



ITEANZ Position Paper

Motor Vehicle Window Tinting

The Institute of Transportation Engineers Australia and New Zealand Section (ITEANZ) is part of the international Institute of Transportation Engineers (ITE) which is a community of transport professionals including transport engineers, transport planners, consultants, educators and researchers. ITE has nearly 17,000 members in more than 90 countries.

One of the objectives of ITEANZ is to promote public awareness of issues that its membership considers are important to the community. Motor vehicle window tinting has been a subject of community discussion in recent years and ITEANZ has developed a position on this issue after a thorough process of peer review.

The purpose of this position paper is to urge the Minister for Roads to review the *Road Safety (Vehicles) Regulations* relating to window tinting levels, due to the fact that there is long-standing and increasing evidence that window tinting has a detrimental effect on road safety.

Summary

A substantial body of literature exists demonstrating the negative effects on visual performance of the decreased levels of visible light produced by window tints.

Most, if not all of the countries who are leaders in road safety require a minimum of 70% light transmittance through the driver's side windows. *Australian Design Rules(ADR) recommend the same.*

The TAC, Australian College of Road Safety, Pedestrian Council of Australia, RACV, NRMA, Bicycle Network Victoria, Bicycle Network Australia and the Amy Gillett Foundation support the 70 % ADR requirement. Many at Victoria Police support higher visibility levels to assist in the enforcement of offences relating to distracted drivers. The Police need to be able to see into a car for a number of different reasons.

For a safer road environment the highest level of visibility in all conditions is fundamental and eye contact between road users is a very important part of safe road use.

Drivers, motorcyclists, bicyclists and pedestrians are often in situations where they need to see through a vehicle's windows and often there is a need to look through more than one window.

There are a number of situations where the driver has to look through the front side windows to check for the presence of pedestrians and cyclists.

When the Victorian Government reduced the regulation to a minimum of 35% transmittance for driver's side windows, it did so with no scientific evidence that this would not adversely impact on road safety. The Board of ITEANZ notes that the presence or otherwise of tinted windows is not collected at vehicular crash sites rendering it impossible to assess its effect or to make credible assertions as to its effect on reducing the standard. This brings into question the relevance of VicRoads response for the Government and Victoria's road users.

Victoria has earned the reputation of a world leader in road safety by implementing many road safety initiatives in the past. Transportation and road safety professionals around the world hold the state in the highest regard. Thus it is disturbing to see the Government condone a regressive action with regard to recognised standards of visibility.

Recommendation

In light of the long-standing and increasing emerging evidence that window tinting has a detrimental effect on road safety, the Minister for Roads is urged to review the *Road Safety (Vehicles) Regulations* relating to window tinting levels.

Background

From 1970 to 1991, it was specified by the Australian Design Rules (ADR 8/00) that 85% of incident visible light be transmitted by windshields in the Primary Vision Area of the driver. As the windshield itself absorbed up to 15% of incident light, effectively, this requirement prohibited any tinting in recognition of the central role played by visual information for drivers to operate their vehicles safely. But increasing pressure from glass manufacturers, who began to export to other countries, resulted in the regulation for minimum visible light transmittance (VLT) of windshields being lowered from 85 to 75%, even though the scientific evidence indicated that this would result in a lower level of safety (Baldock et al., 2004).

Once windshields had been allowed to be tinted down to a VLT value of 75%, the Australasian Branch of the International Window Film Association (IWFAA), representing the interests of the window tinting industry, lobbied for the tinting of front side windows down to a VLT level of 35%.

In 1998 Victoria's Standards for Registration were amended to allow for a minimum of 35% light transmittance on all glazing in a vehicle other than the windscreen. Prior to that amendment, windows to both sides of the driver were required to have a minimum of 70% light transmittance (RACV 2013).

The Arguments For and Against Tinting

Road Safety

The IWFAA claimed that the visual tasks performed through the front side windows are different from those performed through the windshield in such a way that, unlike the windshield, tinting the front side windows down to a VLT level of 35% would not be detrimental to road safety (Baldock et al., 2004).

The tasks performed through the front side windows are nevertheless, important in the safe operation of a vehicle. Tinting of the front side windows makes it harder for a driver to see pedestrians and cyclists at night, particularly when the driver is turning, and when dealing with the glare of headlights.

Dark tinting of the front side windows also poses problems for other road users who need to see into the car to assess the intentions of the driver or to see that the driver has seen them. It also makes it particularly difficult for a driver waiting at an intersection to turn left to see through the front side windows of a car alongside them waiting to turn right or proceed straight ahead. This last problem, that of seeing through cars, would be of concern in shaded areas during daylight hours when the benefit of the headlights of oncoming vehicles is absent, as well as at night when an approaching cyclist would be very difficult to detect. This is because the VLT is reduced from 49% (70% x 70%) to 12% (35% x 35%) due to looking through two side windows (Baldock et al., 2004). If the subject driver also has a heavily tinted side window then the VLT could be as low as 5%.

