



DfI

Department
for Infrastructure

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Restricting the use of tyres 10 years old and older on heavy vehicles

Regulatory Impact Assessment

September 2022

Title: Restricting the use of tyres on the front axles of heavy vehicles	Regulatory Impact Assessment (RIA)			
	Date: September 2022			
	Type of measure: Subordinate Legislation			
Lead department or agency: Department for Infrastructure	Stage: Consultation			
	Source of intervention: Domestic			
Other departments or agencies: Driver & Vehicle Agency (DVA) Driver and Vehicle Licensing Agency (DVLA)	Contact details: Dorcas Cutrona Telephone: 028 90 541074			

Summary Intervention and Options

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

Following two collisions, resulting in eight fatalities, in the last 10 years where Coroners concluded that old tyres fitted to the front axles of heavy vehicles were a contributory factor, there are safety concerns arising from the use of old tyres on the front axles of heavy vehicles.

Heavy goods vehicle (HGV), bus, coach and minibus owners/operators understand the private costs involved in replacing tyres, but may not be aware of the dangers associated with older tyre use, or the increased social benefits (through road safety) which may materialise from replacing older tyres fitted to front axles on HGVs, buses and coaches and on all axles in single configuration on minibuses.

Data suggests a minority of these heavy vehicle owners/operators continue to use tyres aged 10 years or older on front axles even in the presence of Driver Vehicle and Standards Agency (DVSA) published roadworthiness guidance and industry information that advises against their use. Government intervention is the best way to address this information gap and negative externality.

What are the policy objectives and the intended effects?

The policy looks to ensure that tyres aged 10 years or older are not fitted to the front axle of every HGV, bus and coach on the road, nor on all axles, in single configuration on minibuses, by expanding on the existing Construction and Use regulations to set a maximum tyre age.

The intended effect of this policy is to improve road safety by reducing the possibility that collisions involving HGVs, buses and coaches occur due to the failure of old tyres on front axles, or for minibuses due to the failure of old tyres in single configuration on all axles.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

- **Option 0:** Do minimum
- **Option 1 (preferred option):** A ban on tyres aged 10 years or older on the **front steered axles** of HGVs, buses and coaches, and for all tyres in **single configuration** on minibuses. This ban will apply equally to first life and re-treaded tyres. For re-treaded tyres, their age will be calculated from the date of re-treading. We have recognised the lack of evidence for (a) extending a ban to axles other than the front axle of in-scope vehicles and (b) treating re-treaded tyres differently to new tyres. This option provides additional safeguards for minibus drivers, passengers and other road users.

Will the policy be reviewed: Yes

If applicable, set review date:

Five years after legislation comes into force (2025)

Does implementation go beyond minimum EU requirements?

N/A

Is this measure likely to impact on trade and investment?

No

Are any of these organisations in scope?

Micro

Small

Medium

Large

What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)	Yes Traded: 0	Yes	Yes	Yes Non-traded: 0
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I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: **Chris Hughes**

Date: **28/9/2023**

Description: To amend The Road Vehicles (Construction and Use) Regulations to **ban tyres aged 10 years or older on the front steered axles of HGVs, buses and coaches, and for all tyres in single configuration on minibuses**. This ban will apply equally to first life and re-treaded tyres, for re-treaded tyres, their age will be calculated from the date of re-treading.

ECONOMIC ASSESSMENT (Option 1)

Price Base Year	PV Base Year	Time Period	Net Benefit
2019	2019	10 years	-2.0m

Costs (£m)	Total Transitional (Policy) (constant price)	Years	Average Annual (recurring) (excl. transitional) (constant price)	Total Cost (Present Value)
Best Estimate	0.7	1	0.16	2.0

Description and scale of key monetised costs by ‘main affected groups’ Maximum 5 lines
 The cost of replacing tyres aged 10 years or older is estimated to affect around 0.16% of the HGVs, buses, coaches, and minibuses considered in this option. These vehicles are primarily owned by businesses with some private and third-party organisation ownership. The costs are those of disposing of tyres, which are in use, and bringing forward the purchase of new tyres. Cost estimates also include familiarisation and enforcement costs,

Other key non-monetised costs by ‘main affected groups’ Maximum 5 lines
 Demand for re-treaded tyres and tyres which are 10 years or older will fall and businesses or individuals selling those will sell fewer units. Lost revenue may be made up through passing cost onto consumers, and other businesses may benefit through the sale of newer tyres.

