Title: Raising the national speed limit for HGVs > 7.5t on single carriageway roads in England and Wales	**Impact Assessment (IA)**
IA No: DfT00151	**Date:** 30/01/2014
Lead department or agency: DfT	**Stage:** Final
	Source of intervention: Domestic
Other departments or agencies: DEFRA	**Type of measure:** Secondary legislation
	Contact for enquiries: Alanna Barber, alanna.barber@dft.gsi.gov.uk

Summary: Intervention and Options

RPC: RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, Two-Out?**	**Measure qualifies as**
£126.5m	£206.2m	-£11.83m	Yes	Out

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

The maximum speed limit for Heavy Goods Vehicles (HGVs) over 7.5t on single carriageway roads, as prescribed in Schedule 6 of the Road Traffic Act 1984, is set at 40mph, while the speed limit for cars is 60mph. It has been suggested by a number of interested parties - including the trade associations and comments received via the Red Tape Challenge - that this is too low. The 40 mph speed limit causes congestion and unnecessary cost to vehicle operators. It may also cause avoidable overtaking accidents. Speed limits are set by Government to balance the private benefits of speed of travel with the social cost of high speeds.

What are the policy objectives and the intended effects?

The policy objective is to maximise the benefits of travel to society by increasing the current 40 mph maximum speed limit for HGVs >7.5 tonnes on single carriageway roads. The intervention will also level the playing field for businesses, as HGVs which are travelling above the maximum speed limit currently have a competitive advantage over those that are adhering to the maximum 40 mph speed limit.

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

Options considered in the consultation-stage Impact Assessment and included in the consultation were:

Making no change to the current 40 mph (do nothing) - which would have no net costs and no net benefits (the baseline comparison).

Option 1: increase the national speed limit (NSL) for HGVs >7.5t on single carriageways from **40 to 50 mph.** This is the preferred option, as other options have been rejected as too complex and expensive to implement.

Option 2: increase the NSL for HGVs >7.5t on single carriageways from **40 to 45 mph.**

The Department also considered increasing the speed limit for HGVs >7.5t only on single carriageways where the road speed is set at NSL (i.e. 60mph). Option 2 is no longer an option.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** **March**/2020

Does implementation go beyond minimum EU requirements?			Yes / No / N/A		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:**	**Non-traded:** 0.1-0.3	

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) that the benefits justify the costs.

Signed by the responsible SELECT SIGNATORY: Claire Perry Date: 20/07/2014

Summary: Analysis & Evidence

Policy Option 1

Description: Increase the speed limit for HGVs over 7.5t on single carriageway roads from 40 mph to 50 mph.

FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 18[1]	Net Benefit (Present Value (PV)) (£m)		
			Low: £65.8m	**High:** £229.4m	**Best Estimate:** £126.5m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		£6.4m	**£86.1m**
High	Optional		£14.8m	**£199.2m**
Best Estimate	£0.1m		£10.6m	**£143.2m**

Description and scale of key monetised costs by 'main affected groups'

Figures in brackets are best estimate annual averages. An increase in HGV speed may result in an increase in fatal accidents (£6.7m) and serious accidents (£1.9m). Our best estimate is that there would be an additional 2 to 3 fatal accidents and 4 to 9 serious accidents per annum. Higher speeds result in higher fuel consumption (£1.0m), leading to increased carbon emissions (£0.7m). There will also be some increase in noise pollution (£0.3m) since noise is related to vehicle speed. In addition, there will be some small negative effects on other road users who might experience a slight increase in congestion due to additional HGV journeys on the network (<£100k per annum). There will be some transition costs for updating guidance material and signs to government (£50k) and industry/road safety charities (£41k)

Other key non-monetised costs by 'main affected groups'

We have not modelled the effect on other vehicles of a reduction in 'platooning' (build-up of traffic behind HGVs travelling at 40 mph). If a reduction in platooning allows other motorists to travel faster, there will be some non-monetised costs associated with this such as an increase in carbon emissions and expenditure on fuel. There could also be some additional costs to maintain roads, as faster vehicles may cause additional road damage.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		£11.1m	**£152.0m**
High	0		£32.1m	**£428.8m**
Best Estimate	0		£19.9m	**£269.8m**

Description and scale of key monetised benefits by 'main affected groups'

HGV operators will experience time savings (£13.8m) and reduced vehicle operating costs (£2.5m) from being able to make journeys more quickly. Government will benefit from increased fuel duty revenues (£2.1m). There is also a benefit to society from increased competition (£1.5m), since lower transport costs allow firms to compete more vigorously. There is a small air quality benefit from a reduction in NOx[2] emissions (<£100k) because HGVs are more NOx efficient at higher speeds.

Other key non-monetised benefits by 'main affected groups'

Reduction in 'platooning' will lead to time savings and reduced vehicle operating costs for other road users who previously found themselves traveling behind an HGV and unable to overtake. This could also help to reduce road accidents that happen as a result of risky overtaking manoeuvres. This potential benefit has not been quantified because we do not have sufficient confidence that it would occur (since while overtaking manoeuvres might become less likely, they would also be performed at higher speeds and so could become more dangerous).

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Time savings, environmental impacts and vehicle-related costs and benefits are calculated using the Department's National Transport Model. Vehicle speeds are set in this model according to speeds observed on the road, and have been adjusted using a range of different plausible scenarios. Time savings are monetised using standard WebTAG values and increase through time in line with GDP forecasts. Environmental impacts are monetised using standard values of the cost of NOx, PM10[3] and carbon emissions. For our accident modelling, we have extended several models relating vehicle speed to road accidents. We have assumed no relationship between speed variance and accidents (and therefore no road safety benefit from a reduction in dangerous overtaking manoeuvres).

BUSINESS ASSESSMENT (Option 1)

[1] We have chosen an 18 year appraisal period to maintain consistency with the consultation stage impact assessment. At consultation stage, forecasts up to 2030 were presented as it was felt that a ten-year appraisal period would not adequately demonstrate the longer term impacts of the policy. We have maintained the same length of period, but updated the implementation year such that the period studied is now 2014-2031.

[2] **NO_x** is a generic term for mono-nitrogen oxides NO and NO_2 (nitric oxide and nitrogen dioxide).

[3] Particulate Matter up to 10 micrometres in size.

Direct impact on business (Equivalent Annual) £m:						In scope of OITO?	Measure qualifies as
Costs:	**0.8**	**Benefits:**	12.7	**Net:**	11.8	Yes	OUT

Evidence Base (for summary sheets)

Problem under consideration

The Vehicle Speed Limit:

1. Besides maximum speed limits applicable to any vehicle on any road, there are national maximum speed limits for most types of vehicles. These "vehicle class speed limits" can be set at different levels for motorways, non-motorway dual carriageways and other roads (single carriageways). On "restricted roads" (i.e. most roads in built-up areas with street lighting), a national road speed limit of 30 mph, whilst specific local road speed limits, for example of 20 mph and 40 mph can be set for sections of the road network, where the authority responsible for the relevant specific road considers this appropriate. Where the vehicle class speed limit is higher or the same as the road speed limit, the road speed limit applies.

2. The maximum national speed limit for single carriageway roads is 60 mph. The maximum national speed limit for single carriageways for the vehicle class of Heavy Goods Vehicles with a maximum laden weight of more than 7.5 tonnes is 40 mph. This is included in schedule 6 of the Road Traffic Reduction Act (1984), although the 40 mph limit was set earlier, and applies to Great Britain (with Northern Ireland having its own legislation). This assessment relates to England and Wales as national vehicle class speed limits are now a devolved matter in Scotland. The table below shows the main vehicle class speed limits applicable in Great Britain along with the corresponding road speed limits (which apply to cars and motorcycles).

3. Speed limits are set by Government to balance the private benefits of speed of travel with the social cost of high speeds, most clearly identified with accident risk. Government regulates speed limits because private users do not take the full social costs of speed into account when choosing how fast they travel. The main reason for the lower vehicle speed limits is that goods vehicles are designed to carry heavier loads and when laden take longer to slow down than a car travelling at the same speed, though there have been significant technical improvements to vehicles, and roads infrastructure, since the current vehicle speed limits were set.

National speed limits

Type of vehicle	Built-up areas mph (km/h)	Single carriageways mph (km/h)	Dual carriageways mph (km/h)	Motorways mph (km/h)
Cars and vehicles (including dual-purpose vehicles and car-derived vans up to 2 tonnes maximum laden weight)	30 (48)	60 (96)	70 (112)	70 (112)
Cars towing caravans or trailers (including car-derived vans and motorcycles)	30 (48)	50 (80)	60 (96)	60 (96)
Motorhomes or motor caravans (not more than 3.05 tonnes maximum unladen weight)	30 (48)	60 (96)	70 (112)	70 (112)
Motorhomes or motor caravans (more than 3.05 tonnes maximum unladen weight)	30 (48)	50 (80)	60 (96)	70 (112)
Buses, coaches and minibuses (not more than 12 metres overall length)	30 (48)	50 (80)	60 (96)	70 (112)
Goods vehicles (not more than 7.5 tonnes maximum laden weight)	30 (48)	50 (80)	60 (96)	70 (112) 60 (96) if articulated or

				towing a trailer
Goods vehicles (more than 7.5 tonnes maximum laden weight)	30 (48)	40 (64)	50 (80)	60 (96)

4. The speed limits for this class of HGVs in some of the other European countries are:

   France –50mph or 37 mph depending if more or less than 12t
   Germany – 37mph
   Italy – 50mph or 43.5mph depending if more or less than 12t
   Netherlands – 50mph
   Spain – 43.5mph[4]

   Current Problems

5. The 40 mph HGV limit is 20 mph less than national single carriageway speed limit and is the lowest of the mainstream vehicle class speed limits (with cars towing trailers or caravans, buses and coaches and smaller lorries all having speed limits of 50 mph). It was set when lorries had very different technology and the problems associated with it include:
   i. it is set at a lower level than the balance of advantages and problems would now suggest and the justification for its current level is now relatively weak;
   ii. a substantial majority of drivers do not comply with it;
   iii. systematic enforcement is difficult and establishing a credible deterrent for the 40 mph limit would not be a reasonable call on finite police resources and is more difficult to automate using cameras than road speed limits. If a lot more enforcement did occur it would involve the disproportionate targeting and punishment of these drivers[5];
   iv. the current widely-flouted restrictions mean that the law-abiding are at a competitive disadvantage and incur extra costs associated with the slower journeys and reduced driver and vehicle utilisation than those that ignore the law;
   v. the speed limit differential generates congestion, particularly on some main roads;
   vi. there are safety problems associated with overtaking and driver frustration.

   Stakeholder and Consultation Input

6. A number of comments were made through the Red Tape Challenge that the speed limit for HGVs >7.5t should be increased to 50 mph. Representations have also been made by stakeholders, including the main trade associations and respondees to the Red Tape Challenge call for evidence, that the 40 mph speed limit for HGVs >7.5t on single carriageway roads is too low.
7. Currently, around 75% of HGVs travel in excess of 40 mph on single carriageways.[6] The average free-flow speed has remained relatively stable in recent years; the most recent data shows that the average HGV speed is 45 mph on single carriageways.[7]
8. Given that the data collected on free-flow speeds suggests that HGV drivers routinely travel over the 40 mph limit, it could equally be argued that there is no real need for any change to the speed limit prescribed by statute. However, there are three main reasons for considering such a change:

- The majority of vehicle operators and drivers would clearly prefer to be operating within the law, rather than breaking a speed limit which appears not to be widely enforced.
- Increasing the speed limit to 50 mph will bring time savings to motorists; both HGV drivers who can travel faster, and motorists who will no longer be adversely affected by platooning.
- As some drivers do obey the 40mph speed limit, they are operating at a disadvantage compared to those who break the speed limit. Changing the speed limit would level the playing field.

