II & III light commercial vehicles.

4.2 *Emission Limits*

The limit values for Euro 5 and for Euro 6 are contained in Regulation 715/2007/EC and are shown in Annex A. The reductions in the limit values at Euro 5 compared with Euro 4 are shown in Table 2, and Euro 6 compared with Euro 5 in Table 3.

22 <http://www.dft.gov.uk/consultations/closed/emissionstandardseuro5/> Consultation on Emissions standards for cars and light goods vehicles ('Euro 5')

23 <http://www.dft.gov.uk/consultations/closed/emissionstandardseuro5/attachmentcpartialregulatory1694> Attachment C - Partial Regulatory Impact Assessment to consultation on Emissions standards for cars and light goods vehicles ('Euro 5')

24 http://ec.europa.eu/enterprise/automotive/pagesbackground/pollutant_emission/stakeholder_consultation/call_for_consultation.htm Stakeholder Consultation – Euro 5 Emission Limits For Light Duty Vehicles

4.3 Euro 5 Emissions Limits

Table 2: Euro 5 Emissions Limits and percentage reductions relative to Euro 4

	HC (mg/km)	NO _x (mg/km)	HC + NO _x (mg/km)	PM (mg/km) ²⁵	PN ²⁶ (#/km)
Petrol					
Car & class I van	100 (0%)	60 (25%)		5.0/4.5 (N/A)	
Class II van	130 (0%)	75 (25%)		5.0/4.5 (N/A)	
Class III van	160 (0%)	82 (26%)		5.0/4.5 (N/A)	
Diesel					
Car & class I van		180 (28%)	230 (23%)	5.0/4.5 (80%)	6.0*10 ¹¹
Class II van		235 (29%)	295 (24%)	5.0/4.5 (88%)	6.0*10 ¹¹
Class III van		280 (28%)	350 (24%)	5.0/4.5 (92%)	6.0*10 ¹¹

No changes are proposed in carbon monoxide limits on the grounds that air quality objectives for this pollutant have already been achieved.

There will be changes to the method for measuring and specifying limits for particulate matter. The UN-ECE PMP (Particle Measurement Programme) has developed revisions to the particulate mass measurement procedure which will be applied at the same dates as particle number limits. These revisions necessitate a recalibration of the limit value whilst retaining the same technical stringency. This results in the reduction from 5 mg/km to 4.5 mg/km, effective from 1 September 2011 for type approvals and on all new vehicles from 1 January 2013

4.4 Euro 6 emission limit values

Euro 6 limit values have been developed at the same time as those for Euro 5. Table 3 shows these limits together with the percentage reductions compared with Euro 5.

Table 3: Euro 6 Emissions Limits and percentage reductions relative to Euro 5

	HC (mg/km)	NO _x (mg/km)	HC + NO _x (mg/km)	PM ²⁷ (mg/km)	PN ²⁸ (#/km)
Petrol					
Car & class I van	100 (0%)	60 (0%)		4.5 (N/A)	

²⁵ Petrol PM limits apply to direct injection engines only, and there are no current PM limits for petrol engines against which to calculate a percentage reduction.

²⁶ A number standard for direct injection petrol vehicles is to be defined for entry into force at Euro 6

²⁷ Petrol PM limits apply to direct injection engines only, and there are no current PM limits for petrol engines against which to calculate a percentage reduction

²⁸ A number standard for petrol direct injection vehicles is to be defined for entry into force at Euro 6

	HC (mg/km)	NO _x (mg/km)	HC + NO _x (mg/km)	PM ²⁷ (mg/km)	PN ²⁸ (#/km)
Class II van	130 (0%)	75 (0%)		4.5 (N/A)	
Class III van	160 (0%)	82 (0%)		4.5 (N/A)	
Diesel					
Car & class I van		80 (56%)	170 (28%)	4.5 (0%)	6.0*10 ¹¹
Class II van		105(55%)	195 (34%)	4.5 (0%)	6.0*10 ¹¹
Class III van		125 (55%)	215 (39%)	4.5 (0%)	6.0*10 ¹¹

Developments in the automotive industry suggest that emissions reductions for petrol vehicles could be achieved using improved three way catalysts and / or engine measures such as Exhaust Gas Recirculation (EGR). The diesel PM and PN requirements are expected to force the adoption of DPFs on all vehicles at Euro 5. This technology is extremely effective at reducing emissions including those of ultrafine (less than 100 nanometre (0.1 micron)) particles which may pose the greatest adverse impact on health. Some manufacturers are already offering these as a consumer-request option on their Euro 4 vehicles.

Whilst particle emissions from petrol cars traditionally have been negligible, tests on new lean-burn gasoline direct injection (GDI) vehicles show particle emissions from GDI cars to be higher than from conventional petrol cars. In consequence, the Regulations seek to regulate particle emissions from lean burn GDI to control them to the same PM level as diesel vehicles. Given the current performance and state of development of GDI technology, this particulate mass limit may be achievable without the need for after-treatment systems such as particulate filters.

The relatively modest diesel NO_x reductions proposed for Euro 5 would be achievable with engine measures which might include some of the following - advanced EGR, improved combustion control with new sensors, reduced compression ratios, in-cylinder components, ultra-high pressure fuel injection, and two-stage pressure charging.

To meet the NO_x standard at Euro 6, the larger-engined diesel vehicles, and possibly also the smaller ones, may require NO_x reduction treatment by selective catalytic reduction (SCR) in a system that requires a dosing with reagent. For those vehicles equipped with SCR, measures have been put in place to warn drivers to refill with reagent when the level in its container runs low. Should dosing with reagent cease, whether through the driver's failure to refill the reagent container or through some other failure, the vehicle will be immobilised if the situation is not rectified.

4.5 Particle Emissions Measurement

The current measurement technique used for assessing particle emissions involves passing an exhaust gas sample through filter papers and measuring the total mass of material ('particulate') collected on the filter papers. However, the quantity of particulate collected from modern diesel vehicles equipped with DPFs is approaching the limits of detection of the current measurement technique. Variability in test results is relatively high, preventing the adoption of limit values of less than 5 mg/km. For this reason, the UN-ECE's PMP was established to devise improved measurement techniques. The PMP has developed two techniques, one to reduce the variability of measurement of mass, and the other to count the number of particles. A validation exercise has proved both techniques are robust.

Particle number measurement is a far more sensitive technique than even the improved particulate mass technique. The difference in particle number count between conventional diesel vehicles and those equipped with DPF is that the latter emits around 1000 times fewer particles.

Regulation (EC) No 715/2007 specifies that a PMP particle number measurement procedure and particle number limit will be adopted by Comitology; the Implementing Measures Regulation introduces a limit of 6x10¹¹ particles/km number limit in the implementing Regulation is based on data gathered for DPF-equipped vehicles used in the PMP validation exercise.

Adopting a particle number measurement will allow a limit to be set which ensures that ultrafine particle emissions are well controlled and the Regulation is therefore far more certain to deliver the intended health benefits than a particulate mass limit alone.

4.6 *Durability*

At present manufacturers must demonstrate the durability of emissions control systems at Type Approval. For approvals at Euro 3 and 4 standards, the durability period was 80,000 km. For Euro 5 this distance has been increased to 160,000 km. Manufacturers have choices in how they demonstrate compliance. They can accumulate the required distance according to a specific driving regime during which they conduct emissions tests every 10,000 km to develop "Deterioration Factors" (DFs) with which to compare emissions at 160,000 km relative to those for the vehicle when new, or they can use default DFs that are written into the Regulation. DF is a measure by which the emissions increase as distance is accumulated. In effect, at 160,000 km the vehicle must not exceed the emission limit values set in the Regulation. Therefore, to cover any deterioration with distance, the starting point has to be reduced in proportion by the value of the DF. Each pollutant has its own DF. Effectively, this means that by doubling the distance over which emissions must remain within limits, the Regulation further tightens the end-of-production-line emissions standards by the difference in the values of the DFs for Euro 4 and Euro 5 / 6.

In addition to having to demonstrate durability at Type Approval, manufacturers are required to test vehicles in service to demonstrate the emissions limits are not exceeded as the vehicles age. This "In-Service Compliance" (ISC), or "In- Service Conformance" test requires emissions to be tested on a vehicle that has accumulated not more than 100,000 km or is up to 5 years old, whichever occurs first, as was the case for Euro 4.

4.7 *Derogations for Heavy Passenger Cars*

Various categories of vehicle, for example, certain off-road vehicles, taxis, and motor homes, have, historically, been issued Type Approval to light commercial vehicle requirements, which are graduated by vehicle weight category. This accounts for the fact that emissions generally increase with vehicle weight and so avoids applying technically more stringent standards to vehicles, which by their nature, are heavier than passenger cars. This derogation will continue to apply at Euro 5, but with a more limited scope.