Benefits (£m)	Total Transitional (Policy) (constant price)	Years	Average Annual (recurring) (excl. transitional) (constant price)	Total Benefit (Present Value)
Best Estimate	0 (all recurring)		0.52	4.49

Description and scale of key monetised benefits by ‘main affected groups’ Maximum 5 lines
 None

Other key non-monetised benefits by ‘main affected groups’ Maximum 5 lines
 The benefit of fatalities avoided could be monetised. But uncertainty is very high regarding the baseline and the number of fatalities likely to occur in the counterfactual. Avoiding 0.9 fatalities in the next ten years would make this policy cost neutral. This measure is also likely to reduce more minor collisions, which will have safety benefits.

Key Assumptions, Sensitivities, Risks

The MOT test fees will remain unchanged. An estimated 2,520 vehicles in NI will be made exempt from testing in 2018 with this number increasing over time due to the rolling yearly mechanism.

BUSINESS ASSESSMENT (Option 1)

Direct Impact on business (Equivalent Annual) £m		
Costs: £0.2	Benefits: £0.0	Net: -£0.2

Evidence Base

1) Problem under consideration

This Regulatory Impact Assessment (RIA) considers amending Northern Ireland legislation to exempt in-scope vehicles of historical interest, from the annual roadworthiness test.

In September 2012, a catastrophic failure of a 19 year old tyre, fitted to the steering axle of a large coach, led to the loss of three lives. The Coroner concluded that the tyre failure was a result of its age.

In September 2017, a Heavy Goods Vehicle (HGV) travelling on the M5 (England) suffered a tyre blow-out on the steering axle resulting in the loss of five lives. The Coroner concluded that this crash was due to a tyre blow-out and noted that an 18 year old tyre fitted to the steering axle had suffered structural deterioration due to its age.

The Driver and Vehicle Standard Agency (DVSA) published a guide to maintaining roadworthiness for commercial goods and passenger carrying vehicles on Britain's roads. This was updated in 2013 to advise bus operators against fitting tyres older than 10 years to the steering axles of their vehicles. In November 2018 this guidance was extended to cover HGVs, advising that tyres aged more than 10 years old should not be used on HGVs except on a rear axle as part of a twin wheel arrangement.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785463/guide-to-maintaining-roadworthiness-commercial-goods-and-passenger-carrying-vehicles.pdf

DfT commissioned research in 2018 with the aim to establish the effect age has on the integrity of road vehicle tyres. As part of this research, the UK's TRL Ltd worked with a leading laboratory in the United States to carry out testing and analysis.

<https://www.gov.uk/government/publications/tyre-ageing-its-effect-on-material-properties-and-structural-integrity>

Although the research is not statistically conclusive, it suggests that corrosion is more likely to be found in older tyres and highlights the ability of moisture to penetrate through cuts in the tread area into the structure of the tyre. The research also implies change in the hardness of the rubber, both in the tread area and the sidewall for older tyres. This hardness can reduce the flexibility of the tread and increase stresses on the bonds that form the tyres structural integrity.

Collectively, this research, expert witnesses and the conclusions from the Coroners' inquests provides evidence that age does affect tyre performance. DVSA data on roadside checks shows that there are a small number (0.16%) of HGVs, buses, coaches and minibuses that use tyres over 10 years old, despite the introduction of DVSA's roadworthiness guidance.

In order to remove this threat to road safety we are introducing a legislative proposal, on a precautionary basis to ban tyres 10 years or older on steering axles on heavy vehicles (and on all axles in a single on minibuses). Different policy options were included in a statutory consultation, published in June 2019. Buses, coaches, heavy goods vehicles and minibuses are included within this analysis. <https://www.gov.uk/government/consultations/banning-tyres-aged-10-years-and-older>

2) Rationale for intervention

This section introduces the market failures associated with older tyre use. Reasons why the market fails to deliver a higher level of safety in the absence of government intervention are discussed, as well as why the proposed intervention is justified.

There is asymmetric information influencing heavy vehicle owners/operators' tyre replacement decisions. Some HGV, bus, coach or minibus owners/operators may not believe that their older tyres present additional danger (in terms of road safety) compared to a newer tyre. The potential for this information gap is largest for vehicles which do not operate commercially and are not subject to Operator licensing. These operators are not required to follow DVSA maintenance schedules and may not be familiar with roadworthiness guidance.