[4] All of these speeds are set by the countries, in km per hour.

[5] Based on DVLA licensing statistics, we know that just 2% of category C licence holders (i.e. those eligible to drive an HGV >7.5t) received points on their licence for exceeding the HGV speed limit over the past 4 years. DVLA estimate around 20,000 offences for exceeding the HGV speed limit were recorded on category C licences over the past four years, and there are approximately 1 million category C licence holders.

[6] See: https://www.gov.uk/government/statistical-data-sets/spe01-vehicle-speeds for free-flow speed statistics (also printed at the **appendix** to this document). 'Free-flow' statistics are collected at areas of the network where external factors which might restrict driver choice, (including junctions, hills, sharp bends and speed enforcement cameras as well as congestion) are not present.

[7] Ibid

9. The Department for Transport published its Logistics Growth Review - Connecting People with Goods document in November 2011.[8] One of the actions contained within the document is to confirm that the Government intends to consult on the speed limit for HGVs >7.5t on single carriageway roads during 2012.

10. The Department published the consultation on 9 November 2012 with the aim of helping the Department to formalise anecdotal and informal evidence on whether the 40 mph speed limit is set at the appropriate level i.e. taking into account the economic, environmental and safety impacts. In the consultation the Department sought views on:
    a) Evidence that could enable assessment of additional collisions caused by or involving HGVs >7.5t on single carriageway roads if speed limits were increased
    b) Air Quality impacts of a change
    c) Noise impacts of a change
    d) Possible behaviour changes for all classes of vehicles
    e) Whether a modal shift in freight transport from rail / sea to road was a likely outcome of a change
    f) Road maintenance requirements if the speed limit was changed
    g) Whether local authorities would reduce speed limits on non-trunk primary routes if the HGV > 7.5t speed limit was changed
    h) The need for printed public information if a change was made

11. We also requested consultees' views on the policy options which were:
    a) Whether to increase the speed limit for HGVs >7.5t to 50 mph
    b) Whether to increase the speed limit for HGVs >7.5t to 45 mph
    c) Any further options not identified in the consultation document

12. Only four responses out of 703 supported Option 2 (to increase to 45 mph) with 602 (86% of overall responses) saying "no". The reason for this was clear; those who answered "yes" to Option 1 (to raise to 50 mph) but "no" to Option 2 thought the 45 mph option would cause confusion, and produce little benefit to business. Those who answered "no" to both the 50 mph and 45 mph speed limits cited similar justifications for both. The Department therefore discounted the option of raising the speed limit to 45 mph.

13. Nearly three-quarters of responses said "no" to raising the national speed limit for HGVs >7.5t to 50 mph. 77% of logistics sector respondents supported an increase while 78% of private individuals (206 responses) were not in favour. Logistics sector respondents were made up of a few responses from haulage companies and responses from four associations – whose membership ranges from 300 to 14,000 members. In terms of the number of people represented, the majority were in favour of an increase in the limit.

14. Eight respondents supported a proposal given in the consultation document, to only increase the speed limit for HGVs >7.5t on single carriageways where the national speed limit applies, and retain the 40 mph limit at other times, (and about 60 responses advocated an increase "on certain roads" only.) This group of responses spanned across both those who were for an increase in speed limit, and those against.

15. After analysing the consultation responses, the Department has given careful consideration to increasing the speed limit only on certain roads. The costs and benefits of this would mirror those of increasing the speed limit on all single carriageways, though as the change would have an impact on fewer roads, this would reduce the costs and benefits. A system with differing vehicle speed limits according to the road could be confusing to HGV drivers and the wider public, (many of whom are already unaware of the maximum vehicle specific speed limits for each vehicle type) and this was a concern to the Department. There would also be costs incurred from the requirement to install new signs, (which is not required for increasing the speed limit on all single carriageways.)

16. Given the evidence, the Department for Transport believes that 50 mph is the most appropriate speed limit for HGVs >7.5t on single carriageway roads in England and Wales.

[8] https://www.gov.uk/government/publications/logistics-growth-review

Rationale for intervention

17. The prime policy objective of this work is to review the national HGV speed limit, with the intention of having it at a level which strikes the best balance between its effects (with the most important effects to consider being safety-related, environmental and economic), provided such a change can be introduced safely and fairly. A subsidiary objective is to avoid the majority of drivers breaking the speed limit routinely and to facilitate tougher sanctions against serial or serious offenders

18. To meet this policy objective, Option 1 at the consultation has been developed to include a number of complimentary measures, which are aimed at ensuring it can be introduced in a safe and fair way. Option 1 is forecast to both increase average speeds and reduce the variance of the speed distributions on the roads involved. It has not been possible to estimate robustly any reduction in forecast road deaths and injuries due to the reduced variance in speed (including related to overtaking), whereas it has been possible to forecast the increase in connection with average speed change.

Associated measures

19. Given there is some uncertainty and risk with the implementation of Option 1, we propose to implement the following associated measures:

Driver Conduct Hearings and Licence Suspensions for Speed Limit Offences

20. The increased use of vocational driver conduct hearings for goods vehicle drivers breaking vehicle class speed limits. When the HGV speed limit on single carriageways is increased from 40 to 50 mph, the Secretary of State would instruct the senior traffic commissioner to make breaking the new limit a significant driver conduct issue.

21. The putative approach would involve automated severe warning letters issued by the Driver and Vehicle Licensing Agency (DVLA) for first time offenders and proceedings against second time offenders (i.e. those holding a still current endorsement for the offence). Proceedings may well result in the suspension of the vocational entitlement on driving licences for several weeks. Serial offenders already face lengthy court-imposed bans if they reach 12 points.

22. The Department is confident the work volumes can be accommodated by DVLA and the Traffic Commissioners using the current systems. This intervention will only be implemented with the revised speed limit in place. With the limit set as 40 mph, there is no policy reason for treating offenders differently in respect of driver conduct hearings than other types of speed limit offence, for example breaking a 30 mph limit. Also the driver conduct process does not have the capacity to handle all vocational licence holders who commit speeding offences, particularly as licence documentation does not distinguish between fixed penalty offences committed by lorry drivers whilst driving a car and whilst driving a lorry.

23. The effects of stronger enforcement with the 50 mph speed limit in place have not been quantified in this impact assessment. We think that 50 mph is a more sensible speed limit and therefore there will be less incentive for operators to exceed the new limit. Furthermore we know that cars do not often travel above 50 mph (in free-flow) so we think it unlikely that HGVs > 7.5t will. The likely effects would be to reduce the higher end of the speed distribution and hence disproportionately improve safety.

Driver Conduct Hearings and the National Goods Vehicle Class Speed Limits

24. The current administrative offence code used for breaking the HGV speed limit on single carriageways also applies to all other national vehicle class speed limits related to goods

vehicles. The other national goods vehicle limits are 50 mph on single carriageways for lighter vehicles and for larger goods vehicles on non-motorway dual carriageways and 60 mph for most other circumstances on motorways and other dual carriageways. So offences related to these other national goods vehicle class limits would be included in a stricter driver conduct process.

25. When drivers are caught breaking the national HGV speed limit of 60 mph on motorway, this is often symptomatic of tampering or defects with the speed limiters restricting most of these vehicles to about 90 km/h (or 56 mph). Drivers appearing at conduct hearings are therefore liable to face licence suspensions.

26. However, like the current 40 mph single carriageway limit, the 50 mph non-motorway dual carriageway limit is broken routinely. Indeed lorry speeds on national speed limit non-motorway dual carriageways in light traffic are similar to those on motorways in light traffic, with actual speeds affected by the 56 mph speed limiters on most vehicles. The Department plans to consult separately about changing the 50 mph speed limit to 60 mph.

27. If this other speed limit change does not proceed, the stricter approach to driver conduct hearings for drivers breaking national goods vehicle class speed limits can proceed. However it would involve the hearings being less well-targeted. Decisions at hearings are made on a case-by-case basis, so all circumstances can be taken into account.

Possible Further Driver Conduct Changes

28. Police can already refer vocational driving licence holders into the vocational driver conduct processes for endorseable offences such as using hand held mobile phones whilst driving and speeding. DVLA and the Traffic Commissioners are considering options for the greater use of vocational driver conduct processes and how referrals into them might be generated by the system. Additional offence codes, for example which distinguish between mobile phone offences committed in a large vehicle as opposed to committed by a driver with a vocational licence whilst in a car might help target driver conduct processes. Likewise the same principle could be applied to breaches of the 30 mph and local speed limits, such as 40 mph speed limits.

29. No decisions have been made, but there are possibilities of a greater use of vocational driver conduct hearings beyond vehicle class speed limits to help deter the breaching of speed limits by people driving large vehicles.

Local Speed Limits

30. The Department reissued its advice about setting local road speed limits in January 2013. The advice is at: https://www.gov.uk/government/publications/setting-local-speed-limits. The advice enables local authorities to put in place local speed limits – including where there are considerable numbers of vulnerable road users, substantial development adjacent to roads and a risk of air quality limits being breached.

31. For rural roads whose function is predominantly for conveying motor traffic (i.e. most A and B class roads outside villages and towns), the advice issued in January 2013 indicated that 40 mph road speed limits should be considered by local authorities where there are considerable numbers of vulnerable road users (such as pedestrians and cyclists), there is a strong environmental or landscape reason, there is substantial development, or there are many bends, junctions or accesses.

32. The circular also identified (in a departure from its predecessor) that where there is a possible risk of air quality limits being exceeded, then this itself could be an important factor in the choice of the speed limit for the road.

33. The circular allows the national speed limit change from 40 mph to 50 mph for lorries on single carriageway roads to be implemented fairly – through putting in lower local limits where the balance of advantage for reducing the road speed limit has been changed because of the different lorry limit and is now favourable to a lower local limit. The deployment of local speed limits is liable to reduce the disbenefits of the national HGV speed limit change in greater proportion to reductions in the benefits. These effects have not been quantified in this impact assessment. They depend on separate local decisions and it is not practical to model where they would be liable to be made.

Other HGV-Related Safety Work

34. There are other policies and measures which are resulting in improvements to road safety for HGVs and which have contributed to the long term decline in fatalities. These include vehicle safety improvements, which the Department is confident will continue to have an effect, through the progressive spread through fleets as time goes on of more recently manufactured vehicles with more safety features, and the introduction of more safety-related changes to new vehicles.

Study of Incidents on Rural Single Carriageway Roads

35. The Department also proposes to commission an in-depth study of fatal incidents on rural single carriageways, including those that have taken place in the recent past and those occurring after the speed limit change has been implemented, in order to learn lessons and stimulate further safety improvements, including in relation to drivers, roads and vehicles, both nationally and locally. The Department recognises that it may be difficult for a local authority to identify patterns from the fatal incidents occurring on its roads and will therefore in this study consider whether there are patterns which can be addressed through local measures, including safety engineering, building on the extensive improvements that local authorities have already implemented.

36. The prime aim of the study is not to evaluate the change in the national HGV speed limit on rural roads. However there may be findings relevant to that. The study specification is under development but it is planned to be a major piece of work.

Current situation in detail – speeds and speed limits on single carriageway roads

37. The 'do nothing' case is the counterfactual against which the benefits and costs of the other options are compared and appraised. In this case the 'do nothing' case is retaining the current HGV speed limit on single carriageway roads. The following section describes the characteristics of the 'do nothing' case.