The derogation is allowed for diesel vehicles designed for 'specific social needs'. These are defined as including special purpose vehicles (for example, ambulances and motor homes) and 7+ seat vehicles with a reference (unladen) mass greater than 2000 kg, and vehicles of reference mass greater than 1760 kg built to accommodate wheelchairs (for example, London taxis).

In response to concerns about the growth in the sales of Sports Utility Vehicles (SUVs) that are used as normal passenger cars, some limitation of scope has been applied to these vehicles. The derogation applied to off-road vehicles expires on 1st September 2012. After that date vehicles that meet the "M1 G"²⁹ classification will be bound to comply with the same emissions standards that apply to "ordinary" passenger cars.

All derogations for heavy passenger cars whether diesel or petrol will cease on the introduction of Euro 6.

5. **Regulation - repair information**

The Regulation widens the availability of repair and maintenance information in a controlled manner that should benefit independent repair and maintenance operators and consumers financially.

Where previously independent operators were denied access to some information that the manufacturers considered confidential or which they deemed affected vehicle security, to

²⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1970L0156:20070712:EN:PDF> COUNCIL DIRECTIVE of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers (70/156/EEC), Annex II, section A, paragraph 4

improve access for independent repairers this Regulation mandates they should have the same access to information for repair, maintenance and vehicle security from manufacturers that the manufacturers provide to their franchised operators. The information is to be made available in a format that is common across the industry, using data exchange protocols to a minimum standard specified in the Regulation, and at a cost which is proportionate to the information requested.

The benefit to the consumer is that an independent repair facility can repair certain malfunctions instead of the consumer being limited to having to go to the franchised dealer because the manufacturer denies information to the independent operator.

6. Costs and Benefits

6.1 Sectors and Groups Affected

The Regulation will affect manufacturers of light duty vehicles and manufacturers of exhaust after-treatment systems. Consumers will be affected by increased vehicle costs and in some cases, small impacts on fuel economy, but these may be offset by the consumers being able to have independent operators carry out repairs at costs lower than those charged by the franchised operators. It has not been possible to place a value on the extent to which this "offsetting" may take place.

There are nine manufacturers producing significant volumes of cars in the UK, three of which also make small vans. In addition there are three other manufacturers that produce light commercial vehicles (mainly vans), and one major supplier of catalyst exhaust aftertreatment systems. A wide range of European and non-European manufacturers import cars and vans into the UK. The costs per organisation presented on the summary sheet are an annualised cost per manufacturer currently *selling* vehicles in the UK market not just those manufacturing in the UK. This is for the reason that it is expected that manufacturers will pass on any increase in technology costs through increased vehicle prices and this therefore clearly impacts on all vehicles which will be sold in the UK not just those manufactured here.

Manufacturing output in the UK in 2003 was 1.7m cars and 173,000 vans (incl. 4x4 & minibuses). Of these just over 1.1m cars and 98,000 vans were exported. 62% of car exports and 92% of van exports were to other EU countries. In 2006, the UK manufactured just over 1.4m cars of which 76.9% were exported³⁰. The data for light and heavy commercial vehicles were consolidated; 208,000 were manufactured of which 65% were exported.

In 2006, 2.2m new cars (61.5% petrol, 38.1% diesel) and 321,000 new light goods vehicles were registered in the UK³¹. Those statistics did not break down the light goods vehicles by fuel type.

The equivalent *registration* figures for 2007 for Europe are 16.0m cars of which 53.3% were diesel, with respective *production* of 17.0m cars and 1.9m light commercials³².

The Regulation should benefit vehicle repairers by improving access to vehicle repair information ensuring free and fair competition in this sector.

Regulation (EC) No 715/2007 permits Member States to introduce schemes to encourage motorists to buy cleaner vehicles ahead of their mandatory introduction. Such incentives may take the form of reduced tax rates for vehicles meeting standards which are more stringent than legal minimum standards, and offered only till the mandatory introduction of the more stringent standard. This might distort the single EU market for cars and vans, but it is not possible to quantify the value of these costs. To minimise the risk of distortion, the Regulation applies equally in all EU markets, and incentivises Euro 5 now, and Euro 6 vehicles only after the introduction of Euro 5.

30 <http://www.autoindustry.co.uk/statistics/production/uk/index> Auto Industry, Manufacturing Statistics

31 <http://www.dft.gov.uk/162259/162469/221412/221552/228052/252186/vehiclelicensing2006.pdf> Transport Statistics Bulletin, Vehicle Licensing Statistics 2006. Transport Statistics: DfT

32 http://www.acea.be/index.php/news/news_detail/automobile_production_expanded_by_53_in_2007/ ACEA European Automobile Manufacturers' Association, 20 February 2008

6.2 Benefits

6.2.1 Economic

The need for additional emissions abatement equipment should benefit UK suppliers and manufacturers of this equipment. The UK market for light duty diesel vehicles is 1.1 million units per annum. The total value of the UK market created for exhaust aftertreatment systems (specifically DPFs and Selective Catalytic Reduction systems) is estimated to range from £209 to £1,681 per vehicle, thus totalling between £230m to £1,850m per annum. Although this could be considered a benefit, obviously not all of this will benefit UK businesses and the value of the equipment required to comply with the directive has been presented as a technology cost in this impact assessment. More detail can be found in the economic costs section.

6.2.2 Environmental

The effects of implementing this Regulation will have a positive impact on people's health and on ecosystems both through UK action and, as air pollutants are transboundary in nature, through action in the rest of Europe.

The predicted annual UK emissions savings in the year 2025 in ktonnes and as a percentage of the baseline light-duty vehicle emissions inventory are given in Table 4. By then the current vehicle parc is assumed to have been largely replaced, by vehicles compliant to either Euro 5 or Euro 6. However, compliance of the entire vehicle parc with Euro 6 will not be until some years later.

Table 4: Annual Emissions savings

	Urban	Total UK	
	PM ktonnes (%)	NOx ktonnes (%)	PM ktonnes (%)
Petrol Cars & Vans	0 (0%)	13 (8%)	0 (0%)
Diesel Cars & Vans	4.86 (78%)	59 (35%)	10.95 (71%)

These savings are assessed against a baseline of no tightening of current emissions standards. Savings for petrol and diesel are cumulative. It is important to note that in addition to reducing UK emissions, future Euro standards will apply across all Member States resulting in additional reductions in background concentrations of transboundary pollutants, such as NO_x and PM₁₀. This effect has been included in the following modelled data on air quality, health and ecosystem impacts.

Note that the emissions inventory modelling does not specifically address GDI vehicles, which is a developing technology but at present forms a negligible, although increasing, proportion of the petrol vehicle fleet.

The health benefits attributable to Euro 5 are shown in Table 5.

Table 5: Euro 5 Health Benefits

PM - life years saved over 100 years (2010 – 2109) (‘000s)	PM – Reduced Respiratory Hospital Admissions (2020)	PM – Reduced Cardiovascular Hospital Admissions (2020)
1,451 – 2,770	241	241

Defra's Air Quality Strategy review included detailed modelling of potential Euro standards. This has both quantified and valued the health impacts associated with these measures. Two scenarios were considered including assumptions for light duty vehicle standards. The agreed Euro 5 & 6 standards are within the range modelled by these two Air Quality Strategy review scenarios. The approximate monetised benefit of Euro 5 & 6 is shown in Table 6. The results shown reflect the interim statement from COMEAP referred to in Section 2 on the Quantification of the Effects of Air Pollution on Health in the UK.

Table 6: Monetised Health Benefits £m (2007 prices)

	PV (2010 - 2109)			Annualised		
	Primary PM	NO _x as NO ₂ & Secondary PM	Total	Primary PM	NO _x as NO ₂ & Secondary PM	Total
Euro 5 & 6	21,014 - 30,499	2,768 - 4,036	23,782 - 34,535	705 - 1,023	93 - 135	798 - 1,158

Note that in addition to the health benefits the proposal will deliver environmental benefits in terms of reduced acid and nitrogen deposition in ecosystems. However, a valuation cannot be put on these benefits at present.

6.3 Contribution to meeting air quality targets

As noted in Section 2 above the EU and UK Government have a number of air quality objectives, and future vehicle emissions standards will be the most significant contributors to meeting these objectives. Defra's recent review of the Air Quality Strategy (AQS), leading to subsequent publication of the updated AQS³³ in July 2007, modelled in detail two potential vehicle emissions standards scenarios. In the AQS, Measure A2³⁴ includes light duty vehicle standards equivalent to the limit values agreed for Euro 5 and 6, as well a provisional heavy duty vehicle Euro VI standard. Impacts on air quality targets have been estimated based on the above Euro 5 and 6 emissions savings and the AQS analysis.