Moral hazard is a form of asymmetric information leading to market failure. Vehicle owner/operators are insured for third party damages by law. They may also be covered for damage to their own vehicles, including the impact of lost working time a collision would have on their fleet. This means once owner/operators have paid their annual insurance premiums, any damage occurring to other road users and the roads themselves will not result in any additional costs (beyond a negligible insurance excess). Because there is currently no legal requirement for tyre age, insurers do not expect owners/operators to record tyre age, so they cannot charge different amounts dependent on the risk profile arising from the age of tyres used. As such, vehicle owners/operators bear none of the costs of a collision (due to compulsory insurance) and no additional insurance costs if they used old tyres, but all of the

costs of tyre replacement. Without intervention, there will be more old tyres in use than the socially optimum amount.

There is a negative externality associated with using old tyres on heavy vehicles. A vehicle owner/operator will only consider the private cost of replacing an older tyre. They will not take into account the wider social cost⁷ associated with the increased risk of road collisions from using the old tyre. Therefore in a free market environment, these tyres will be replaced less frequently than the socially optimal level.

A ban on the use of older tyres on the front axle of heavy vehicles (and on all axles for minibuses) is the preferred option to address these failures. Safety issues arising from the use of older tyres on front axles point to the need to remove them from being fitted to heavy vehicles. Due to the asymmetric information and negative externality concerns mentioned above, these tyres will be replaced less frequently than the socially optimal level. Publicly available information has not brought replacement rates to this optimal level (considered in detail in the considered options). As such, government intervention calling for a ban on these tyres will best address these failures. Consideration of other methods (such as for instance a tax on older tyres) may not deliver the same outcomes. Such methods are costly to implement and enforce and present a route for potentially dangerous tyres to remain on the market. Given the relatively small number of older tyres on the market, it is more proportionate to ban older tyres on a precautionary basis.

Use of the Precautionary Principle

We believe it is appropriate to propose a ban on tyres aged 10 years and older on front axles of HGVs, buses and coaches and on all axles of minibuses based on the precautionary principle.

<https://www.gov.uk/government/publications/rpc-guidance-using-the-precautionary-principle-january-2020>

We have reviewed the Regulatory Policy Committee's guidance note in making our decision and our rationale is set out below. This is based on guidance from the United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA), chaired by the GB Health and Safety Executive's Chief Scientist.

<https://webarchive.nationalarchives.gov.uk/20190701152341/https://www.hse.gov.uk/aboutus/meetings/committees/ilgra/pppa.htm>

Stage 1 – Evidence for Harmful Effects

Tyres aged over 10 years are still being used on some vehicles. We have evidence from DVSA data that since the 2013 guidance was issued, there are still some buses and coaches operating with tyres aged over 10 years so, the current guidance is not completely effective. We believe it is reasonable to assume that this would also be the case for HGVs brought into scope by the 2018 guidance update and that in the absence of regulation, we may not see all operators removing tyres aged 10 years or older from their vehicles. There is also a proportion, estimated by DVSA to be 25% of HGVs and 30% of buses, coaches and minibuses that are operated privately and are not subject to Operator licensing and its associated maintenance schedules. The vehicle involved in the second fatal collision was a privately-owned vehicle falling within this subset.

Older tyres may be causing more collisions, injuries and deaths than we are aware of. We are only aware of two incidents where Coroners concluded that tyre failure due to age was a contributory factor. However, it is possible that there have been more incidents leading to property damage, injury and death where tyre age was not considered, since there is no current legal requirement for tyre age. There is an incomplete evidence base to inform the impact that older tyres have on road safety, since tyre age is not routinely recorded in collision investigation data.

Reason to believe there are negative safety implications in the use of older tyres. While there is still some uncertainty, collectively, the Department's research, the evidence from the tyres examined from the 2017 HGV crash and the expert opinion provided to the Coroners for both the incidents all suggest that older tyres have negative road safety implications.

Stages 2 and 3 – Irreversible Harmful Effects and Level of Scientific Uncertainty

Given our assessment above and the severity of the two fatal collisions where a defective tyre fitted to the steered axle of the vehicle was cited as contributing factor, we consider it is reasonable to assume that, in the absence of legislation, tyres aged 10 years or older fitted to the front axles of in scope vehicles have the potential to cause further fatalities.