38. The current speed limit on single carriageway roads is 40 mph for HGVs >7.5t and 50 mph for HGVs <7.5t. Most HGVs weigh more than 7.5t when unladen, so are restricted to 40 mph (in 2012, only 38% of registered HGVs weighed below 7.5t[9]). Despite this, the average speed in 2012 was 45 mph and 75% of all HGVs were found to be travelling at speeds in excess of 40 mph. When looking at vehicle speed statistics (which unfortunately do not classify according to weight) it is useful to note that almost all HGVs weighing less than 7.5t are 2-axle rigid vehicles, and that two thirds of 2-axle rigid HGVs weigh <7.5t[10].

39. Data on vehicle speeds is collected by automatic traffic counters located at free-flowing sites on the road network. 'Free-flow' observations indicate the speed that drivers choose when uninhibited by congestion, bends in the road or other factors that cause drivers to slow down. Figure 1 shows

[9] At the end of 2012 quarter four, there were 460,116 licensed HGVs of which 176,958 (or 38.46%) were 7.5 tonnes or under. Source: DfT/DVLA

[10] At the end of 2012 there were 262,832 HGVs which were 2-axle rigid vehicles. Of these, 172,324 (or 65.6%) were 7.5 tonnes or under.

historic data on the distribution of free-flow HGV speeds on single carriageway roads. This chart clearly shows two things: firstly, the distribution of speeds has remained very stable over time; secondly, speeds in excess of 40 mph are the norm, even when taking into account the higher speed limit for HGVs <7.5t.

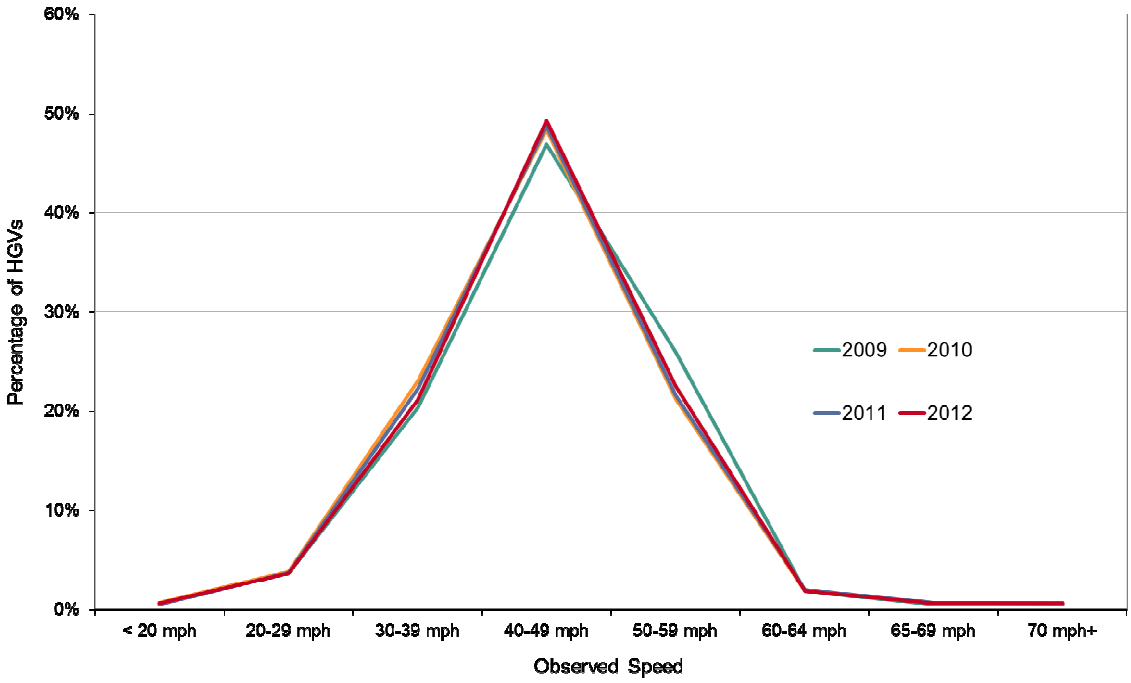

Figure 1: HGV traffic speed at free-flow sites on non-built up single carriageway roads, percentage by speed band

40. Figure 2 shows average speed recorded in 2012 by vehicle type. Two-axle rigid HGVs are shown separately from other HGVs as a proxy for those vehicles weighing <7.5t. It is noticeable that despite very different maximum speed limits, the actual average speed observed in free-flow conditions for cars and HGVs is fairly similar.

41. By removing 2-axle rigid HGVs, we can examine the speed of HGVs weighing more than 7.5t only. We find that in this group, average speed in 2012 was 44 mph and 71% of vehicles exceeded the 40 mph speed limit[11].

42. As mentioned above, the status quo, in which 71% of drivers do not obey the law and face little prospect of being caught, creates an uneven playing field and puts drivers who do choose to adhere to the speed limit at competitive disadvantage; based on DVLA licensing statistics, around 2% of category C licence holders (i.e. those eligible to drive an HGV >7.5t) received points on their licence for exceeding the HGV speed limit over the past 4 years.

[11] Note however that some 2-axle rigids weigh>7.5t; this analysis excludes these.

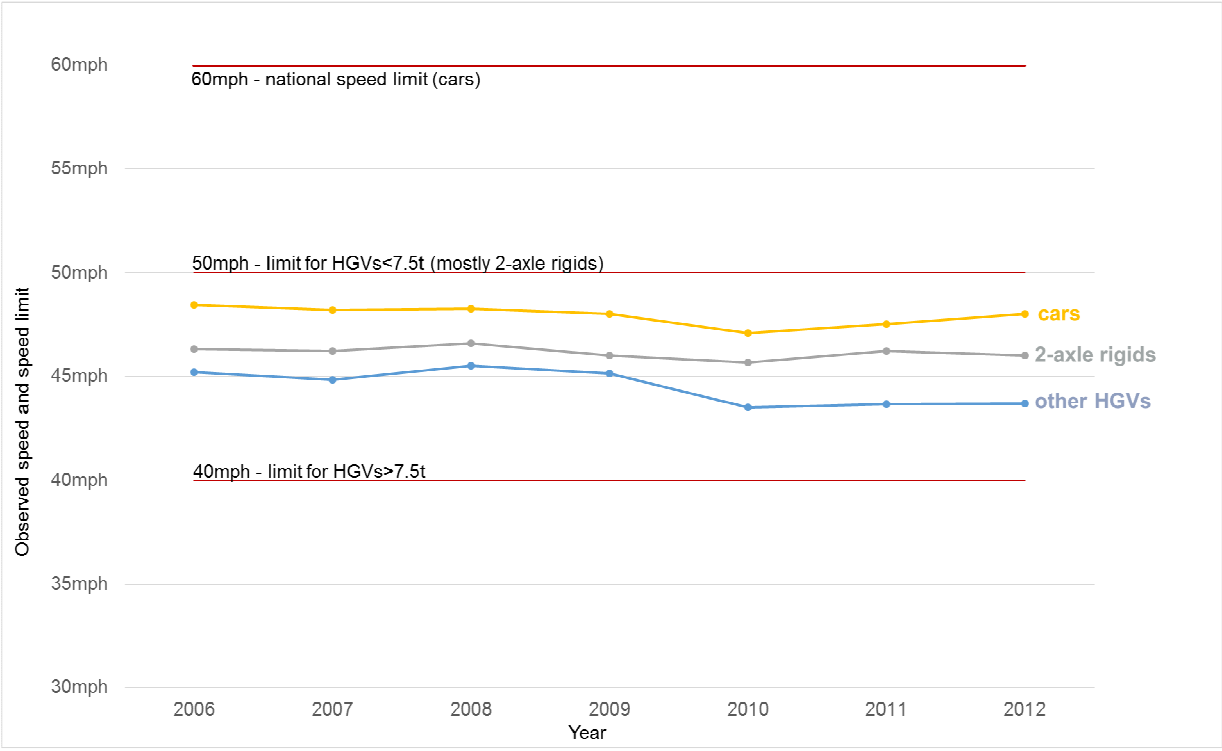

Figure 2: Average free-flow speed on single carriageway roads by vehicle type, 2012

Modelling approach

43. The National Transport Model (NTM) v2[12] has been used to provide modelled evidence of the effects of increasing the HGV speed limit on vehicle speeds and associated costs and benefits. The NTM uses assumptions and projections of major determinants of road travel demand to project future traffic patterns. Among these variables are income per person, population growth, fuel prices and fuel efficiency projections, besides a range of other policy and economic factors. The model contains a wealth of data on the travel behaviour of a large number of different types of individuals (in terms of age, household structure and income) and the entire population is projected forwards using ONS population forecasts which include changes in the national demographic. The additional demand for travel caused by this (and a number of other factors) will increase congestion on roads. The model uses elasticity based responses to model changes in demand that occur as a result in congestion. That is to say, increases in travel demand are translated by the model into drivers changing their route or time of travel to avoid the additional costs associated with increased delays.
44. Speed flow curves representing different area and road types allow the definition of the relationship between traffic flow on a link and average speed. As congestion increases, typically speed will decrease. These relationships are used in the NTMv2 to establish the change in average speed due to changes in traffic and consequently the change in fuel consumption and emissions for an additional vehicle and other traffic. The model also considers factors that affect road users' decisions whether or not to travel. By making journeys faster for HGVs, the model forecasts small increases in HGV traffic, which will have knock-on effects for other vehicles.
45. The NTMv2 is set up for defined forecast years based on five-year increments (2010, 2015, 2020 etc.). For the appraisal period studied here (2014 to 2031), calculations must therefore be based on interpolation of results from the modelled years. The NTM does not include information about local speed limits. Therefore, in order to model the effect of the speed limit change for only those single carriageways where the national speed limit applies, we have modelled the speed change as taking place on rural roads only. This is likely to mean that time-savings are somewhat over-estimated,

[12] https://www.gov.uk/transport-appraisal-and-modelling-tools

since this simplification does not take account of sections of rural 60 mph roads where local speed limits apply (for example when the road passes through a village).

46. The NTM allows the Department's modelers to set different free-flow speeds for articulated and rigid HGVs as well as on different road types. The NTM does not distinguish between HGVs of different weights, so we must input a speed that represents HGVs of all weights (not just those above 7.5t).

47. Table 1 shows the input speeds used to run the NTM for both the 'do nothing' scenario and for option 1. The 'do nothing' speeds are based on the observed speeds of articulated and rigid HGVs in 2012 free-flow statistics (44.4 mph and 45.5 mph respectively; the relevant tables are printed at the appendix to this document).

48. For Option 1, we modelled 'lower-bound' and 'upper-bound' scenarios according to two different assumptions. The lower-bound assumption was that following a raise in the HGV >7.5t speed limit, all HGVs will travel at the same speed currently observed for 2-axle rigid HGVs (46.1 mph). This is because, as discussed above, two-thirds of 2-axle rigid HGVs weigh <7.5t, so the speed limit is already 50 mph for most 2-axle rigid HGVs. Their speed is therefore likely to give a good indication of the speed we can expect other HGVs to choose when facing a higher speed limit of 50 mph. This approach is likely to give an under-estimate because it does not take into account the fact that one third of 2-axle rigid HGVs currently face a speed limit of 40 mph.

49. For the upper-bound scenario, we assume that all HGVs travel at the same speed as cars and light goods vehicles in free-flow (modelled in the NTM as 49.1 mph and 47.9 mph on single carriageway A and B roads respectively). We consider this to be a reasonable upper-bound scenario because we do not anticipate that HGVs will travel (on average) faster than cars, for whom the national speed limit is 60 mph. This is because we assume these professional HGV drivers have the same behavioural response to speed limits and driving conditions as car and light goods vehicle drivers; and also because HGV drivers, guided by their employers, will have greater concern about the additional fuel costs of increasing their speed than light vehicle drivers.