The second way in which window tinting creates problems for into-vehicle visibility is by increasing reflectance. That is, a larger proportion of incident visible light is reflected directly back to an external observer. This greater reflectance causes problems because the reflected light masks the light transmitted from the interior of the vehicle. As the VLT value of windows decreases, there will be an increase in reflectance. This means that an external observer sees an increased amount of incident light reflected back to him or her that masks the already decreased amount of light transmitted from the vehicle interior. As the degree of masking is related to the ratio of reflected light to transmitted light, lowering levels of VLT will involve progressively more pronounced losses in the ability to see inside the vehicle (Proffitt et al., 1995).

One common reason why drivers need to see into another vehicle is to make eye contact with the other driver in order to establish acknowledgement of one another's presence and recognition of one another's intentions, particularly in give way situations (Clark, 1996). Clark (1996), in a self-count of deliberate fixations to see if other drivers were aware of the situation of the author's vehicle, found that eye contact could occur once a minute when driving through busy back streets and that in many of these cases, the eye contact necessitated looking through the driver's side window of the other car. When eye contact with pedestrians was necessary, the author noted that the pedestrians would often have to look through the driver side window of the car. Pedestrians, especially the elderly, would be disadvantaged by tinting because they need eye contact with drivers of cars at crossings to make sure that they have been seen. Pedestrians, unaware that they have not been seen, could unknowingly place themselves at risk by then walking across the road.

It is not only pedestrians who wish to make eye contact with drivers of cars. Motorcyclists and bicyclists also commonly need to be able to see into vehicles. Bicyclists should never assume that they have been seen by a driver and so they need to make eye contact so that they know that the driver is aware of their presence. One common scenario in which a bicyclist would want to be able to see inside a car is when the bicyclist is entering an intersection along a road into which a car is about to make a left turn from the intersecting road. Bicyclists in such a situation would want to be able to see the driver of the car to be sure that they have been seen. With dark window tinting, this would be more difficult (Gregory, 1995).

Eye contact with other drivers is also useful because it allows a form of social interaction on the road. Dark window tinting would not allow drivers to see one another's facial expressions and, without drivers being able to interact in this way, more antisocial driving behaviours would be likely to be exhibited (Allen, 1970).

The Statewide Community Road Safety Group (2013) in their new guide "Sharing Roads and Paths" states clearly that everyone should "make eye contact with road users".

Another problem with the dark tinting of front side windows will arise when the driver must glance quickly through a front side window with a VLT value of 35% after having been looking through a windshield with a VLT of 75%. The large difference in VLT values for the two windows will mean that the driver's eyes must adapt in a very short space of time (NHTSA 1991).

The increase in driver distraction caused by increasing use of GPS navigation systems and smart phones makes it even more important for road users to seek eye contact with drivers.

Excessive Glare

The tinting industry claims that window tinting reduces excessive glare for motorists. The RACV recommends that for a far lower cost, drivers and passengers could wear sunglasses as an equally effective means of reducing excessive glare during the day. Unlike tinting, sunglasses can be removed when it is cloudy or at night-time. Night driving presents a disproportionate risk, compared to daytime driving. Furthermore, there are commercially available clear films that claim to be just as effective as coloured film in reducing Ultra Violet light. Refer to next paragraph.

Reduction in Ultra-Violet light

Untinted window glass cuts out most harmful UV rays. The further reduction as a result of window tinting is minimal (RACV 2013).

Keeping a car cool

The tinting industry has argued that tinting has a positive effect on cooling vehicles, reducing the load on air conditioning systems and fuel consumption levels. Studies have shown temperature reductions of only around one degree in a moving vehicle as a result of having tinting and that the corresponding reduction on air conditioner load was almost insignificant (RACV 2013). The RACV believes that air conditioning will keep a car cool more effectively than tinting.

Privacy

Some motorists believe tinting will give the vehicle occupants greater privacy, since people cannot see inside the vehicle's tinted windows as clearly as with non-tinted windows. The Police oppose this because they are less able to see if the occupants are behaving appropriately eg wearing seatbelts, driver using phone or other device, etc. Potentially, Police safety can be compromised if they stop a vehicle and cannot see inside it as they approach (Proffitt et al., 1995).

Aesthetics

Some people believe tinting improves the appearance of their vehicle. This should not over-ride safety requirements.