The severity of the structural failure of the tyres in the two fatal collisions and the effect of these failures on the directional control of the vehicles is clear, however these examples alone cannot provide scientifically robust evidence. The Department's research, together with information from expert witnesses, provides evidence of significant changes to material properties within the

structure of a tyre that would be associated with mechanism of failure seen in the two fatal collisions. This evidence is limited and insufficient to support a robust assessment of the risks and likelihood of harm as tyres age, so a precautionary approach is appropriate.

Stage 4 Review

DVSA will continue to record tyre age data of in scope vehicles as part of the annual testing regime. We will review this dataset annually to monitor compliance with this legislation and to improve our evidence base in this area. We have given details of a five year post-implementation review for this policy since this timeframe will permit a valid, statistically significant dataset to be generated.

By creating a legal requirement, we expect tyre age to be collected in road traffic collisions, which may also build our evidence base for this policy.

3) Policy Objective

The policy objective is to reduce the number of road traffic collisions resulting from old tyres.

Fewer collisions would result in:

- a. Reduced road infrastructure repair bills (and associated time costs for road users whilst those repairs take place),
- b. Fewer physical and mental health complaints from individuals involved in collisions (also resulting in a healthcare spending reduction);
- c. Less unproductive time for those who are injured in collisions;
- d. Reduced property damage from those involved in collisions;
- e. Increased fleet capacity for businesses through fewer repairs needed;
- f. Fewer emergency service workers;
- g. Fewer legal and other administrative costs.

4) Description of options considered (including do minimum)

Baseline (Do Minimum)

Option 0 (Do minimum): This is the counterfactual scenario, where regulations focussing on the use of older tyres are not introduced. It has not been possible to predict the number of collisions that will occur without intervention due to the infrequency of collisions. Instead, for indicative purposes, each policy option considers the 'tipping point', or the number of collisions that would have to be prevented for the policy to be cost neutral.

Legislative Options

Option 1 (Preferred): To amend The Road Vehicles (Construction and Use) Regulations to **ban** the use of tyres aged 10 years or older on **steering axles** for all HGVs, buses and coaches and on **all axles for minibuses** (where the tyre is fitted in single configuration) only. The view of DfT engineers is that the risk of loss of control of the vehicle, as a result of a failure of a rear tyre in single configuration is higher than when used in twin configuration so it is appropriate to include all tyres in single configuration on minibuses in any legislation, to maximise the road safety benefits. This option provides additional safeguards for minibus drivers, passengers and other road users, without a significant increase in costs, given the relatively low cost of replacing any non-compliant tyres on minibuses. This is our **preferred option** since it is logical to capture the diverse groups that use minibuses, 90% of which are currently not used under an Operator licence and therefore not subject to DVSA maintenance schedules or roadworthiness guidance. This ban will apply equally to first life and re-treaded tyres, for re-treaded tyres, their age will be calculated from the date of re-treading. By treating re-treaded tyres equally to first life tyres we will mitigate risk to the UK re-treading industry. This option also allows operators to source high quality tyres at lower costs than first life tyres, mitigates environmental impact and contributes to Defra's recycling and waste strategy.

Alternatives to regulation considered

Industry and government guidance is not working to the level desired. Due to the above market failures, we expect older tyres on heavy vehicles to remain fitted at levels higher than that which is socially optimal.

Some tyre manufacturers advise users to replace tyres once the 10 year limit is reached. Following the collision in 2012, DVSA roadworthiness guidance was introduced in 2013, which advised bus and coach operators against the use of tyres older than 10 years on front axles. This was updated in 2018 to apply the same rules to HGVs. The Tyre Industry Federation, in association with the Freight Transport Association (FTA) and the Road Haulage Association (RHA) published a Guide to Tyre Management in 2015 that covered tyres fitted to heavy vehicles in the UK (trucks, trailers, buses and coaches), re-iterating this advice.

<https://itma-europe.com/wp-content/uploads/CV-Tyre-Management.pdf>

It was hoped that in the aftermath of the collision, none of these vehicles would be fitted with older tyres on front axles.

Analysis of DVSA annual and roadside testing (which is explored further in the cost section of this impact assessment) **show that a small proportion of these vehicles** (estimated to be

around 0.16%) **are still fitted with tyres aged 10 years and above on the front axle** (6 years after the introduction of the 2013 guidance). Due to a lack of evidence, it has not been possible to analyse how older tyre fitment rates on front axles have changed due to the update of the guidance in 2013. The current data does not allow us to analyse how successful for the 2018 guidance update for HGVs has been.