50. There is very limited evidence about how HGV speed could change in response to a change in the vehicle specific speed limit. An analysis of different international studies on the effect of changing road speed limits (but not vehicle specific speed limits) showed that on average, across all vehicle types and on different types of roads, a 10 mph change in speed limit led to a 2.4 mph average change in free-flow speed[13]. Given this, the upper and lower-bound scenarios we have proposed seem reasonable.

Table 1: HGV free-flow speed inputs for NTM (mph)

	single carriageway A roads		**single carriageway B roads**		**Justification**
	artics	**rigids**	**artics**	**rigids**	
Do Nothing	44.35	45.51	44.35	45.51	Observed free-flow speed of articulated and rigid HGVs
Option 1 - lower	46.09	46.09	46.09	46.09	Observed free-flow speed of 2-axle rigid HGVs
Option 1 - upper	49.09	49.09	47.85	47.85	Free-flow speed of cars as modelled in the NTM

51. Forecast traffic growth and, therefore, congestion and vehicle speeds, are highly related to economic growth. To account for the uncertainties in forecasting demographic and economic variables over an appraisal period of several decades, the NTM uses three different 'growth scenarios', based on high, central and low forecasts of key inputs[14]. We combined these with our upper and lower bound speed assumptions as shown in Table 2 to create 'high', 'low' and 'best' estimates. The high and low estimates have been constructed to be the highest and lowest plausible scenarios, while the 'best'

[13] Finch, D., Kompfner, P., Lockwood, C., Maycock, G. (1994) *Speed, Speed limits and accidents*, TRL Project Report 58, Transport Research laboratory.

[14] These are based on official high, central and low forecasts of: population growth (Office for National Statistics); GDP growth (Office for Budget Responsibility); and fuel price (Department of Energy and Climate Change)

estimate is, for simplicity, based on the mid-point between these two. Therefore the best estimate should not be considered in isolation, rather in the context of the range from lower to upper-bound scenarios.

Table 2: Speed and growth scenarios used in the analysis

	speed scenario	**NTM growth scenario**	**Description**
Lower Estimate	lower	low	Lower growth means that fewer HGVs are forecast to be on the roads. This means fewer vehicles to benefit from the policy, but also less congestion and therefore free-flow speeds can be attained more often. We assume that in free-flow rigid HGVs hardly change their speed while articulated HGVs increase their speed somewhat. These relatively small speed changes have fairly small road safety implications. A small increase in speed results in a small increase in accidents.
Higher Estimate	upper	high	Higher growth means that more HGVs – and cars – are forecast to be on the roads. This means more HGVs to benefit from the policy but also more congestion, meaning that free-flow speeds are attained less often. We assume that both rigid and articulated HGVs increase their free-flow speeds quite significantly, to the same speed as that observed for cars. These relatively larger speed changes result in larger increases in accidents.
Best Estimate	average between lower and upper	central	The central case is the NTM's best estimate of the number of HGVs on the road and the level of congestion. It is based on central estimates for population growth, fuel prices and GDP growth. We use the mid-point between the two different speed scenarios presented above.

Monetised costs and benefits of Option 1

52. The effects of changing the speed limit fall into three main categories:

a. **economic:** This includes its effects on journey times, their reliability, fuel and other vehicle operating costs, changes in tax transfers between individuals / businesses and Government (including fuel duty), implementation and maintenance costs for roads authorities;

b. **environmental:** This includes its effects on carbon emissions, pollutants and noise;

c. **safety:** The effects that the change of the speed limit may have on the number of road traffic and pedestrian collisions, casualties and severity of casualties.

Table 3 below summarises the major effects of higher speeds for heavy goods vehicles on the network as a result of increasing the speed limit, and who will be affected by them. The entries in Table 4 show total costs and benefits for all road users across the entire appraisal period.

Table 3

Impacts of increasing the national speed limit for HGVs on single carriageway roads	
Impact	**Incidence**
Time savings	HGV drivers, and the businesses they work for; individuals
Changes in fuel costs and non-fuel vehicle operating costs	HGV drivers, and the businesses they work for; individuals
Changes in external costs of vehicle use: • Air pollutants (e.g. NOx[15]) • Carbon emissions • Accident risk (including associated increase in congestion caused by incidents) • Noise	All road users, individuals near single carriageway roads, and wider society
Costs of implementation	Government (central and local) and other information providers such as training providers
Increased fuel duty and tax revenue	Transfer from individuals/business to government

Table 4: Present value of total monetised costs and benefits (2014-2031), 2014 prices and values. Positive values are benefits; negative values are costs

		Low	Best	High
Time Savings	Business Users	£102.2m	£186.5m	£300.4m
	Commuters	£0.1m	-£0.1m	£1.1m
	Other users	£0.1m	-£0.3m	£1.8m
Fuel & Vehicle Operating Costs	Business Users - Fuel	-£4.3m	-£14.5m	-£24.0m
	Business Users - VOCs	£21.3m	£34.3m	£49.0m
	Commuters	-£0.1m	-£0.1m	-£0.1m
	Other users	-£0.1m	-£0.1m	-£0.4m
Wider Public Finances (Indirect Taxation Revenues)		£16.1m	£28.2m	£43.0m
Wider Economic Impacts	Agglomeration	£0.0m	£0.0m	£0.0m
	Competition	£11.9m	£20.6m	£32.5m
Environmental Impacts	Greenhouse Gases (CO2)	-£5.5m	-£9.7m	-£14.9m
	Noise	-£1.6m	-£4.4m	-£7.3m
	Local Air Quality (NoX)	£0.4m	£0.6m	£0.9m
	Local Air Quality (PM10)	£0.0m	£0.0m	-£0.1m
Road Safety Impacts	Fatal accidents	-£58.2m	-£89.4m	-£119.2m
	Serious accidents	-£16.3m	-£24.9m	-£33.3m
Implementation Costs		-£0.1m	-£0.1m	-£0.1m
	Total NPV	**£65.8m**	**£126.5m**	**£229.4m**

Time Savings

53. Time savings to HGVs are the most significant monetised benefit. Under the 'do something' scenarios, HGVs are modelled as travelling faster whenever they are uninhibited by congestion (i.e. in free-flow conditions). This results in lower average journey times and therefore a saving of business time. We assume that the time saved can be used for productive business activities and therefore value it according to the standard business time values proposed in WebTAG[16].

[15] Nitrogen Oxides.

[16] These vary according to time of day, vehicle type and usage type. They are uprated through time in line with expected GDP growth. For further details, see: http://www.dft.gov.uk/webtag/documents/expert/pdf/u3_5_6-vot-op-cost-120723.pdf

54. There are some small negative impacts on journey times forecast for other road users. These are not due to the faster speed of HGVs (since the NTM cannot model 'platooning') but instead due to slight changes in the level of congestion which result from additional HGV journeys on the network. Benefits that other road-users might experience from a reduction in platooning are discussed further in the 'non-monetised' section.

55. Note that we have not included any 'reliability' impacts. These are more typically associated with schemes that increase road capacity, making it easier for road users to avoid an accident and therefore reducing the effect that accidents have on journey times. Since this policy change involves a change in speeds but no change in capacity, reliability impacts are likely to be minimal.

Fuel and Vehicle Operating Costs

56. HGVs are forecast to experience a decrease in vehicle operating costs and an increase in fuel costs. The former is significantly larger than the latter, so overall this is a net benefit.

57. Vehicle operating costs includes expenditure on oil, tyres, maintenance, depreciation and vehicle capital (only for vehicles in working time)[17]. HGV firms will experience lower operating costs per unit of productive output because HGVs can now travel faster, and therefore can do more in a given period of time. The forecast increased expenditure on fuel occurs because more fuel is consumed when travelling at higher speeds.

58. As for time savings, small knock-on effects for other road users occur due to small changes in the level of congestion. Since other users are likely to travel slightly slower due to this increase in congestion, they will experience higher vehicle operating costs and lower fuel costs.

59. We asked for views in the consultation from HGV operators and trade associations about whether they felt the balance of savings and costs of extra speed reflects their own experience or expectations. Not many respondents answered this question and many of those responses that did either answered "N/A" or did not clearly express an opinion related to the question.

60. Of those that did clearly state an opinion, ten said that increased speed would bring fuel savings for operators. One said: "Modern European HGVs have gear sets, power curves and ratios that provide greatest operator economy at sustained road speeds. Being able to build and maintain momentum is a fundamental to economic operation. Where a 40 mph ceiling is in place, this is outside the standard economic gearing for many trucks on standard European highways. Technical inefficiencies lead to an increase of fuel consumption and noise at lower speeds." However not all agreed on this point. Three respondents who answered this question argued that changes would not save money. One said: "Our findings show that fleets that are operated within the existing speed limits show a vast improvement in mile per gallon figures and overall vehicle running costs, thereby disproving some of the allegations that running in this way is costing money … there is not sufficient evidence to support the reduction in time against the savings in fuel and other running costs." Another said: "… I cannot understand why any manager or operator should feel that raising the speed limit is going to save them money. Safer and more fuel efficient driving will save much more money."

61. The NTM's forecasts for the fuel efficiency and emissions of HGVs are based on our best knowledge of current and future HGV technologies. We cannot be sure how HGV drivers will change their speed in response to a change in the speed limit; and this uncertainty is represented by the range of high and low speed scenario inputs that we have used.

Public Finance Benefits

62. An increase in fuel consumption by HGVs results in higher expenditure on fuel duty, and therefore increased revenue for the UK Exchequer. Note that the increased revenue is higher than the fuel cost to HGV firms because the latter is based on the dis-benefit to business of increased costs, rather than the total change in expenditure[18].

Wider Economic Impacts

[17] WebTAG 3.5.6 (see Table 2).

[18] Fuel cost user impacts are based on 'rule of a half' calculations. For further information, see WebTAG Unit 3.5.3

63. Agglomeration impacts measure benefits that arise from bringing firms closer together, so that they may share suppliers, skills and ideas. Reducing transport costs has the effect of bringing firms within closer reach of one another, and so results in agglomeration benefits. We assume that no agglomeration benefits arise from reducing rural journey times, and so there is almost no agglomeration effect from this policy. The NTM does, however, forecast some very small knock-on effects due to changes in the level of congestion. These total less than £100k over the entire appraisal period for each scenario.

64. Improving transport links can also generate benefits to society by increasing the level of competition between firms, through similar mechanisms as for agglomeration impacts. When firms compete with one another more vigorously, consumers can benefit from higher levels of production and lower prices. This is a net gain to society because consumers value this extra production more highly than its cost to produce. Current evidence suggests that the value of this benefit is equivalent to around 10% of any savings to business (which arise from time savings and reductions in vehicle operating costs)[19].

Greenhouse Gases, Noise and Air Quality

65. An increase in carbon emissions is forecast due to increased fuel consumption by HGVs. Carbon emissions are given a monetised value according to the cost of mitigating environmental harm by the Department of Energy and Climate Change (DECC). Since road transport is not covered by a carbon trading scheme, the non-traded carbon price has been used to monetise the cost of these additional carbon emissions.