6.3.1 Particulates

Currently only PM₁₀ are regulated, on the bases of 24 hour and annual mean values. The CAFÉ Directive currently under negotiation to replace the Air Quality Framework Directive 96/62/EC proposes additional controls on fine particles (PM_{2.5}). These new controls on fine particles set a target value of 25 µg.m⁻³ in 2010 that will become a limit value from 2015. Coupled to this is an exposure reduction target of up to 20% in the concentration of PM_{2.5} between 2010 and 2020. However, because negotiations are still on-going, the target and limit values may change, as may the percentage exposure reduction.

The UK AQS follows broadly the same targets. Details may be found in Table 2 of Volume 1 of the UK AQS.

6.3.2 PM₁₀ 24-hour mean obligation of 50 µg.m⁻³

The current air quality limit value for PM₁₀ states levels averaged over 24 hours must not exceed 50 µg.m⁻³ more than 35 days a year.

³³ <http://www.defra.gov.uk/environment/airquality/strategy/pdf/air-qualitystrategy-vol1.pdf> and <http://www.defra.gov.uk/environment/airquality/strategy/pdf/air-qualitystrategy-vol2.pdf> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

³⁴ <http://www.defra.gov.uk/environment/airquality/strategy/pdf/air-qualitystrategy-vol2.pdf> - Paragraph 685 et seq of The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 2

The AQS analysis projected that tighter vehicle emissions standards would eliminate urban roadside exceedances of the 24 hour PM₁₀ limit value in 2020. This is against a base case exceedance of 0.3% of urban road length. This reduction is entirely attributable to the light duty vehicle Euro 5 emissions standards. The baseline does not predict any exceedances of this objective at background locations.

6.3.3 PM₁₀ annual mean obligation of 40 µg.m⁻³

The current annual mean limit value for PM₁₀ is 40 µg.m⁻³

The AQS baseline air quality projection suggests that there will still be widespread exceedances of this target at roadside locations. The UK AQS review measure A2 equating to the Euro 5 PM is expected to give a 42% reduction in background exceedances and 46% reduction in urban roadside exceedances of PM₁₀ (<20µg.m⁻³ annual mean) in 2020. It should be noted, however, that Euro 5/6 will deliver further benefits beyond 2020 because the current fleet will not have been fully replaced by vehicles compliant to Euro 5/6 until around 2025.

6.3.4 NO₂ annual 2005 objective of 40 µg.m⁻³

The AQS review projected a reduction in the number of exceedances at roadside locations of around 89% in 2020 for the high stringency emissions standards scenario. However reductions in heavy duty vehicle NO_x emissions, which are outside the scope of this Regulation (a separate proposal was published in January 2008³⁵), make a substantial contribution (around half the emissions reduction) to this reduction. It is probable that both light and heavy duty emissions savings are needed to achieve a substantial proportion of the 89% reduction.

6.3.5 Other Environmental Benefits

In addition to reducing ambient concentrations of pollutants, the Regulation will deliver benefits in terms of reduced acidification and eutrophication of the environment and reduced soiling of buildings. Eutrophication is the loss of oxygen in water caused through nutrient enrichment by nitrogen and / or other chemicals.

The AQS review assessment for the high stringency vehicle emissions scenario suggested that it would deliver a 3.8% reduction in the geographic area for which acidity objectives are exceeded and a 8.9% reduction in accumulated exceedance (a combination of area and level of exceedance). This is somewhat higher than reductions predicted for other measures considered by the AQS review.

In terms of eutrophication the AQS review analysis predicted a 5.3% reduction in geographic area exceeding nutrient nitrogen deposition objectives and a 8.2% reduction in accumulated exceedance. Again this is somewhat higher than reductions predicted for other measures considered by the AQS review.

There will also be a reduction in the soiling of buildings due to reductions in particle emissions from diesel vehicles. The AQS review estimated this benefit to be around £2.2 million pa, with all of the benefit coming from Light Duty Euro 5.

6.3.6 Social

No social benefits have been identified.

6.4 *Costs*

6.5.1 Economic

³⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0851:FIN:EN:PDF> Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information

The Regulation will lead to higher vehicle costs because of the adoption of additional and more advanced technology. Cost estimates for the various technologies were received from three car manufacturers and one after-treatment manufacturer. In addition an independent expert opinion has been obtained³⁶. Costs quoted by industry varied widely between manufacturers and consequently a wide range of unit costs has been used in the modelling, with a "Most Likely" cost based on the independent estimates. We have not been able to assess the unit cost impact of changes in durability requirements.

DfT have monetised the costs of introducing Euro 5 and 6 for Light Duty Vehicles (LDVs). As such this has been modelled through applying the costs above to the number of vehicles forecast, taking account of changes in distance travelled due to increases in fuel consumption.

The modelling undertaken has considered those costs incurred in the period 2010 - 2109. These have been presented as present values and also on an annualised basis to maintain consistency with those presented in the AQS and to enable appropriate comparison of costs and benefits which occur over different time periods. It has been necessary to estimate the costs and benefits over a 100 year period as the impacts of air quality measures have long lasting effects. In addition, the standards do not have an end date and the emissions limits are unlikely to be relaxed in future. It is therefore necessary to capture the full benefits now as any analysis of a future Euro Standard would only look at savings over a Euro 5 & 6 baseline.

As also set out in the AQS, costs have been estimated year on year between the start of the policy and 2020 and then extrapolated up to 2109. The extrapolation allows for any anticipated increases in fuel prices and the shadow price of carbon but otherwise assumes that costs are maintained at their 2020 level in future years.

No costs are considered as one off as there are no 'transition costs' associated with Euro 5 & 6. The additional technology costs are incurred on each occasion a vehicle is purchased and are therefore included in the average annualised costs. Average annualised costs also covers all other costs considered which are: increased operating costs, the costs of carbon from changes in fuel consumption, the resource value of a change in fuel demand and the value of reduced vehicle kilometres.

The benefits valuations have been provided by Defra based on modelling for the AQS review. These have not been attributed to either Euro 5 or 6 but have been modelled and valued as one measure.

The main inputs used in the DfT modelling are outlined below in Tables 7 to 10.

The costs in Table 7 are for implementing Euro 5 relative to the current Euro 4 vehicles. Table 8 gives the costs of Euro 6 relative to Euro 4. Thus the unit cost increases for Euro 5 and Euro 6 relative to Euro 4 are not cumulative.

Table 7: Euro 5 Technology Unit cost assumptions

Costs attributable to NO_x limits

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High
Conventional petrol car	8	25	25
GDI petrol car	0	33	36
Diesel car	36	65	420
Diesel class 1 van	36	65	420
Diesel class 2 & 3 van	36	65	420

Costs attributable to PM limits

³⁶ Review of NO_x Reduction Technologies to Meet Light Duty Diesel 2010 and 2015, Gasoline 2010 and 2015 and Heavy Duty Diesel 2013 European Legislative Limits. RD.05/330601.5 - Ricardo Consulting Engineers

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High
Conventional petrol car	0	0	0
GDI petrol car	57	101	144
Diesel car	101	144	700
Diesel class 1 van	101	144	700
Diesel class 2 & 3 van	181	260	786

Total costs

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High
Conventional petrol car	8	25	25
GDI petrol car	57	134	180
Diesel car	137	209	1121
Diesel class 1 van	137	209	1121
Diesel class 2 & 3 van	218	325	1207

Table 8: Euro 6 Technology cost assumptions

Costs attributable to NO_x limits

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High
Conventional petrol car	8	25	25
GDI petrol car	0	33	36
Diesel car	144	501	1402
Diesel class 1 van	144	501	931
Diesel class 2 & 3 van	260	902	1315

Costs attributable to PM limits

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High
Conventional petrol car	0	0	0
GDI petrol car	57	101	144
Diesel car	101	144	700
Diesel class 1 van	101	144	700
Diesel class 2 & 3 van	182	260	787

Total costs

Vehicle	Cost assumptions (£ per vehicle, 2007 prices)		
	Low	Medium	High

Conventional petrol car	8	25	25
GDI petrol car	57	134	180
Diesel car	245	645	2102
Diesel class 1 van	245	645	1631
Diesel class 2 & 3 van	441	1162	2102

There is also an additional cost per vehicle for changes in the requirements of On Board Diagnostics (OBD), specified in the Implementing Measures Regulation, comprising the diagnostic equipment and sensors. The costs are shown in Table 9:

Table 9: Implementation costs, OBD

2007 prices per vehicle (£ per vehicle, 2007 prices)			
Additional cost of OBD calibration	Low	Medium	High
	1.25	1.39	1.66

2007 prices per vehicle (£ per vehicle, 2007 prices)			
	Low	Medium	High
Euro 5			
Petrol NO _x monitor	0.00	0.00	0.00
Diesel EGR monitor	2.45	4.90	7.35
Diesel improved sensor tolerances	2.45	3.68	4.90
Diesel glow plugs	0.00	0.00	0.00

2007 prices per vehicle (£ per vehicle, 2007 prices)			
	Low	Medium	High
Euro 6			
Petrol NO _x monitor	2.45	3.68	4.90
Diesel EGR monitor	2.45	4.90	7.35
Diesel improved sensor tolerances	2.45	3.68	4.90
Diesel glow plugs	0.00	0.00	0.00

In addition to the technology costs, the technology required to comply with the emissions standards will have an adverse impact on fuel consumption as shown in Table 10. A fall in fuel economy, all things being equal, will result in a rise in the marginal cost of driving that might result in a lower demand for travel. If it does, this 'rebound effect' is represented in the cost estimates through a reduction in the assumed annual mileage of compliant vehicles. The penalties are given as Euro 5 compared with Euro 4, and Euro 6 compared with Euro 4, and therefore are not cumulative. The additional fuel costs are included in Tables 11 and 12 where they have been combined with the estimated total compliance costs given in Tables 7 to 9.