Older Drivers

Window tinting reduces threshold contrast, as discussed above. Natural degradation of older drivers' vision is known also to have the same effect. Although difficult to quantify at present, the combination of these two effects is likely to present a greater risk of collision for older drivers.

Deterioration over Time

Window tinting is not applied in the factory at the time of manufacture but is usually a later add-on. There is anecdotal evidence that the quality of the tinting deteriorates over time and this is not always addressed by vehicle owners. This may result in further reduction in VLT.

Positions Adopted by Organisations

VicRoads states on its website “Having good visibility of the road and other vehicles is critical. Drivers should have good visibility through the front, side and rear windows and through mirrors. Window tinting can reduce driver vision especially at dusk or at night and in poor weather conditions. This is likely to be more critical for the elderly and other people with even minor vision disabilities.” (VicRoads 2013a).

In 1998 VicRoads advised the Minister that “the windows beside and forward of the driver are regularly used in normal driving to see other road users, particularly pedestrians, bicyclists and motorcyclists at intersections and roundabouts and enable eye contact to be made – a basic road safety principle. The front side windows are also used to view the external rear vision mirrors and for following motorcyclists to observe the driver via external mirrors. Reduction in visibility both into and out of the vehicle through these windows is likely to reduce safety particularly in poor light conditions” (VicRoads 1998).

The ITEANZ agrees with and supports the position expressed in the above two paragraphs.

By 2013 VicRoads had modified its position. In a letter signed by the Minister for Roads (VicRoads 2013b) it is stated “*research to date has been unable to establish the relationship between the level of light transmission in a vehicle’s side windows and overall crash frequency. Also, while there is research identifying that lower light transmission can reduce sight distance in low conditions, it has not generally looked at the possible benefits of tinting in reducing dangerous glare in strong light conditions*”. The last point about “dangerous glare” is a strange one given that drivers can wear sunglasses. Furthermore the use of the word “dangerous” is rather emotive and the whole point is unsubstantiated by any “relationship(with) overall crash frequency” to use their own words.

The 2013 letter further states that “*eye contact between the driver and other road users, while useful, is not always possible due to factors such as the vehicle height such as a 4 wheel drive or van, and the presence of sun visors or sunglasses. Accordingly, the road safety outcome of not always being able to make eye contact is hard to quantify. Overall, VicRoads is not aware of any crash statistics correlating the current level of allowed tinting with a significant increase in road safety risk. VicRoads will continue to monitor the situation and any related research that may indicate the need to review the current permitted visible light transmittance levels*”.

The use of the expression “correlating the current level of allowed tinting with a significant increase in road safety risk” is also unclear. What is the definition of “significant”? Would a small increase in risk be acceptable?

In a letter to a Mr B Fraser (VicRoads 2013c) the Minister for Roads wrote “*there is currently no clear evidence that Victoria’s current regulatory limits on window tinting have led to an overall increase in injury crashes*”. Again the use of “overall” implies that it is considered to be a minor issue. The letter goes on “*While I acknowledge that there is a range of research articles pointing to risk factors associated with reduced light transmittance, the absence of clear evidence of a general problem means the case for changing the existing in-service light transmittance levels is not strong*”. This suggests that without supporting evidence, the Government is prepared to risk a level of safety about which many specialist groups are concerned.

If data on the level of glass tinting in Victoria (or elsewhere) is not collected as part of crash records, there can be no evidence-based assessment. The underlying thrust of VicRoads’ recent compromise and advice to the Government and the road-user community on this issue is shallow when Victoria’s crash statistics do not include data on glass tinting, making it impossible to draw meaningful conclusions: lack of data is the standard that applies.

The **TAC** Vehicle Purchase Policy has a Mandatory Requirement under Active Safety (crash prevention): “Clear glazing – no added window tinting” (TAC 2013).

Based on email correspondence, many at **Victoria Police** would support a review of the regulations to assist in the enforcement of distracted driver offences.

The **RACV** does not encourage motorists to have their vehicle windows tinted (RACV 2013a) and agrees with the thrust of the ITEANZ Position (RACV 2013b).

The **NRMA** advised that “Our position is that no tint should be added beyond that provided by the vehicle manufacturer”. (NRMA 2013)

Australian Design Rules state “*the windows forward of the rear of the driver’s seat luminous transmittance must not be less than 70% when measured through glass and film together unless the laws of a State or Territory allow a lesser luminous transmittance (DIT 2011)*”.

The **Federal Assistant Minister for Infrastructure and Regional Development**, The Hon Jamie Briggs MP, (2014) advised as follows.

“The Commonwealth’s *Motor Vehicle Standards Act 1989* requires all new road vehicles to comply with national standards known as Australian Design Rules (ADRs) before they can be supplied to the market for use in transport. The ADRs set standards for safety, anti-theft and emissions.