66. An increase in speed may also result in an increase in noise. We have worked with DEFRA to assess the potential impact of this additional noise. As no database of speed limits was available, this noise modelling has been carried out by DEFRA using a simple assumption, in the absence of better data, that 5-10% of A roads will be affected. The noise impacts have then been assessed using WebTAG guidance[20], based on modelled speed increases and assumptions about the existing noise level to which affected dwellings are subjected. Noise effects are monetised according to individual preferences for a noise-free environment, as revealed by changes in house prices. DEFRA include an additional cost to represent the slightly increased risk of heart attack caused by pollution. However, we have not included this small cost in our analysis since it is not recommended in the WebTAG noise guidance (module 3.3.2). We have checked and can confirm that this exclusion makes no difference to the overall cost benefit case.

67. The policy is expected to result in improved air quality from a reduction in NOx emissions. The latest vehicle emissions curves[21] show that, within the speed range under examination, NOx efficiency improves as HGVs travel at faster average speeds. This is not the case with Particulate Matter, however. Emissions curves suggest that HGVs are most efficient at 70 kph (44 mph), above which PM10[22] emissions increase, hence the small negative value for PM10 emissions.

68. As part of the consultation, the Department invited views from local authorities on where they think the proposals will have an impact on air quality, specifically whether there are any single carriageway roads which are subject to the national speed limit, or are signed at 50 mph in areas where there are air quality problems. There were few responses to this question.

69. Nine councils stated that they do not have any such roads in their areas. One community group, a Parish Council, three private individuals, and a Parish Councillor named between them seven roads that fell into this category. A few respondents gave some further interesting arguments. A Parish Council said: "The effect of traffic on air quality is most noticeable in towns when traffic is impeded. The difference in the effect whether traffic is travelling at 40 mph or 50 mph is less marked." A County Council Councillor said: "Slow moving traffic is more likely to heighten air quality problems. We have three AQMAs (Air Quality Management Areas) … as a result of the amount of slow moving traffic." The Transport Research Laboratory said: "AQMAs are areas where particular air quality

[19] WebTAG 3.5.14

[20] See WebTAG 3.3.2 for further information

[21] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4556/aeat-updated-vehicle-emission-curves.pdf

[22] Particle Matter less than 10 micrometers in diameter.

issues, normally NOx, but sometimes Particulate Matter, have been identified; these may be particular roads or complete boroughs. It is very likely that a proportion of these have single carriageway roads passing through them. In some cases, they may be AQMAs because a motorway or trunk road passes through, rather than this being related to any particular single carriageway."

70. When asked in the consultation what effect a speed increase would have on the environment, 103 respondents thought air quality and noise would be negatively affected; 42 respondents felt it would increase noise levels; 12 respondents felt it would decrease air quality; 38 felt the effect on air quality and noise would be negligible or would not be affected; and 16 felt it would improve air quality/emissions. The main reasons why respondents thought the effect on air quality would be negligible or that air quality would even be improved are because many HGVs already travel faster than 40 mph, and because vehicle technology means HGVs are more efficient at a slightly faster speed. This is borne out by the vehicle emissions curves data.

Implementation Costs

71. There would be no additional cost to reprint The Highway Code, as this is reprinted at regular intervals and we are liaising with the Driver and Vehicle Standards Agency regarding stock levels and new editions of the Code. However there would be some transitional/implementation costs accruing to government as a result of the speed limit change, as government would need to raise awareness of the new limits, both to HGV drivers themselves and all other motorists - and this is expected to cost central government £50,000. Motorists are generally unaware of the lower, differential speed limits for HGVs and other vehicles.

72. We asked for opinions in the consultation on whether anyone believed that an increased speed for this class of vehicle on single carriageways would result in their organisation incurring costs in the form of publicity or conversion costs. Only four organisations said a change would result in their organisation incurring costs.

73. A road safety charity said a small number of staff days would be required to review and amend written information, e.g. online factsheets and course materials, - and also raising awareness of the new limit on social media networks (they said printed publications would not need amending). They envisage that this would probably be carried out by one manager and a couple of Press Office staff to a cost of a few thousand pounds. We estimate that around 7 organisations (road safety charities and industry bodies) might be affected in this way, so we have included implementation costs of £21,000 for industry and the third sector (7 * £3,000). This figure was based on the average salaries of the staff that would be required to make these changes.

74. A local authority which has within it seven roads that cross the border between Scotland and England, estimated that it may cost them approximately £20,000 to provide new signs, and other traffic management measures. We have included this as a single transition cost to local government.

75. Total implementation costs are therefore calculated to be around £91,000, of which £21,000 falls to industry and the third sector.

Road Safety Impacts

76. There is little academic evidence about how a change in the HGV speed limit would affect road casualties. We commissioned a research report by TRL[23] (2009) into the potential effect of an increase in the HGV < 7.5t speed limit on single carriageway roads. Unfortunately, the final report was unable to reach any firm conclusions about the likely effects.

77. It is difficult to estimate the road safety impact because a change in the speed limit is likely to have two effects which act in opposing directions:

    a. An **increase in speed** (since HGVs > 7.5t are travelling faster) means that when accidents do occur, they are likely to be more severe and more likely to cause fatalities. Accidents may also occur more frequently because at higher speeds there is less time for drivers to correct errors and perform manoeuvres.

[23] Summersgil, Buckle, Robinson and Smith (2009) HGV speed limit increase evaluation: final report. *TRL Published Research Report* **PPR576**. Crowthorne: TRL. Available at: http://assets.dft.gov.uk/publications/trl-ppr576/final-report.pdf

b. A **decrease in speed variance** occurs because the slowest vehicles on the road are now travelling at more similar speeds to other road users. The effect of this may be to reduce the desire for other road users to overtake HGVs > 7.5t, thus reducing the number of dangerous overtaking manoeuvres and related accidents.

78. Evidence around the effect of absolute speed is much more certain than evidence around the effect of speed variance. This is partly because it is simply more difficult to design an empirical study to investigate the effect of speed variance. There is strong evidence that traffic speed matters[24] and that it is one of the most important risk factors in accidents[25] while there is much less certainty about the role that speed variance plays. Elvik (2009; pg 31) for example proposes that "there is […] a distinct possibility that the apparent relationship between speed variance and safety is entirely spurious". We therefore tentatively conclude that the increase in fatalities caused by higher speeds is likely to dominate any reduction in casualties brought by a reduction in dangerous overtaking manoeuvres.

79. Figure 3 shows a breakdown of HGV accidents according to accident type and, where relevant, first point of impact on the HGV. It includes accidents in which an HGV was being overtaken even if it was not hit. This breakdown is not readily available because STATS19 does not record, for accidents involving overtaking, the type of vehicle being overtaken. To account for this, TRL (2009) opened the Heavy Vehicle Crash Injury Study fatal accident files and calculated the proportion of overtaking accidents in which the HGV was being overtaken. This allows us to calculate, as presented below, the proportion of fatal accidents involving an HGV in which the HGV was being overtaken. It is clear that this represents a fairly small proportion of accidents (the green segment, 9%). The majority of accidents involve multiple vehicles and a frontal impact with the HGV, with no overtaking involved.

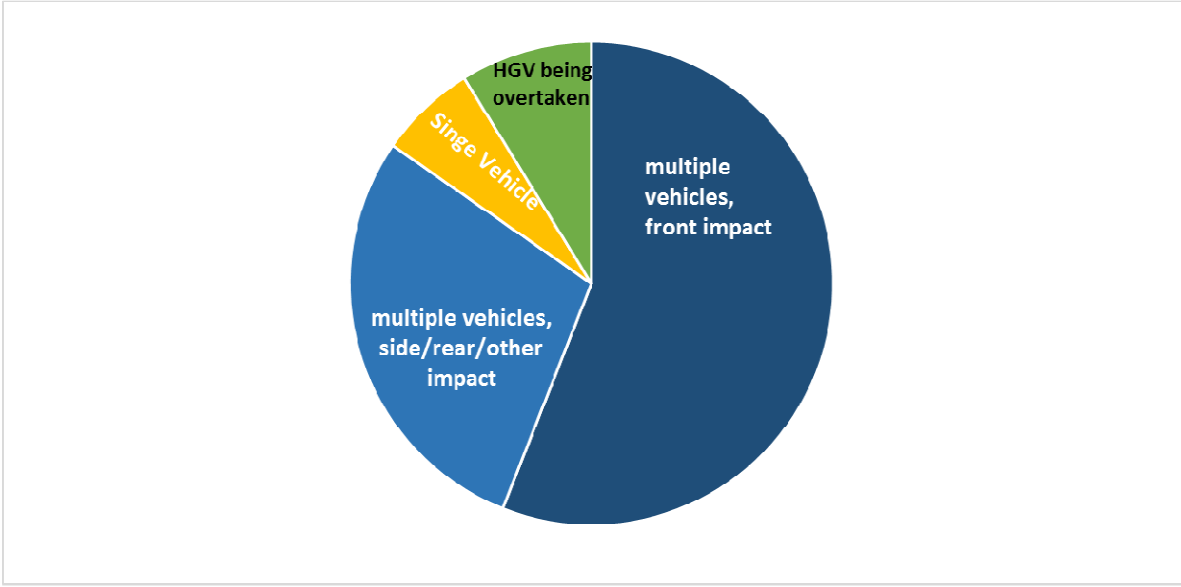

Figure 3: Fatal accidents involving HGV>7.5t on 60 mph single carriageway, 2003-2012 by point of first impact on HGV. Source: STATS19 and HVCIS

81. We believe it is important to produce an illustrative estimate of the number of additional accidents that might be caused by an increase in HGV speed. To produce this illustrative estimate, we have used a relatively simplistic approach based on models about the effect of speed on accidents. We have assumed that speed variance has no effect (either positive or negative) on accidents. Almost all of the literature around speed and road accidents is based on a change in the speed of *all* traffic, rather than a subset of vehicles so we have adapted this, in consultation with academics, to illustrate how it could apply to HGV speeds. The method outlined below is an extension to the findings of the TRL report that we commissioned. This method suggests that an additional 1.7 to 3.5 fatal accidents and 4.2 to 8.5 serious accidents might occur each year as a result of the speed limit increase. To add robustness to these estimates, we have performed similar calculations using two alternative methodologies in the section entitled 'Road Safety Methodology: Alternative Approaches' below.

[24] For example Elvik, Christensen and Amundsen (2004; pg 48) performed a meta-analysis of 460 estimates of the effect of speed on accidents and found that in 74% of cases, a change in speed resulted in a corresponding change in accidents (either an increase in speed leading to an increase in accidents or a decrease in speed leading to a decrease in accidents).

[25] Taylor, Baruya and Kennedy (2002) examined traffic and accident characteristics of 174 sections of British single-carriageway 60 mph roads. They conclude (pg. 1) that "no other measure of speed was found to influence accident frequency as strongly as, or in addition to, mean speed".

Using these alternative methods, we can suggest a wider range of potential outcomes – an additional 0.5 to 4.5 fatal accidents might occur each year according to these methodologies.

82. Accidents involving HGVs have significantly declined since 1998. This decline in accidents has been almost constant over the last twenty years or so (see Figure 3 below), despite continued growth in freight movements[26] and the size of the HGV fleet[27]. We therefore attribute this decline to modernisation of the HGV fleet and vehicle safety improvements. The accident rate flattened during the 2008-2012 recession, and we believe that this occurred because economic factors led to the fleet becoming smaller and, on average, older for the first time in almost twenty years.

83. Although it is very difficult to make accurate forecasts of the accident rate, we believe it is most likely that the falls in the accident rate which were observed prior to the recession will resume as the HGV fleet continues to grow and modernise with economic recovery. Since we cannot forecast the extent of the effect of new technologies, the forecasts presented in this document are based on the assumption of no change in accident numbers from the 2008-2012 level going forwards.