Table 10: Fuel consumption penalties associated with Euro 5 and 6

Euro 5			
	NO _x	PM	Total
Conventional petrol car	0%	0%	0%
GDI petrol car	0%	0%	0%
Diesel car	0.8%	1%	1.8%
Diesel class I van	0.8%	1%	1.8%
Diesel class II & III van	0.8%	1%	1.8%
Euro 6			
Conventional petrol car	0%	0%	0%
GDI petrol car	0%	0%	0%
Diesel car	2%	1%	3%
Diesel class I van	2%	1%	3%
Diesel class II & III van	2%	1%	3%

Table 11 shows the results of the modelling for annualised costs and total present value costs in the period 2010-2109 for the introduction of Euro 5 and Euro 6.

Table 11: Total Euro 5 & 6 Central estimates

	Total PV costs (£m, 2007 prices)			Annualised costs (£m, 2007 prices)
	NO_x	PM	Total	
Diesel cars	10,158	3,903	14,061	469
Diesel class 1 LGV	851	378	1,229	41
Diesel class 2 & 3 LGV	3,268	1,330	4,598	153
GDI Petrol Car	203	546	750	25
Standard petrol car	906	0	906	30
Petrol LGV	8	0	8	0
Particle number equip.	0	11	11	0
Total Euro 5 & 6	15,394	6,169	21,562	720

As previously stated we received a range of possible technology costs for the introduction of Euro 5 & 6 and have conducted sensitivity analysis based on these. The results of this analysis are provided below in Table 12.

Table 12: Total Euro 5 & 6 Sensitivity estimates

	Total PV costs (£m, 2007 prices)			Annualised costs (£m, 2007 prices)
	NO_x	PM	Total	
Diesel cars	4,082 - 26,888	2,969 - 15,897	7,051 - 42,784	235 - 1,428
Diesel class 1 LGV	387 - 1,523	269 - 1,243	655 - 2,766	22 - 92
Diesel class 2 & 3 LGV	1,459 - 4,727	1,047 - 3,236	2,507 - 7,963	84 - 266
GDI Petrol Car	18 - 228	311 - 782	329 - 1,010	11 - 30
Standard petrol car	354 - 942	0	354 - 942	12 - 31
Petrol LGV	3 - 8	0	3 - 8	0
Particle number equip.	0	11	11	0
Total Euro 5 & 6	6,304 - 34,316	4,606 - 21,168	10,910 - 55,484	364 - 1,849

As may be seen, the increase in total costs would be incurred primarily in the diesel vehicle sector and, in particular, the diesel car sector due to their higher production volumes compared to vans.

The costs shown above do not include the cost impact of deleting the Heavy Passenger Car derogation for off-road vehicles from 1st September 2012, and at Euro 6 for other heavy vehicles. It seems likely that highly efficient SCR de- NO_x systems will be required on these vehicles. However it is not currently possible to assess the additional cost impact over less efficient SCR systems on lighter vehicles. However the High versus Medium NO_x Technology Cost Assumption for diesel Euro 6 cars (£901 difference from Table 8) can be used to give some impression of the scale of the possible cost impact. These costs, of £901 per vehicle combined with annual UK sales of diesel Heavy Passenger cars of 82,550 (2004 figures), give an annual cost to the UK of £74 million in addition to the above costs. However there is a great deal of uncertainty over this estimate. These estimates should therefore be treated as very broadly indicative only and are not included in the cost estimates presented in this Impact Assessment.

In addition to the new emissions standards, the Regulation introduces new particle emissions measurement techniques. The purpose of this is to ensure the adoption of technology which effectively controls emissions of ultrafine particles. The new procedures are twofold, firstly an improved version of the current particulate mass measurement system and secondly a completely new particle number count system. The costs to modify the particulate mass measurement systems are negligible, indeed there may be some operating cost reduction due to improved repeatability which may reduce the number of tests required. However, Particle Number count will require purchase of new measurement instruments. The cost of these components is currently around £70,000 per system. There are approximately 50 emissions

test cells in the UK that are used for type-approval testing. There would therefore be a one-off cost to equip these emissions test cells with the new equipment, estimated to be around £3.5 million. The useful life of the test instrumentation is 10 years and will be specific to Euro 5 and 6. The instrumentation would have to be supplied ten times over the 100 year appraisal period (the appraisal period used for costs and benefits throughout this impact assessment) at a present value cost of £11m.

The only increase in administration expected to be placed on manufacturers is the requirement to confirm that they have made repair information freely available to independent garage operators. This is likely to be completed through a simple declaration at type approval and is not expected to have any significant impact on administration burdens. For this reason we have not attempted to quantify this impact and this Impact Assessment presents no net change in administrative burdens.

6.5.2 Environmental

The total impact of the increase in light duty diesel vehicle CO₂ emissions (due to the assumed reductions in fuel efficiency set out in Table 10) in 2020 and the monetised cost at the central shadow price of carbon (2007 prices) is given below. The total present value cost of additional carbon impacts from 2010-2109 is around £1bn.

Table 13: Increased CO₂ emissions in 2020

Increase in CO ₂ emissions	As % of UK Total ³⁷	£ bn
1 MtCO ₂	0.2	0.03

7. **Small Firms Impact Test**

Production of light-duty vehicles is predominantly carried out by large multinational firms. The UK does however have a number of small independent manufacturers, possibly more than other Member States. However, due to the high development costs, these manufacturers source complete engine and emissions control systems from larger manufacturers. They should not therefore be disproportionately affected by the proposal. In addition the EU whole vehicle type approval framework directive allows Member States discretion to exempt manufacturers from certain aspects of the Regulation. Depending on the vehicle category, such exemptions may be granted where production is not more than 1,000 units per annum. There are four such manufacturers in the UK and the UK currently makes use of this exemption to reduce the level of standards with which they must comply. It is anticipated therefore that the emissions standards will have little effect on small manufacturing industry.

Medium size businesses are likely to supply the technology to deliver the emissions control equipment necessary and a proposal could therefore be a positive advantage for these bodies.

There will be a positive impact on small firms through repair information being made available to independent repair firms on the same basis as it is for franchised operators.

8. **Competition Assessment**

The sectors affected by the proposal are primarily the UK vehicle market and the market for after-treatment systems. The proposal is not expected to have a major impact on competition despite these markets being dominated by a small number of large manufacturers. The cost impact is expected to be similar across all firms and the limit values placed in the Regulation are unlikely to affect the market structure.

New manufacturers will not face any higher costs than existing manufacturers. The light vehicle market is not characterised by rapid technological change, and changes tend to be incremental in response to legislation. The large reduction in NO_x limits for diesel and/or GDI vehicles

³⁷ Emission forecasts from 'Energy White Paper: meeting the energy challenge' (BERR May 2007).

would add costs of production for manufacturers focusing on those areas of production, but these would be passed on to the consumer.

No negative effect on international competitiveness is expected since the Regulation introduces mandatory standards that will apply throughout the EU. Introduction of strict diesel standards has a potential benefit for manufacturers wishing to market diesel passenger cars in the USA or Japan. Standards for diesel cars and vans in these regions are significantly tighter than current EU diesel standards, so tightening the standards potentially enables manufacturers to market more easily EU specification diesel vehicles in US and Japanese markets.

As mentioned above, small firms will benefit from having repair information made more freely available to them with a consequent positive impact on competition in the vehicle servicing and repairs industry.

9. Enforcement, Sanctions and Monitoring

Enforcement of current vehicle emissions standards is primarily through the type approval process administered by the Vehicle Certification Agency, and via registration checks of vehicle "certificates of conformity" by the Driver and Vehicle Licensing Agency. The proposed Regulation would not necessitate any changes to these procedures.

The proposal does however specify that Member States must lay down penalties for infringement. We are exploring what penalties might be required beyond those already contained in the type approval system.