Given the advisory nature of the published guidance and information, these are not enforceable. DVSA estimate that approximately 75% of HGVs and 70% of buses, coaches and minibuses are operated commercially under Operator licences and follow the maintenance schedules, reflecting DVSA roadworthiness guidance, that licensing requires. This leaves 25-30% of in-scope vehicles that are not obliged to follow DVSA maintenance regimes and may not be aware of the roadworthiness guidance (DVSA estimate this is up to 90% of all minibuses). For example, the vehicle involved in the second fatal collision (2017) was privately owned and not subject to Operator licensing.

We consider that further intervention is necessary, on a precautionary basis, since there is still a minority of vehicles fitted with tyres aged 10 years or older on front axles. The DfT and its Agencies are working closely to ensure vehicle operators understand how to maintain the safety and roadworthiness of their vehicles, including their tyres, and to enforce any non-compliance.

Policy specifics and exemptions

A 10-year age limit is appropriate. In advance of the 2013 update of DVSA's roadworthiness guidance and given the lack of available scientific evidence to define an optimal age limit, the figure of 10 years was chosen on a precautionary basis by the Secretary of State for Transport, in collaboration with industry stakeholders. At least two major tyre manufacturers also recommend replacing tyres aged 10 years or older (Michelin and Continental).

The Department was not able to examine the 19 year old tyre involved in the 2012 coach crash, however the 18 year old tyres involved in the 2017 incident were examined and found to have substantial corrosion in the steel cords. This informed the decision to update DVSA roadworthiness guidance in November 2018 to extend the Department's advice against the use of tyres aged more than 10 years old on front axles, to include trucks. The DfT commissioned research project¹⁷ saw material changes in tyre structure began to appear around 8-9 years, although due to limited sample sizes this was not statistically conclusive. Since 2013, industry

has continued to support the 10 year age limit and no evidence to support a different limit was received at consultation.

Therefore, on balance, given the lack of scientific evidence to determine a specific age limit, the Department has elected to set the limit at 10 years, in keeping with current DVSA roadworthiness guidance, industry advice and its memorability.

We are offering exemptions to certain vehicles, following the assessment of views from the consultation. These will include agricultural tractors and vehicles of historic interest, providing that they are not operating commercially.

Consultation and other discounted policy options

In 2019, The UK Government consulted on options to ban older tyres on heavy vehicles, including legislation to make it illegal for buses, coaches, heavy goods vehicles, and minibuses to have tyres aged 10 years and older. The consultation closed on 1st September 2019 and received over 1,100 responses.

We have considered carefully how to account for re-treaded tyres in any ban. Re-treaded tyres are a key element of the heavy-duty vehicle tyre market (around 30%), providing a cost-effective product to operators, an environmentally sustainable solution to recycling worn tyres and employment at UK manufacturing sites. There are different re-treading processes but these in effect replace the tread on worn tyres by removing some of the existing tyre rubber compound, inspecting the tyre carcass and then adding a new layer of rubber and tread. All re-treaded tyres supplied in the UK must comply with specific, international United Nations Economic Commission for Europe (UNECE) Regulations and be tested according to the same load and speed criteria as those used for new tyres. During the re-treading process a new date is imprinted on the tyre, denoting the date of re-treading but there is no requirement in current regulations to retain or record the original date of manufacture of the tyre carcass.

DFT discounted the proposal to ban the use of tyres which are 10 years or older, and re-treaded tyres of all ages on all axles of HGVs, heavy trailers, buses, coaches and minibuses. In this option prohibiting the use of re-treaded tyres of any age is the only way to guarantee, under current regulations, that every element of a re-treaded tyre was below 10 years old. This is not the desired outcome of our policy as all re-treaded tyres supplied in the UK must comply with UNECE Regulations, testing them to the same load and speed criteria as new tyres,

regardless of age. We discounted this option in advance of consultation. The costs of this option were estimated at £479m, as detailed in Option 1 in the consultation stage IA.

As our consultation proposal, but to **allow tyres 10 years and older on heavy trailers**. This option (option 3 in the consultation stage IA) would permit older tyres on trailers but not on any other locations and would also ban re-treaded tyres of any age from the front axles. We have discounted this option following analysis of consultation responses, using the same rationale as for discounting Option

The Department is unable to produce statistical information to produce a report of the road casualties involving vehicles of historical interest. However, in GB, it was found that in 2015 there were 215 casualties in personal injury accidents involving 1961-1977 vehicles compared with 455 casualties involving 1978-1987 vehicles.