84. To generate our casualty estimates, we have used average speed outputs from the Department's NTM v2 in both the 'do nothing' scenario and the policy option. As explained in the 'monetised benefits' section above, we used observed free-flow speeds and a range of assumptions in order to calibrate free-flow speeds in the NTM. Since the proposed speed limit change will affect the entire single carriageway network in England and Wales, average speeds modelled by the NTM are the most accurate depiction of the overall change in speeds. Using free-flow estimates alone would over-estimate the impact of the policy, since these do not take into account areas of the network where congestion or other factors result in slower speeds. Therefore, while our free-flow assumptions involve an increase in HGV speed of around 2-3 mph, the overall increase on the network is found to be less than 1 mph (in fact, it is between 0.3 to 0.6 mph). We make use of various NTM average speed outputs from the lower-bound, upper-bound and central scenarios as inputs into the methodology described below.

85. The TRL report we commissioned performed a detailed analysis of accidents on single carriageway roads involving HGVs > 7.5t. They were able to calculate the number of fatal accidents that had occurred when an HGV >7.5t had been travelling in the speed interval 36-44 mph on a single carriageway 60 mph road. TRL suggest that HGVs travelling outside of this speed interval would be unlikely to be affected by a change in the speed limit; those travelling below 36 mph were travelling more than 10% below the current speed limit and likely to be limited by a factor such as a hill, bend or congestion; those travelling above 44 mph were in excess of the existing speed limit by more than 10% so apparently not influenced by the existing speed limit.

86. Based on data from the period 1998-2008, TRL calculate that 36 fatal and 95 serious accidents per year occurred when an HGV > 7.5t was travelling at a speed in the interval 36-44 mph on a single carriageway road with a 60 mph limit. We have repeated the methodology described in TRL (2009) using data for the period 2008-2012. Over this period, we estimate that 18 fatal and 44 serious accidents per year occurred when an HGV > 7.5t was travelling at a speed in the interval 36-44 mph on a single carriageway road with a 60 mph limit. These lower numbers are to be expected because, as described above, there has been a significant reduction in road accidents of all types over recent decades.

87. We adopt TRL's assumption that only those HGVs travelling 36-44 mph would change their speed as a result of the speed limit change. Examination of the most recent speed data (see the Appendix to this document) shows that at free-flow areas of the network, approximately 19% of HGVs weighing > 7.5t travel at speeds in the interval 36-44 mph at present[28]. The implied speed increase for these vehicles is between 1.6-3.3 mph (found by dividing the 0.3-0.6 mph increase forecast by the NTM by 19%).

[26] See traffic statistics Table TRA0101 for historic goods vehicle traffic: www.gov.uk/government/organisations/department-for-transport/series/road-traffic-statistics.

[27] See vehicle licensing statistics Table VEH0511 for number of years since first registration of licensed heavy good vehicles: http://www.dft.gov.uk/statistics/series/vehicle-licensing/

[28] This estimate has been obtained by taking 4/10 of the percentage of vehicles in the interval 30-39 mph, and summing it with 4/10 of the percentage of vehicles in the 40-49 mph interval. A weighted average across the different HGV types, based on observed numbers, is then taken. For the 2-axle rigid HGV category, 34% of those travelling 36-44 mph is taken – since the rest are assumed to weigh <7.5t and so will not change their speed in response to the speed limit increase.

88. We use another TRL research report, Taylor, Baruya and Kennedy (2002) to estimate the number of additional accidents that could be attributed to this speed increase. Taylor et al. find (pg 16) that on English rural roads, the percentage increase in accident frequency per 1 mph increase in mean speed (V) is [2.431/V * 100]. This means that with an average HGV speed of 42 mph in the baseline, we can expect a 5.8% increase in accident frequency with every 1 mph increase in speed.

89. From this, we forecast that there would be around a 14% increase in the 18 fatal and 44 serious accidents that involved HGVs travelling in the interval 36-44 mph. As shown in the table below, this suggests that there would be an additional 1.7 to 3.5 fatal and 4.2 to 8.5 serious accidents involving HGVs >7.5t each year as a result of the speed limit increase.

Table 5: Estimated annual increase in serious accidents

	low	central	high
Total HGV speed change (mph)	0.31	0.48	0.64
% of HGVs that weigh >7.5t and travel 36-44mph in free-flow	19%	19%	19%
Speed change for vehicles affected (mph)	1.61	2.47	3.29
Increase in accidents (%)	9.4%	14.4%	19.3%
Fatal accidents baseline	18	18	18
Serious accidents baseline	44	44	44
Estimated annual increase in fatal accidents	**1.70**	**2.62**	**3.49**
Estimated annual increase in serious accidents	**4.15**	**6.37**	**8.50**

90. The graph below (Figure 3) shows the forecast number of fatal accidents, both in the baseline and with the speed limit change. As discussed above, this forecast is a flat-line based on accident levels for the period 2008-2012. We expect that accidents will continue to fall in the same way as pre-recession, but do not have sufficient evidence to forecast this fall. If accident numbers do continue falling in the future, the road safety costs presented here will be an **over-estimate** of the true impact (since they are based on a proportionate increase in the baseline number of accidents).

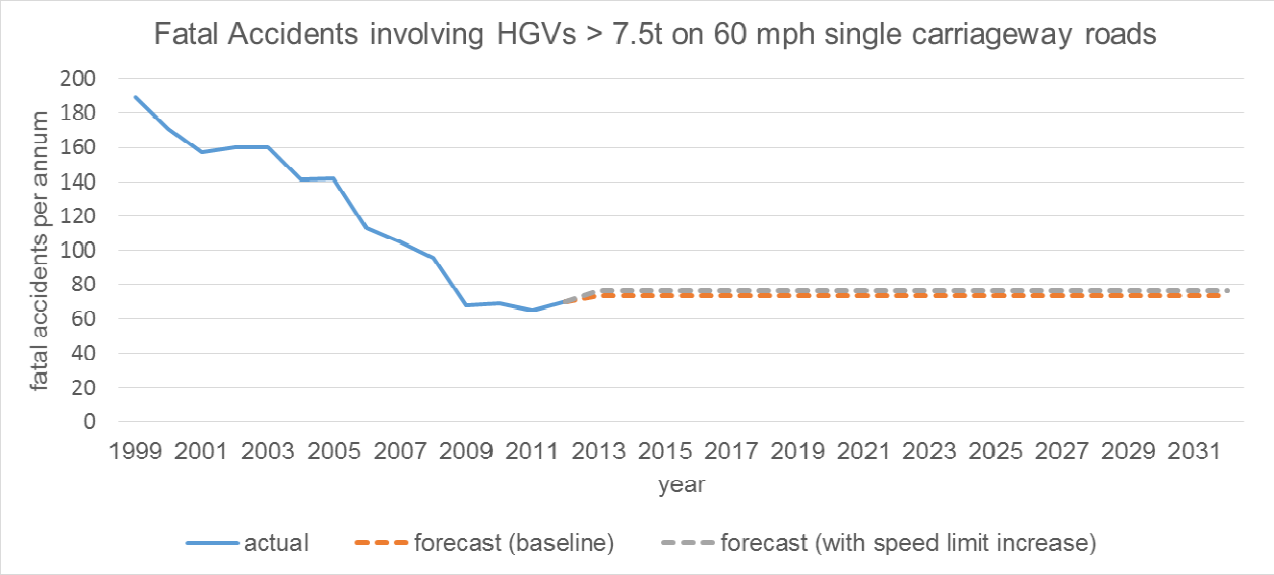

Figure 4: Fatal Accidents involving HGVs > 7.5t on 60mph single carriageway roads

91. As is standard in transport appraisal, we have monetised the value of the additional accidents that could occur as a result of the policy change. This is based on standard WebTAG values of a fatal and serious accident, uprated with GDP through time[29]. In 2014, the additional fatal and serious

[29] In 2010 values and prices, the total cost to society of a fatal and serious accident was £1.88m and £0.22m respectively. Uprated to 2014 values and prices, this gives the following costs: £2.18m for a fatal accident, £0.25m for a serious accident. The values includes costs such as the value of lost output from death or incapacitation of individuals involved, medical and ambulance costs, police costs and human costs (which attempt to represent the pain grief and suffering caused by the accident). See WebTAG unit 3.4.1 for further information.

accidents occurring as a result of this policy are monetised as having a social cost of between £4.8m and £9.7m. Over the entire appraisal period, the present value of the road safety cost is £75m to £153m. We believe that this is a cautious estimate – i.e. more likely to be too high than too low – since (i) it does not consider any further falls in casualties beyond the 2008-2012 level; and (ii) it does not take into account any potential benefits that might occur from a reduction in speed variance. Nonetheless, this road safety cost is still substantially lower than the total benefits to society of the intervention.

92. We asked for any sources of information on the effects of HGV speed on accident rates and casualties that would enable a better assessment of road safety in the consultation. While almost all respondents answered this question in the consultation, the Department did not receive much more conclusive data than we already held. Respondees provided the following comments which we carefully considered, in particular those relating the opposing impacts of speed and speed variance:

93. One enforcement group said: "…Data shows that more HGVs are having injury collisions on roads subject to a 60 mph restrictions than in 50 mph restriction areas, again supporting [the assertion] that higher speeds also infer a greater number of KSI collisions." A safer roads group said: "A 5 year snap shot of the available evidence from 2007-11 for HGVs shows: 41 collisions recorded on 50 mph or 60 mph, single carriageway roads (… 6% of all fatal collisions, 4% of all serious collisions); Most common collision types are other vehicles drifting into the path of HGVs (8 collisions, 21%) and HGVs failing to stop in time for stationary traffic (6 collisions, 15%); 4 collisions occurred when HGVs have overtaken cyclists…; 2 collisions occurred when other vehicles have been overtaking HGVs. The argument that speeding up slow moving HGVs will reduce injuries involving other faster vehicles overtaking them would have only helped to prevent 2 injury collisions in the last 5 years."

94. However 52 responses believed an increase in the maximum speed for these vehicles on single carriageways would improve road safety. One individual said: "If cars are able to maintain 60 mph safely on a single carriageway road and HGVs are interspersed at 40 mph then as overtaking opportunities present themselves cars will overtake until a platoon of HGVs occurs. That is 2-3+ HGVs sequentially spaced on the highway. Motorists are tempted to either ambitiously overtake several HGVs at once or "bunny hop" between them which causes the HGV to un-necessarily brake to maintain braking space separation. By having a delta speed of 20 mph more car drivers are tempted to these options. A 10 mph delta will increase the number of car drivers unwilling to select these options and thus reduce the incidence of accident. In terms of severity of accident speed is a function of severity. Relative speed is however a function of frequency in that as the relative speed is reduced (HGV at 50 mph and cars at 60 mph) the frequency of overtaking and therefore the hazard itself reduces."

    Another said: " Research … by Charles C Lave into the relationship between fatality rates, average speed and speed variance on a variety of road types found that there is no statistically discernible relationship between the fatality rate and average speed, but there is a strong relationship with speed variance … vehicles travelling slightly faster than the mean speed have the least accident involvement… For vehicles travelling 20 mph below the mean speed, the risk is seven or eight times greater than that of a driver travelling at the safest speed… Raising the HGV speed limit to 50 mph would significantly reduce the speed variance between light and heavy vehicles, especially on faster roads, and would thus improve road safety by reducing the opportunities for collisions to occur."