The Department, as part of its ongoing vehicle-testing programme for vehicle emission factors, will be able to carry out limited random monitoring at no extra cost. The Department has an ongoing programme of in-service compliance checking aimed at ensuring that type approval emissions requirements are met in service. The proposal does not imply any increased requirement for monitoring.

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Annex A Regulation 715/2007/EC - Annex I - emission limit values

Table 1

Euro 5 emission limits

Category	Class	Reference Mass (RM) (kg)	Mass of carbon monoxide (CO)		Mass of total hydrocarbons (THC)		Mass of non-methane hydrocarbons (NMHC)		Limit values		Combined mass of total hydrocarbons and oxides of nitrogen (THC + NO _x)	Mass of particle matter (PM)	Number of particles ⁽¹⁾ (P)	
			L ₁ (mg/km)	L ₂ (mg/km)	L ₃ (mg/km)	L ₄ (mg/km)	L ₅ (mg/km)	L ₆ (#/km)						
M	-	All	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			1 000	500	100	-	68	180	230	5,0/4.5	5,0/4.5	6*10 ¹¹	6*10 ¹¹	
N1	I	RM ≤ 1 305	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			1 000	500	100	-	68	180	230	5,0/4.5	5,0/4.5	6*10 ¹¹	6*10 ¹¹	
N2	II	RM ≤ 1 760	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			1 810	630	130	-	90	235	295	5,0/4.5	5,0/4.5	6*10 ¹¹	6*10 ¹¹	
N2	III	RM ≤ 1 760	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			2 270	740	160	-	108	280	350	5,0/4.5	5,0/4.5	6*10 ¹¹	6*10 ¹¹	
N2	N2	RM ≤ 1 760	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			2 270	740	160	-	108	280	350	5,0/4.5	5,0/4.5	6*10 ¹¹	6*10 ¹¹	

Key: PI = Positive ignition, CI = Compression ignition

⁽¹⁾A number standard is to be defined as soon as possible and at the latest upon entry into force of Euro 6

⁽²⁾Positive ignition particulate mass standards apply only to vehicles with direct injection engines

⁽³⁾A new measurement procedure shall be introduced before the application of the 4.5 mg/km limit value

Table 2
Euro 6 emission limits

Category	Class	Reference Mass (RM) (kg)	Mass of carbon monoxide (CO)		Mass of total hydrocarbons (THC)		Mass of non-methane hydrocarbons (NMHC)		Limit values Mass of oxides of nitrogen (NO _x)		Combined mass of total hydrocarbons and oxides of nitrogen (THC + NO _x)		Mass of particle matter (PM)		Number of particles ⁽¹⁾ (P)	
			L ₁ (mg/km)	L ₂ (mg/km)	L ₃ (mg/km)	L ₄ (mg/km)	L ₂ + L ₄ (mg/km)	L ₅ (mg/km)	L ₆ (#/km)	L ₂ + L ₄ (mg/km)	L ₅ (mg/km)	L ₆ (#/km)				
M	-	All	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			1 000	500	100	-	68	80	-	170	5,0/4.5	5,0/4.5	6*10 ¹¹			
			1 000	500	100	-	68	80	-	170	5,0/4.5	5,0/4.5	6*10 ¹¹			
N1	II	1 305 < RM ≤ 1 760	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			1 810	630	130	-	90	105	-	195	5,0/4.5	5,0/4.5	6*10 ¹¹			
N2	III	1 760 < RM ≤ 2 270	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			2 270	740	160	-	108	125	-	215	5,0/4.5	5,0/4.5	6*10 ¹¹			
			PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI	CI
			2 270	740	160	-	108	125	-	215	5,0/4.5	5,0/4.5	6*10 ¹¹			

Key: PI = Positive ignition, CI = Compression ignition

⁽¹⁾ A number standard is to be defined as soon as possible and at the latest upon entry into force of Euro 6

⁽²⁾ Positive ignition particulate mass standards apply only to vehicles with direct injection engines

⁽³⁾ A new measurement procedure shall be introduced before the application of the 4.5 mg/km limit value

Table 3

Emission limit value for the evaporative emissions test

Mass of Evaporative Emission (g/test)

2,0

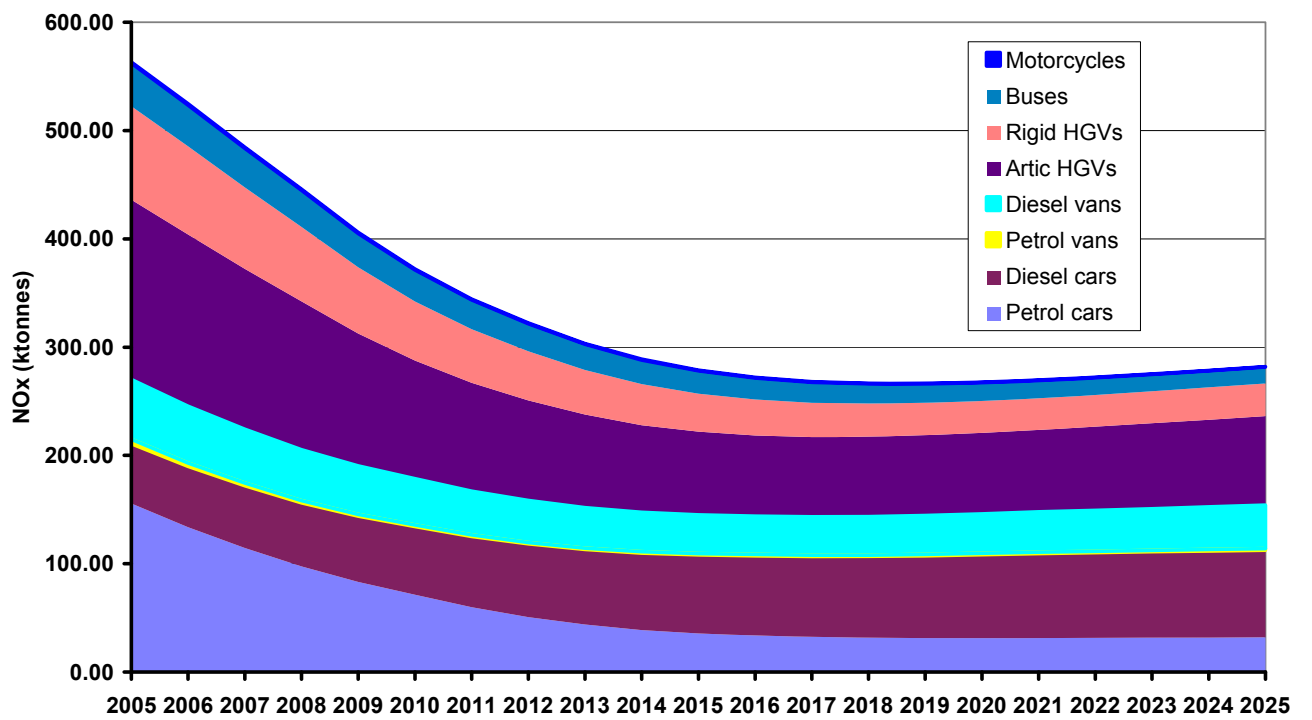
Table 4

Emission limit for carbon monoxide and hydrocarbon tailpipe emissions after a cold start

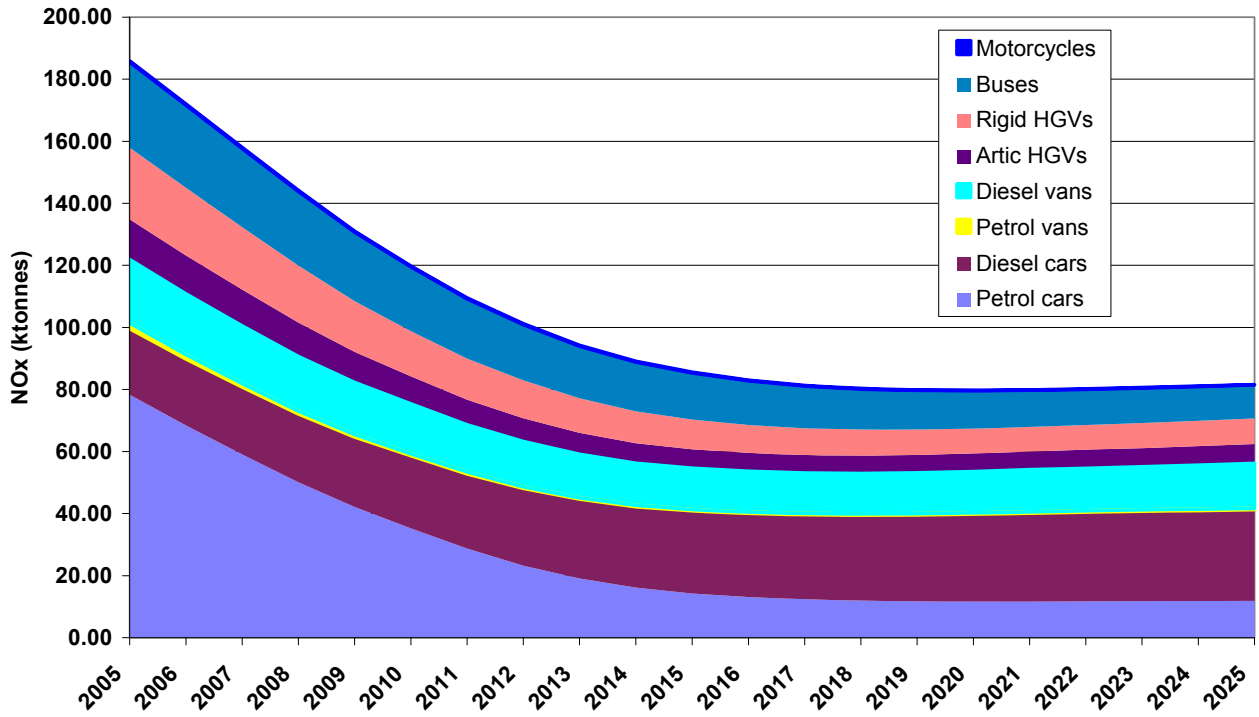
Vehicle category	Temperature 266 k (-7°C) Class	Mass of carbon monoxide (CO)	Mass of hydrocarbons (HC)
		L ₁ (g/km)	L ₂ (g/km)
M	-	15	1,8
N1	I	15	1,8
	II	24	2,7
	III	30	3,2
N2		30	3,2

Annex B Emissions from road transport, UK National and UK Urban

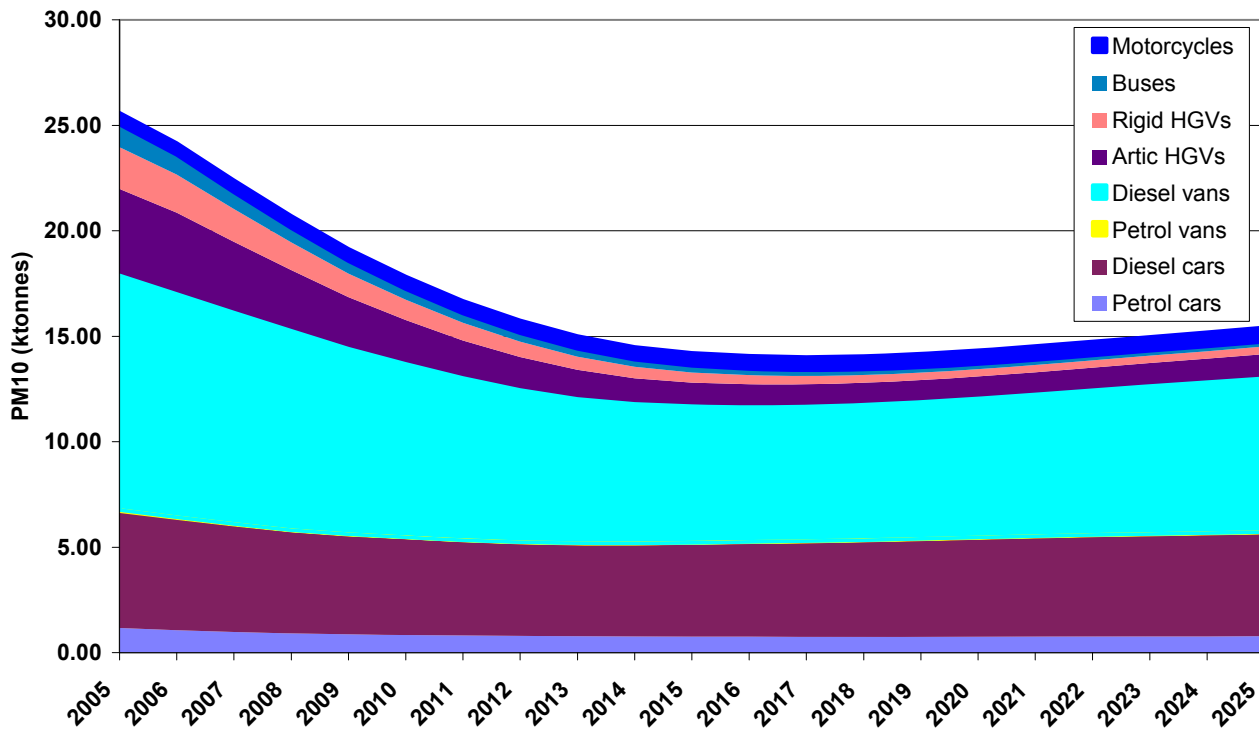
UK National - Road Transport NOx



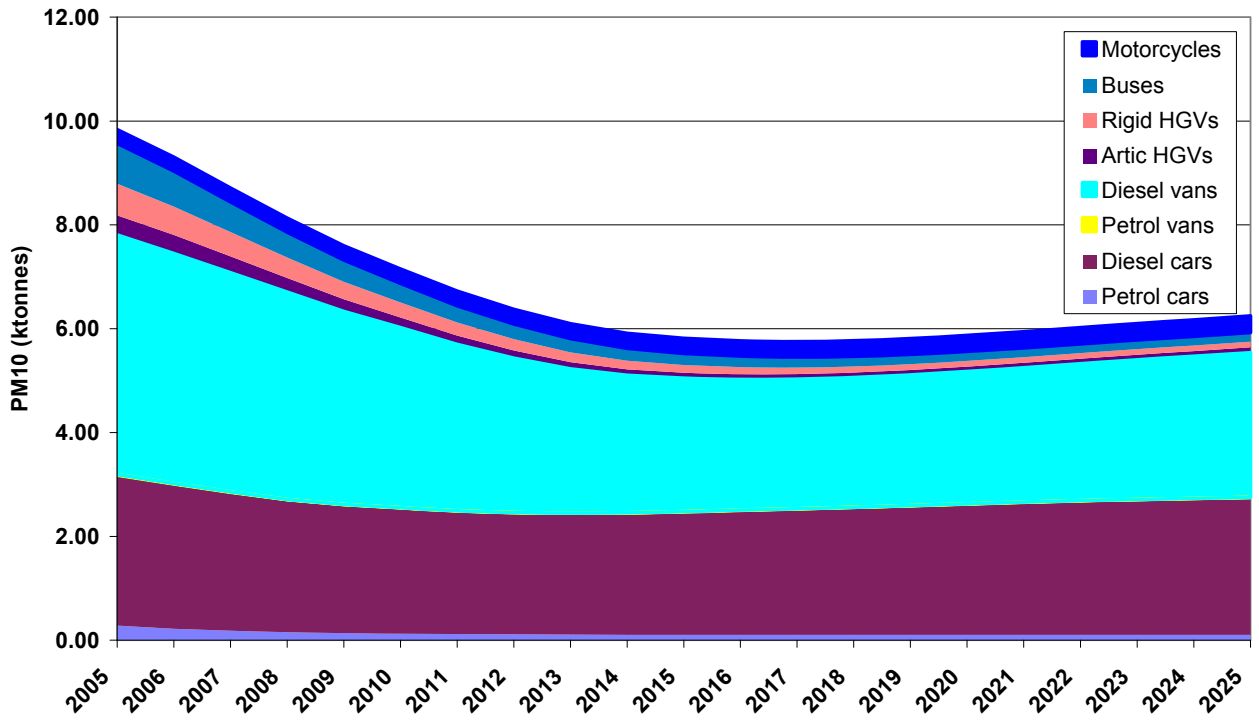
UK Urban - Road Transport NOx



UK National - Road Transport PM10



UK Urban - Road Transport PM10



Summary: Intervention & Options

Department /Agency: Department for Transport	Title: Impact Assessment of The Transposition of European Directive 2007/34/EC Amending Directive 70/157/EC	
Stage: Implementation Stage	Version: Final	Date:
Related Publications: "An Examination of Vehicle Noise Test Procedures" by Watts, Nelson, Treleven, and Balsom. TRL Limited Project Report Number PPR044. April 2005.		

Available to view or download at:

<http://www.dft.gov.uk/pgr/roads/environment/research/cqvcf/noisetest/anexam>

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What is the problem under consideration? Why is government intervention necessary?

Recent improvements in vehicle noise in the real world have not been fully commensurate with the reductions in the Type Approval limit values. In response to this problem, transition to the use of a new test procedure, set out in UNECE Regulation 51 and believed to better represent real world conditions, has been agreed.

The transition procedure is set out in European Directive 2007/34/EC, and the United Kingdom is legally bound to transpose this Directive into law.

What are the policy objectives and the intended effects?