Non-monetised benefits

Time Savings and other business benefits

95. As mentioned above, there will be some benefits from the reduction in ‘platooning’, where long queues of vehicles unable to overtake build up behind slower HGVs. These time savings for other drivers cannot be quantified by the NTM as it does not have the facility to model the impact of driver speed choice on other vehicles (instead it models speed as a function of the level of congestion; in the absence of congestion vehicles are assumed to travel at free-flow speeds). If anecdotal evidence from industry is true, these time savings could be quite significant. We therefore believe that the current time savings forecasts underestimate the overall benefits of the policy. However, with no accurate data about the true scale of the problem nationally and no assessment of how this situation

or behaviour may change given a change to the HGV speed limit, this impact has not been quantified or monetised.

96. We asked in the consultation whether respondents had any opinion or evidence on what effect an increase in the maximum speed limit for HGVs >7.5t on these roads would have on non-HGV vehicle speeds such as car speeds. Not all respondents answered the question posed, or their answers were unclear. However of those that did, responses were divided into three categories: an increase would have the effect of increased car / other vehicle speeds (152 responses); there would be no or an insignificant change in car / other vehicle speeds (55 responses); car / other vehicle speeds would decrease (6 responses). This supports our view that the benefit could be substantial.

Road Safety Benefit

97. As discussed above, a potential road safety benefit of the policy is a reduction in fatal overtaking accidents due to a reduction in speed variance. In their research report, TRL (2009) identified 42 fatal accidents that had occurred when a vehicle was attempting to overtake an HGV >7.5t on a single carriageway road with a 60 mph limit[30]. They suggest that in a best case scenario, all of these accidents might have been avoided had the HGV been travelling faster. This is equivalent to 5 fatal accidents per year which could be prevented. However, note that this figure is based on data for the period 1999-2006, when total casualties were much higher. Due to the downwards trend in casualties (discussed above) it is likely that the potential benefit for more recent years is significantly less than 5.

98. We asked in the consultation whether anyone had an opinion or evidence on the effect of 'platooning' on road safety. No-one was able to provide the Department with robust evidence; some respondents, like the Department, found that there was no conclusive evidence one way or the other.

99. Of those who said car speeds would increase, there were mixed views as to whether this would be detrimental or beneficial to road safety. Some respondents thought HGVs can be intimidating to car drivers and that one reason car speeds would increase is due to HGVs tailgating them. Respondents who thought that the result would be either no or insignificant change, or decreased in car speeds, thought that car drivers would be happier to travel at 50 mph and would maintain a steady speed rather than speeding up to overtake HGVs. Many respondents thought that one important consequence of an increased speed limit for HGVs >7.5t would be improved traffic flow.

100. Overall, there is very limited evidence to suggest that an increase in HGV speed would result in a reduction in risky overtaking manoeuvres and thus a saving of up to five fatal accidents per year. Our modelling concentrates on the effect of average speed on casualties, and considers no effect from the likely reduction in speed variance. As a result, it may under-estimate any road safety benefits arising from a reduction in speed variance.

Non-monetised costs

101. Although we expect significant (non-monetised) net benefits to society from allowing cars stuck behind HGVs > 7.5t to speed up, this also brings with it some corresponding (non-monetised) costs – carbon emissions, fuel, noise and air quality could all be affected by increased car speeds following a reduction in 'platooning'.

102. These costs cannot be monetised because the NTM does not model the effect of platooning so we cannot predict the speed change of vehicles whose speed is currently constrained because they are following HGVs. The extent of this will depend on the frequency and number of vehicles in platoons before and after the HGV speed limit change.

103. We asked in the consultation if as a result of either of the policy options being implemented there were to be reductions in 'platooning' did respondents think there would be a significant impact on

[30] Based on data from the Heavy Vehicle Crash Injury Study, for the period 1999-2006. See page 48 of Summersgill, Buckle, Robinson and Smith (2009)

noise or air quality, but did not receive responses enabling us to monetise the effects. Over half of respondents felt there would be no or minimal impacts.

104. We also asked consultees whether they believed the change will cause added wear and tear on these roads. Most respondents to the consultation answered this question. A high proportion (about 80%) thought that increased speed would have the effect of added wear and tear on these roads. Some respondents were also concerned about the cost to councils to repair roads as they believe local councils are struggling to maintain the roads with current budgets. About 20% of respondents thought that there would be no added wear and tear of roads caused by increased limits and many justified this response with the fact that many HGVs >7.5t already break the current 40 mph.

105. The precise effect on road maintenance requirements of HGVs travelling at a higher speed on single carriageway roads is not known. It is likely to change the requirements for maintenance and this could impose some additional costs on the Highways Agency, local authorities and devolved administrations. However, there is no evidence with which we could monetise these impacts. We do not consider that there will be a very large impact, as the average HGV speed change across the entire network is forecast to be less than 1 mph.

106. As already mentioned, local traffic authorities continue to have the power to set local speed limits on their roads in situations where local needs and conditions suggest that the speed limit should be lower than the respective national speed limit.[31] We therefore asked local authorities in the consultation whether they would take advantage of this power.

107. Of local authority respondents, ten thought it was not more likely that local authorities would introduce more local speed restrictions; 14 thought it was (more of these were Parish Council representatives). One council said: "[Our] road network is of such a size with only two sections of principal dual carriageway … and two short sections of principal single carriageway … our network would not encourage HGVs to use other single carriageway roads and therefore further speed restrictions would not be required." One police force said: "…Speed limits are not generally set to target specific vehicle types but with all road users in mind. Although any increase in HGV speed limit may increase demand for reduced speed limits on routes used by HGVs in more rural locations, such limits are likely to require enforcement to achieve acceptable levels of compliance. The introduction of reduced speed limits for example in villages, to reduce traffic speed of HGVs could as a consequence see increased non-compliance by other vehicle types, i.e. cars, creating an unnecessary and avoidable enforcement burden."

Road Safety Methodology: Alternative Approaches

108. The accident methodology described above was used to produce an illustrative estimate of the likely road safety impact of the policy. Since this used a novel methodology that is not well supported by the literature, two further methods are explored below. Taken together, the three difference methodologies produce a wider and more robust range of estimates.

Alternative approach 1 – increase in speed of all HGVs

109. Instead of assuming that only those HGVs travelling 36-44 mph are affected, we assume an increase in average speed for *all* HGVs > 7.5t. This implies an increase in average speed for these vehicles of 0.5-1 mph (found by dividing the 0.3-0.6 mph increase forecast by the NTM by the percentage of the HGV fleet that weighs >7.5t).

110. Again we use Taylor et al.'s estimate of a 5.8% increase in accidents for every 1 mph increase in speed. We apply this increase to the total number of accidents involving HGVs > 7.5t that occurred on single-carriageway 60 mph roads during the period 2008-2012. The results (see table below) suggest an additional 2.2 to 4.5 fatal accidents would occur each year. This method produces higher estimates than the main road safety methodology. This is because the speed increase is shared between three times as many vehicles (so the percentage increase in accidents is one-third lower)

[31] DfT Circular 01/2013 Setting Local Speed Limits: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/63975/circular-01-2013.pdf

but the number of fatal accidents in the baseline is four times higher. In other words, by broadening our consideration to a larger selection of HGVs, the number of accidents that might be affected is disproportionately higher. This suggests that the subset of HGVs that travel 36-44 mph are less involved in fatal accidents than other types of HGV.

	low	central	high
Total HGV speed change (mph)	0.31	0.48	0.64
% of HGVs that weigh >7.5t	62%	62%	62%
Speed change for vehicles affected (mph)	0.51	0.78	1.03
Increase in accidents (%)	3.0%	4.5%	6.0%
casualties baseline	74	74	74
estimated annual increase in fatal accidents	**2.17**	**3.34**	**4.45**

Alternative approach 2 – increase in speed of all traffic

111. Instead of using Taylor et al.'s estimate of the relationship between speed and accidents, we use an alternative relationship as proposed in Elvik (2009) and Elvik, Christensen and Amundsen (2004). These papers use a meta-analysis to combine the results of over 100 studies from around the world. The studies compare the effects of a range of different types of speed intervention. None, however, examine the effect of differential speed limits. In all cases, the relationship is drawn between the average speed of all traffic and a change in the total number of accidents.

112. For this method therefore, we consider the expected change in average speed of *all* traffic forecast by the NTM. Since HGVs are just a small subset of traffic on single carriageway rural roads, the forecast change in average speeds is very low – around 0.02 mph. This speed change is inserted into the following Power Model formula:

$$\frac{fatal\ accidents\ after}{fatal\ accidents\ before} = \left(\frac{speed\ after}{speed\ before}\right)^{exponent}$$

113. In this formula, 'fatal accidents after' is the variable of interest, and 'fatal accidents before' is the average annual number of fatal accidents which occurred on single carriageway 60 mph roads over the period 2008-2012 inclusive. We use the upper and lower-bound exponents proposed in Elvik (2009) for rural roads and freeways.

114. Using this method we calculate that (see table below) an additional 0.5 to 1.4 fatal accidents might occur each year as a result of the faster speed of HGVs on single carriageway roads. This method produces by far the lowest results. In comparison with the method above, a much smaller speed increase is applied to a casualties baseline that is only eight times higher. It is likely that this method under-predicts casualties because it does not take into account the fact that HGVs are more likely to be involved in fatal accidents than other types of vehicles.

	low	central	high
average speed (mph, all vehicles) before change	40.85	40.80	40.74
average speed (mph, all vehicles) after change	40.86	40.82	40.76
speed after/speed before	1.000281359	1.000432851	1.000578619
Power Model exponent	2.9	5.3	4.1
casualties baseline	578	578	578
estimated annual increase in fatal accidents	**0.47**	**1.33**	**1.37**

115. Despite using different casualty baselines and different (but related) speed assumptions, the three methods we have explored produce fairly similar results, with the estimated annual impact in the range of an additional 1 to 4 fatal accidents per year. We believe this range provides a reasonable approximation of the likely impact of the policy.

Distributional Impact

116. Table 3 shows how the costs and benefits of the policy fall to different groups of society. The policy will disproportionately benefit those HGV drivers who currently choose to travel within the speed limit. These drivers and businesses have the largest potential gain in terms of journey-time savings and associated benefits. This is part of the intention of the policy – to bring benefits to those law-abiding firms by creating a more level playing field.

Post Implementation Review

117. There will be a post implementation review of the regulations after between 3 and 5 years from when they come into force. This will allow for examination of any incidents/causation associated with the change of maximum speed.

118. We have assessed the data which the Department holds, and consider that current methods of collection would enable us to analyse and make further decisions. We will note traffic volumes and accidents involving HGVs before and the change has been implemented. This data will help to inform us about what effect, if any, the maximum speed limit increase on single carriageways has had on road safety.

119. We will also be looking to check with the relevant stakeholders that the anticipated benefits of the change for their operations have been realised.

120. Resource to monitor the impacts and analyse the data will be met by existing resource at the DfT. We envisage this requiring 3 days' work once a year, by a person at Executive Officer level.

Key Risks

121. As has been explained in detail in this document, there is very little evidence that can be used to estimate the road safety impact of the policy. The methodologies we have developed are novel and based on the best available information. However they should be treated with caution, since they are not well established. They are based on adaptations of models which are not intended to be used with a subset of vehicles or with modelled (rather than observed) speed changes. Nonetheless, we consider the illustrative road safety estimates presented in this document to be the best estimates available. They provide a reasonable cautious estimate of the likely impact of the policy. An early sunset clause will be included in the legislative change and a post-implementation monitoring exercise will be undertaken.

122. Both the monetised costs and benefits of the policy are based on assumptions about changes in free-flow speed for HGVs. If in reality HGVs did not choose to change their speed as a result of the policy – for example due to a lack of awareness, or because the speed they currently choose to travel at is preferred – then this would mean that the benefits (journey time savings etc.) and costs (road safety impact and other costs) of the policy would be proportionately lower or non-existent. We have tried to capture this uncertainty about the behavioural response of drivers by using a large range of speed assumptions.

123. We considered that some freight may switch from rail to HGV. We welcomed views on this during the consultation. The split among respondents who thought freight would switch and those who thought it would not was quite even, (166 and 177 respectively). However many who thought it would not were from the logistics industry and the main reasons they cited were that other modes are unsuitable or because many HGVs > 7.5t do not comply with the 40 mph law currently.

124. The NTM does forecast a small increase in HGV journeys on the network, partly due to mode-shift and partly due to an increase in the total number of freight movements[32]. To the extent that these additional journeys are caused by mode-shift, the associated costs and benefits will be over-stated. This is because our modelling does not permit us to estimate the costs and benefits of journeys made using other modes in the baseline. However, this impact is likely to be very small because the change in the number of journeys on the network is minimal.

Specific Impact Tests

125. Small and Micro Business AssessmentThis proposal will affect small firms, but as it is deregulatory in nature it has not been considered necessary to exempt small firms.

126. Assessment of BIS statistics[33] has shown that the proposal should benefit small firms and their employees, not just large firms. For example, looking at sectors that might use HGVs to carry out their business, 33% of employees in the 'Waste Collection' sector are employed by small firms (those with fewer than 50 employees). Similarly, in 'Land Transport' 51% of employees are employed by small firms. In the sector 'Warehousing and Support Activities for Transportation', 20% of employees are employed by small firms.

Competition Impact Test

127. The Office of Fair Trading (OFT) indicate that four questions should be considered to examine whether there would be significant impacts on competition. Would the proposal:

- Directly limit the number or range of suppliers?
- Indirectly limit the number or range of suppliers?
- Limit the ability of suppliers to compete?
- Reduce suppliers' incentives to compete vigorously?

128. We have considered all four questions in turn. The proposal would in no way, directly or indirectly, limit the number or range of suppliers for road transport of goods on HGVs. Neither would it limit the ability of suppliers to compete – in fact we consider that it would create a more level playing field between those who currently obey the law and the majority who travel faster than legally permitted. We also consider that there would be no reduction in suppliers' incentives to compete vigorously since a reduction in transport costs effectively brings firms closer together, allowing them to compete more vigorously (this has been monetised as a competition benefit).

129. As the answer to each of the four questions is 'no', there is no need to complete a full competition assessment.

Greenhouse Gas Assessment and Wider Environmental Impacts

130. The GHG and wider environmental impacts of the proposals have been carefully considered throughout this Impact Assessment. These have been fully valued in the sections above.

131. GHG emissions from increased fuel use of the policies have been modelled using the National Transport Model. The average annual values of the emissions have been valued in the text above. In addition, Table 5 shows the average annual additional carbon emissions in tonnes, and the monetised value of these emissions, over the appraisal period. Table 6 shows the average annual reduction in NOx emissions due to better NOx efficiency of HGVs at higher speeds. Again the emissions figures are in tonnes and presented alongside their monetised value. There is also a very small cost in additional PM10 emissions, which sums to less than £100k over the entire appraisal period.

Table 5: Average annual additional CO2 emissions

LOW	BEST	HIGH

[32] These are expected to occur because the speed limit increase will effectively reduce the cost of freight transport by road.

[33] BIS Business Population Estimates 2013 (https://www.gov.uk/government/publications/business-population-estimates-2013), Waste Collection is Division 38, Land Transport is Division 49, Warehousing and support activities for transportation is Division 52.

CO2 (tonnes)	5,783	10,169	15,595
Value (£m, 2014 prices)	£0.4m	£0.7m	£1.1m

Table 6: Average annual reduction in NOx emissions

	LOW	BEST	HIGH
NOX (tonnes)	24	39	55
Value (£m, 2014 prices)	£0.03m	£0.05m	£0.07m

Equalities Impact Test

132. Any negative impacts on equalities have been considered. These include negative impacts on race, sexual orientation, religious belief, transgender/transsexual persons, disability, gender, age, etc. We have concluded that this measure would not have a disproportionate impact on any particular group.

Direct costs and benefits to business calculations (following OITO methodology)

133. The proposal in this IA should be considered as an OUT, as the direct incremental economic benefit to business exceeds the direct incremental cost to business.

134. The annual direct impacts on businesses are shown in Table 7. Overall, the benefits to business from time-savings and reduced non-fuel vehicle operating costs far exceed the small costs to business from increased fuel consumption. A change to the speed limit is a de-regulatory measure; it will not be mandatory for users to increase their HGV speed. They may wish to drive at a lower speed than the prescribed maximum. Road users will be able to make decisions at an individual level on whether the time savings from travelling faster outweigh any additional fuel costs from doing so.

135. The EANCB on 2009 prices is -£11.83m, and the business net present value is £206.23m.

Table 7: Average annual direct costs and benefits to business (2014 prices and values)

	LOW	BEST	HIGH
Business Time Savings	£7.5m	£13.9m	£16.6m
Non-fuel VOCs	£1.5m	£2.5m	£3.6m
Fuel VOCs	-£0.3m	-£1.0m	-£1.7m
Net Impact on Business	£8.7m	£15.4m	£18.5m

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Appendix

Department for Transport statistics

https://www.gov.uk/government/organisations/department-for-transport/series/speeds-statistics

Table SPE0101

Free-flow vehicle speeds on non-built-up roads by road type and vehicle type in Great Britain, 2012

Per cent / miles per hour / number of vehicles

						Heavy goods vehicles [5]						
						Rigid by number of axles				Articulated by number of axles		
	Motorcycles [7]	Cars	Cars towing	Light Goods [4]	Buses / Coaches	2 [6]	3	4 or more	All Rigid	3 & 4	5 or more	All Articulated
(a) Motorways [1]												
Under 50 mph	*4*	*4*	*13*	*3*	*5*	*6*	*11*	*13*	*7*	*12*	*11*	*11*
50-59 mph	*26*	*14*	*56*	*15*	*41*	*49*	*79*	*86*	*53*	*84*	*89*	*88*
60-64 mph	*9*	*14*	*19*	*14*	*25*	*12*	*9*	*0*	*11*	*2*	*0*	*1*
65-69 mph	*13*	*20*	*8*	*19*	*11*	*13*	*0*	*0*	*11*	*1*	*0*	*0*
70-74 mph	*16*	*21*	*3*	*20*	*10*	*10*	*0*	*0*	*9*	*0*	*0*	*0*
75-79 mph	*14*	*14*	*1*	*15*	*5*	*6*	*0*	*0*	*5*	*0*	*0*	*0*
80-89 mph	*14*	*11*	*0*	*12*	*2*	*4*	*0*	*0*	*3*	*0*	*0*	*0*
90 mph and over	*4*	*2*	*0*	*2*	*0*	*1*	*0*	*0*	*1*	*0*	*0*	*0*
Speed limit (mph)	70	70	60	70	70	n/a	60	60	n/a	60	60	60
Percentage exceeding limit	*48*	*48*	*31*	*49*	*18*	*n/a*	*10*	*1*	*n/a*	*3*	*0*	*1*
Percentage exceeding limit by more than 10 mph	*18*	*12*	*3*	*14*	*3*	*n/a*	*0*	*1*	*n/a*	*1*	*0*	*0*
Average speed (mph)	68	69	57	69	61	61	54	53	60	54	53	53
Number observed (thousands)	2,518	368,686	2,596	67,504	5,264	24,725	2,250	1,329	28,304	5,707	34,550	40,256
(b) Dual carriageways [2]												
Under 30 mph	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
30-39 mph	*1*	*0*	*1*	*0*	*0*	*0*	*1*	*1*	*0*	*1*	*0*	*0*
40-49 mph	*4*	*3*	*15*	*3*	*9*	*8*	*18*	*20*	*10*	*21*	*17*	*17*
50-59 mph	*17*	*17*	*54*	*17*	*41*	*50*	*69*	*78*	*53*	*73*	*82*	*81*
60-64 mph	*11*	*17*	*18*	*16*	*26*	*14*	*11*	*0*	*13*	*2*	*0*	*1*
65-69 mph	*16*	*22*	*8*	*21*	*12*	*13*	*0*	*0*	*11*	*1*	*0*	*0*
70-79 mph	*32*	*32*	*4*	*32*	*11*	*13*	*0*	*0*	*11*	*1*	*0*	*0*
80 mph and over	*19*	*8*	*0*	*10*	*1*	*3*	*0*	*0*	*2*	*0*	*0*	*0*
Speed limit (mph)	70	70	60	70	60	n/a	50	50	n/a	50	50	50
Percentage exceeding limit	*51*	*40*	*30*	*42*	*50*	*n/a*	*80*	*80*	*n/a*	*78*	*83*	*82*
Percentage exceeding limit by more than 10 mph	*19*	*8*	*4*	*10*	*12*	*n/a*	*11*	*1*	*n/a*	*5*	*1*	*1*
Average speed (mph)	70	68	56	68	60	60	54	53	59	53	53	53
Number observed (thousands)	277	36,088	280	5,707	323	2,013	202	158	2,373	366	2,261	2,628
(c) Single carriageways [3]												
Under 20 mph	*1*	*0*	*2*	*0*	*0*	*1*	*1*	*1*	*1*	*1*	*0*	*0*
20-29 mph	*3*	*3*	*7*	*3*	*3*	*3*	*6*	*7*	*4*	*7*	*2*	*3*
30-39 mph	*12*	*16*	*19*	*15*	*19*	*19*	*27*	*28*	*20*	*25*	*23*	*23*
40-49 mph	*35*	*44*	*51*	*43*	*50*	*47*	*50*	*46*	*47*	*48*	*54*	*53*
50-59 mph	*28*	*30*	*19*	*30*	*24*	*25*	*15*	*17*	*24*	*18*	*21*	*20*
60-64 mph	*8*	*5*	*1*	*6*	*2*	*3*	*0*	*0*	*3*	*1*	*0*	*0*
65-69 mph	*5*	*2*	*0*	*2*	*1*	*1*	*0*	*0*	*1*	*0*	*0*	*0*
70 mph and over	*8*	*1*	*0*	*1*	*1*	*1*	*0*	*0*	*1*	*0*	*0*	*0*
Speed limit (mph)	60	60	50	60	50	n/a	40	40	n/a	40	40	40
Percentage exceeding limit	*21*	*8*	*20*	*9*	*28*	*n/a*	*66*	*64*	*n/a*	*67*	*75*	*73*
Percentage exceeding limit by more than 10 mph	*8*	*1*	*1*	*1*	*3*	*n/a*	*15*	*18*	*n/a*	*19*	*21*	*20*
Average speed (mph)	51	48	42	48	46	46	42	43	46	43	45	44
Number observed (thousands)	408	33,681	331	5,130	357	1,712	180	148	2,040	231	1,015	1,246

1 Average vehicle speeds from 26 motorway sites.
2 Average vehicle speeds from 7 dual carriageway sites.
3 Average vehicle speeds from 24 single carriageway sites.
4 Goods vehicles 3.5 tonnes gross weight and under.
5 Goods vehicles over 3.5 tonnes gross weight.
6 Speed limit depends on loading which cannot be determined.
7 Motorcycles include mopeds and other types of two wheeled motor vehicles.

Source: DfT Automatic Traffic Counters
Last updated: July 2013
Next update: July 2014

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Notes & definitions (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68718/Free_Flow_Speeds_-_Notes_and_definitions.pdf)

The figures in this table are National Statistics.