The objective of the measure is to impose the use of the new noise measurement procedure, and to require, for a transitional period, the use of both the previously existing noise measurement procedure and the new procedure during the Whole Vehicle Type Approval process.

The intended effect is to permit the gathering of data on both tests so as to ensure that future reductions in noise limit values are properly reflected in reductions in the noise produced by vehicles in the real world.

What policy options have been considered? Please justify any preferred option.

A Regulatory Impact Assessment was performed in 2005, when use of the new test procedure was originally proposed. This Regulatory Impact Assessment considered three options. The recommended option was use of the new test procedure from 2007, with limit values adjusted so as to effect no change in vehicle noise, followed by a 2 dB(A) limit value reduction from 2010. The chosen option entails no predetermined limit value change, but does require use of both tests for a transitional period. Some adjustment to the new test has been made in order to minimise the cost penalties.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects? Data gathered will be reviewed to establish new limit values, and an Impact Assessment will be performed when limits are proposed. Review of the effects of the policy will be possible from 2012.

Ministerial Sign-off For final proposal/implementation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) the benefits justify the costs.

Signed by the responsible Minister:

Jim Fitzpatrick.....Date: 31st October 2008

Summary: Analysis & Evidence

Policy Option: 1	Description: Transposition of Directive 2007/34/EC
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COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' There will be a small additional cost to vehicle manufacturers during the transition phase and in succeeding years. (Total costs here shown to 2025, discounted in accordance with "Green Book" guidance.)
	One-off (Transition)	Yrs	
	£ 66000 - 79200	2	
	Average Annual Cost (excluding one-off)		
	£ 13200		Total Cost (PV) £ 319750
Other key non-monetised costs by 'main affected groups'			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' No monetised benefits accrue directly from the implementation of this measure.
	One-off	Yrs	
	£ nil		
	Average Annual Benefit (excluding one-off)		
	£ nil		Total Benefit (PV) £ nil
Other key non-monetised benefits by 'main affected groups' The measure will facilitate the eventual introduction of lower noise limits for vehicles, with a benefit to all members of the population exposed to road traffic noise.			

Key Assumptions/Sensitivities/Risks The key assumptions are that rates of noise testing by UK manufacturers remain constant, and that the ratio of "unwitnessed" to witnessed tests is ten to one. The analysis is sensitive to any error in these assumptions.

Price Base Year 2007	Time Period Years 18	Net Benefit Range (NPV) £	NET BENEFIT (NPV Best estimate) £ nil
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What is the geographic coverage of the policy/option?		UK wide		
On what date will the policy be implemented?		July 2008		
Which organisation(s) will enforce the policy?		VCA		
What is the total annual cost of enforcement for these organisations?		£ Unchanged		
Does enforcement comply with Hampton principles?		Yes		
Will implementation go beyond minimum EU requirements?		No		
What is the value of the proposed offsetting measure per year?		£ nil		
What is the value of changes in greenhouse gas emissions?		£ negligible		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)	Micro nil	Small nil	Medium nil	Large 3300
Are any of these organisations exempt?	Yes/No	Yes/No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)	
Increase of	£ nil	Decrease of	£ nil
		Net Impact	£ nil

Key: Annual costs and benefits: Constant Prices (Net) Present Value

Impact Assessment Background Information

References

- A Section 7 and Appendix F to "An Examination of Vehicle Noise Test Procedures" by Watts, Nelson, Treleven, and Balsom. TRL Limited Project Report Number PPR044. April 2005.
- B Email from Stephen Trenowerth, pp Derek Jones, Manager Vehicle Systems and Certification, dated 24th October 2007 (filed as 071024 xx Email Support to REG 51 Impact Assessment on the current DfT "V" drive) refers.
- C "The Valuation of Transport-Related Noise in Birmingham." IJ Batemean, BH Day, and I Lake. 2004.
- D "The National Noise Incidence Study 2000/2001." Building Research Establishment. 2002.

1. Purpose and Intended Effect of the Measure

1.1 Purpose

The purpose of the measure is to require the use of a new noise test as specified in UN-ECE Regulation 51.02 during vehicle Type Approval. The measure also defines a two year transitional period, beginning in July 2008, during which the new noise test and the old noise test will both be used, with the results from the new noise test reported but not used for regulatory purposes

The purpose of the transitional period defined in the measure is to permit correlation of the results from the old and the new tests.

1.2 Intended Effect

The intended effect of the measure is to put in place a new testing regime that will ensure that future reductions in noise limit values produce commensurate reductions in the noise produced by vehicles under real driving conditions. The current measure does not involve any effective change in the noise limit values.

2. Background

Reductions in vehicle noise in the real world delivered by previously existing noise tests undertaken as part of the European Whole Vehicle Type Approval process have not been commensurate with the extent of the progressive reductions that have been made in the limit values.

In order to produce a test the results of which would better align with the noise levels produced by vehicles under real driving conditions, a UN-ECE working group on motor vehicle noise (GRB) completed an amendment to the noise test procedures. UN-ECE Regulations are not mandatory but they may be accepted for EU type-approval if their prescriptions are equivalent to the prescriptions of the equivalent EU Directive in force at the time. A manufacturer may wish to Type-Approve to a UN-ECE Regulation if that manufacturer intends to sell his product in countries outside the EU that are contracting parties to that Regulation.

European Directive 2007/34/EC introduces a requirement that when a noise type-approval test is carried out it will be done on the basis of the current Regulation 51 test procedure and noise data will also be measured and collected on the proposed new test procedure developed by the UN-ECE working group. The Commission will then use the data collected on the old and new tests over a two year transitional period to develop a proposal for new, tighter, noise limits on the new test, and an accompanying impact assessment for co-decision.

3. Rationale for government intervention

Because the measure involves modifications to legislation negotiated and agreed at a European level the Government is legally obliged to transpose it into UK legislation.

4. Consultation

4.1 Within government

Officials within Berr, which is the Department with the most direct interest in the potential impact of this measure upon industry, were involved in discussions during the negotiations on Directive 2007/34.

4.2 Public consultation

A Regulatory Impact Assessment (Reference A) was performed for the Department of Transport when this measure was originally proposed. In the course of this Regulatory Impact Assessment, questionnaires were sent out to twenty-two vehicle manufacturers, to one vehicle manufacturers' trade association, and to four government agencies.

Informal discussions were held with the Society of Motor Manufacturers and Traders (SMMT) during negotiations on Directive 2007/34, and on the draft regulation transposing the Directive.

5. Options

Three options were considered for the purposes of the original Regulatory Impact Assessment. These options were:

- i. Introduction of the new noise test in 2007, with limit values adjusted by an amount intended to produce no effective change in the permitted noise levels from vehicles, and so no compliance costs for industry.
- ii. Introduction of the new noise test in 2007, as in 'i' above, but with the addition of a reduction in the limit value, measured on the new test, by 2 dB(A) in 2010.
- iii. Retention of the pre-existing noise test procedure, with the limit value on that test reduced by 2 dB(A) in 2009.

The options considered in the formal Impact Assessment process all differed from the measure currently under consideration in two important aspects. Firstly, they assumed no transition period during which both tests would be run together. Secondly, they all assumed some change in the limit values would be mandated, even if for future implementation, at the same time as the new test was introduced. These differences limit the applicability of the cost and benefit estimates made in the original Impact Assessment to the current case.

6. Costs and benefits

6.1 Basis of Calculation

The original Impact Assessment attempted to quantify compliance costs for manufacturers on the basis of assumed changes to the noise limit values being mandated by the same measure as that which introduced the new test. These compliance costs are ignored in the current Impact assessment, since any eventual change in the noise limit values would be the subject of a separate Impact Assessment that would be informed by one or more firm proposals.

In addition to attempting to quantify the costs, the original Regulatory Impact Assessment attempted to quantify the benefits that would flow from each of the options considered. Underlying this attempt at quantification was a figure, based upon an analysis of research work undertaken both by DfT and Defra (reference C and reference D), of £524 million per annum for the benefit accruing to the United Kingdom from a 1 dB reduction in road traffic noise. The original Regulatory Impact Assessment argued that the real reduction in road traffic noise resulting from the choice of option ii, from section 5 above, would be likely to be in the region of 0.2 dB, with a consequent benefit to the United Kingdom of £105 million per annum. These benefits, however, were, like the costs, assessed on the basis of the measure mandating changes in the noise limit values at the same time as it introduced the new test. Although benefits are expected to accrue, in the medium term, from the implementation of the current measure, those benefits can only properly be offset against the costs associated with an eventual lower limit value and are consequently ignored in this document.

The costs and benefits for the current measure are based upon best available estimates of the additional costs involved in performing and collecting the data from the two tests during the transition period, and the additional costs involved in performing the new test, instead of the old one, from the end of the transition period onwards.

Estimates, based upon informal discussions with interested parties (including the communication Reference B) are that the costs of noise tests undertaken during the transition period will increase by between £500 and £600 per test, to totals of £900 to £1000 for "unwitnessed" tests and £1150 and £1250 for a test witnessed by Vehicle Certification Agency officials. It should be noted that the additional costs for tests witnessed by officials are charges made by the testing organisations in consequence of those tests being for regulatory purposes and so requiring higher standards of record keeping and traceability of instrument calibration data, and such like, than would tests performed simply in aid of a company's development work.

The figures that we have suggest that the old test is currently costing about £400 for an "unwitnessed" test and about £650 for a test witnessed by Vehicle Certification Agency officials. These figures further suggest that the new test, when performed alone, will cost in the region of £100 more than the old test, which is to say, about £500 for an "unwitnessed" test, and about £750 for a test witnessed by Vehicle Certification Agency officials.

It is difficult to establish precisely how many noise tests are performed by UK manufacturers in the course of an average year, but discussions with the Vehicle Certification Agency suggest that there are probably about a dozen which are witnessed by their staff. Equally, it is even more difficult to be sure how many "unwitnessed" noise tests are undertaken by UK manufacturers, but it would probably be reasonable to assume that as many as ten "unwitnessed" tests are undertaken in the course of development for every one officially witnessed. This would lead to a total of 132 tests performed per year.

The result of calculating on the basis of the above assumptions is:

- A burden on industry during the two-year transitional period of between £66000 and £79200 per year.
- An ongoing burden, following the transition period, of £13200 per year.
- No annual benefit accruing from the measure.

6.2 Costs

Costs associated with this measure are a burden on industry during the two-year transitional period of between £66000 and £79200 per year, and an ongoing burden, following the transition period, of £13200 per year.

Record keeping for the new test will be no more onerous than for the old test. The additional effort involved in making records of more data is swept up in the additional costs of the tests.

In addition to the costs to industry, there will be a proportionate increase in the cost of observing tests which will necessarily be borne by the Vehicle Certification Agency in the short and medium term, since the agency's charges are controlled by statute.

6.3 Benefits

There are no monetised benefits associated with this measure at this time, but the introduction of the new noise test will pave the way for the introduction of lower noise limits for motor vehicles, which will reduce road traffic noise and deliver substantial benefits to society.

7 Sectors and groups affected

The principal group affected by this measure will be manufacturers of light and heavy-duty motor vehicles for use on the road. It is likely that there will be some effect upon specialist test laboratories, which may be expected to find more work both because of the additional work involved during the transition period and in performance of the new test, and because it is anticipated that the more demanding requirements of the new test will encourage out-sourcing of work that some manufacturers would previously have performed in-house.

8 Small Firms Impact Test

The principal group of small firms likely to be affected by this measure are specialist test laboratories. The impact upon these firms is expected to be a positive one in consequence of the generation of additional revenue from testing.

9 Legal Aid

This measure will lead to no change in the work of the Courts, and will have no impact upon the legal aid budget.

10 Sustainable Development

This measure has no development impact.

11 Carbon Assessment

The fact of the measure requiring some additional activities during the process of noise testing will inevitably lead to some additional Greenhouse Gas emissions (electrically powered measuring instruments, for instance, will be turned on for longer) these additional emissions, however, will be negligible.

12 Other Environmental Impacts

As is the case for the Carbon assessment, some additional environmental impact will follow inevitably from additional activities. The environmental impact of noise testing, however, is very small, and the additional impact will be negligible.

13 Health Impact Assessment

There will be no health impact directly attributable to this measure.

14 Race Equality

There are no race equality issues associated with this measure.

15 Disability Equality

There are no disability equality issues associated with this measure.

16 Gender Equality

There are no gender equality issues associated with this measure.

17 Human Rights

There are no human rights issues associated with this measure.

18 Rural Proofing

No aspects of this measure impinge upon rural issues.

19 Competition assessment

Competition assessment is not applicable in this case. The proposal will not impact on competition within UK markets since all EU Member States are required to transpose and implement this Directive and it applies equally to all manufacturers marketing vehicles in the European Union.

20 Enforcement, sanctions and monitoring

No additional enforcement, sanctions, or monitoring are required as a result of implementation of this measure.

21 Implementation and Delivery

Implementation and delivery of this measure will be carried out by the Vehicle Certification Agency using the same mechanism as is currently used.

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

■ Type of testing undertaken	■ <i>Results in Evidence Base?</i>	■ <i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

TRANSPOSITION NOTE

To accompany Regulation (EC) 715/2007 of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and 6) and on access to vehicle repair and maintenance information.

	Objectives	Implementation	Responsibility
Articles 1, 2, 3, 4 (except paragraphs 3 and 4), 5 (except paragraph 3), 10 and 13 (except Article 13(e))	<ul style="list-style-type: none"> - Lay down construction requirements for certain passenger and goods vehicles below a certain weight, to be enforced through the type approval scheme where a mandatory type approval scheme is in place. - Lay down procedures for testing compliance and conformity of production. - Require member States to provide for penalties for making false declaration or falsifying test results as part of the type approval process, for withholding data which could lead to the withdrawal of type approval, and the use of certain devices which interfere with type approval tests. - Give the manufacturers of those vehicles which exceed the weight to have their vehicles approved to the requirements. 	<ul style="list-style-type: none"> - For the purposes of the type approval of light passenger vehicles, regulation 4 of the Motor Vehicles (EC Type Approval) (Amendment) Regulations 2008. - Requirements concerning other vehicles will be implemented separately. - Penalties other than those already provided in the 1998 Regulations (making false declaration during the type approval process) will be enacted separately. 	The Secretary of State.
Article 4(3)	Requires manufacturers to provide certain information on emissions.	Will be implemented separately once the measures envisaged in Article 4(4) are adopted.	The Secretary of State.
Article 4(4)	Provides for requirements and measures for the implementation of Articles 4(2) and 4(3) to be adopted by comitology, under Article 15.	Not the responsibility of member States.	The European Commission/the Committee created by Article 15.
Article 5(3)	Provides for requirements and measures for the implementation of Article 5(2) (defeat devices) and certain type approval requirements to be adopted by comitology, under Article 15.	Not the responsibility of member States.	The European Commission/the Committee created by Article 15.
Articles 6 and 7	Provides for manufacturers to give access to vehicle repair and maintenance information.	Will be implemented separately, to the extent that the adoption of the measures envisaged in Article 8 makes it possible.	The Secretary of State
Article 8	Provides for requirements and measures for the implementation of Articles 6 and 7 to be adopted by comitology, under Article 1.	Not the responsibility of member States.	The European Commission/the Committee created by virtue of Article 15
Article 9	Provides for the Commission to report on the operation of	Not the responsibility of member States.	The European Commission.

	Article 6 and 7.		
Article 11	Makes type approval mandatory for replacement pollution control devices.	Will be implemented separately.	The Secretary of State.
Article 12	Allows member States to make provision for financial incentives for vehicles complying with the Regulation.	Permissive only – does not require implementation.	
Article 13(e), provisions of Article 13 going further than the effect already described above	Requires member States to provide for effective, dissuasive and proportionate penalties for breach of the Regulation, in respect of the type approval scheme (see above), access to information, in-service conformity, recall processes, defeat devices.	To the extent that they are not already implemented by the 2008 Regulations mentioned above, will be implemented separately.	The Secretary of State.
Article 14	Requires the Commission to keep emission requirements under review, and make legislative proposals and amendments in certain circumstances.	Not the responsibility of member States.	The European Commission.
Article 15	Provides for the procedure where other provisions in the Regulation provide for implementing measures to be adopted by comitology.	Does not require implementation.	
Article 16	Amends Directives 70/156/EEC and 2005/55/EC.	For the purposes of the type approval of light passenger vehicles, regulations 2, 3 and 4 of the Motor Vehicles (EC Type Approval) (Amendment) Regulations 2008. For other purposes, will be implemented separately.	The Secretary of State.
Article 17	Repeals earlier Community legislation from 2 nd January 2013.	For the purposes of the type approval of light passenger vehicles, regulations 1(3) and 4 of the Motor Vehicles (EC Type Approval) (Amendment) Regulations 2008. For other purposes, will be implemented separately.	The Secretary of State.
Article 18(1)	Sets out the date of entry into force of the Regulation.	Does not require implementation.	
Article 18(2)	Sets out the dates of application of the Regulation.	For the purposes of the type approval of light passenger vehicles, regulation 1(3) of the Motor Vehicles (EC Type Approval) (Amendment) Regulations 2008. For other purposes, will be implemented separately.	The Secretary of State.
Article 18(3)	Sets out the date by which certain implementing measures must be adopted.	Not the responsibility of member States.	The European Commission/the Committee created by virtue of Article 15.