The ADRs are being increasingly harmonised with international vehicle regulations adopted by the United Nations (UN), except where it is necessary to take account of unique Australian conditions.

Windows on new vehicles must meet the requirements of ADR 8/01 Safety Glazing Material. This ADR aligns with UN Regulation 43 and requires a light transmittance for windows beside and forward of the driver of at least 70 percent.”

The **Director General, Transport for NSW**, Mr Dave Stewart (2013) advised that “Transport for NSW’s Centre for Road Safety recommends research into vehicles with different tinting levels in variable lighting conditions. This will determine comparative visibility and associated risk.”

The **Pedestrian Council of Australia** (2012) supports the ADR recommendation of 70% and opposes any reduction.

The **Australian College of Road Safety** (2013) recommends “*clear glazing with no added window tinting (additional tinting produces significant reductions in vision, especially at night and in adverse weather conditions)*”.

The **Municipal Association of Victoria, State Council** (2013) adopted a resolution which “*urgently requests the Minister and the Shadow Minister for Transport and VicRoads, and the Chair of the Parliamentary Road Safety Committee to undertake a review of the Road Safety (Vehicles) Regulations to restrict the level of window tinting in front side windows with a view to increasing the minimum level of visible transmission from the existing 35% requirement*”.

Bicycle Network Victoria: In an email dated 5 April 2013 Garry Brennan, General Manager, Government and External Relations Bicycle Network, stated that “*there is an overwhelming case for reform*” of the current tinting regulations (Bicycle Network Victoria 2013a). In an email dated 11 Nov 13 Garry Brennan confirmed BNV support for the ITEANZ Position.

Bicycle Network Australia: In an email dated 12 Nov 2013 Christopher Jones, Founder, acknowledged support for the ITEANZ Position.

The **Amy Gillett Foundation** in an email dated 4 July 2014 endorsed the ITEANZ Position on Vehicle Window Tinting.

“Specifically, the Amy Gillett Foundation supports a review of the Road Safety (Vehicles) Regulations in relation to window tinting levels with a view to requiring a minimum of 70% light transmittance through the driver’s side windows, in accordance with Australian Design Rules and many international jurisdictions.

We support the ITEANZ assertions that ‘for a safer road environment the highest level of visibility in all conditions is fundamental and eye contact between road users is a very important part of safe road use. Drivers, motorcyclists, bicyclists and pedestrians are often in situations where they need to see through a vehicle’s windows and often there is a need to look through more than one window. There are a number of situations where the driver has to look through the front side windows to check for the presence of pedestrians and cyclists’.

We understand that you are preparing correspondence to the Victorian Minister for Transport to re-affirm your position including the endorsement of key road user and road safety bodies. We wish to be included in that correspondence as a supporter of your position.

We also would invite ITEANZ to reference the Amy Gillett Foundation's support in your Position paper."

And of course **the window tinting industry** claims that there are a number of benefits with tinting and that there is a lack of empirical evidence correlating window tinting and traffic crashes or police officer injuries or fatalities. If data is not collected, this comment is self-fulfilling.

In the **United Kingdom** the window regulation was amended in 2004 to state that 70% of visible light must pass the driver's side windows and 75% through the windscreen (Sungard 2013).

In **Europe** the minimum light transmittance is generally 70% for driver's side windows although some countries have a higher requirement (EWFA 2013).

In the **USA** there is a wide range of regulations with 8 states requiring the highest level of 70% for driver's side windows (IWFA 2013).

Postscript

Although the research for this position paper was principally carried out in Victoria and refers mainly to organisations in Victoria, the findings and conclusions are considered to apply throughout Australia and New Zealand

If you wish to comment or provide feedback email: iteanz@gmail.com
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References

- Allen, M.J. (1970). Vision and highway safety. New York: Chilton Book Co.
- Amy Gillett Foundation (2014) Email from Tracey Gaudry.
- Australian College of Road Safety (2013) <http://acrs.org.au/about-us/policies/safe-vehicles/fleet-safety/>
- Baldock, M.R.J., McLean, A.J., & Kloeden, C.N. (2004) Front side window tinting visual light transmittance requirements. Centre for Automotive Safety Research.
- Bicycle Network Australia (2013) Email from Christopher Jones to ITEANZ.
- Bicycle Network Victoria (2013a) Email from Garry Brennan BNV to B Fraser.
- Bicycle Network Victoria (2013b) Email from Garry Brennan BNV to ITEANZ.
- Clark, B.A.J. (1996). Mismatches between driver capabilities and road vehicle standards. DSTO Air Operations Division, Aeronautical and Maritime Research Laboratory, Melbourne.
- Dept of Infrastructure and Transport (DIT) Australia Government (2011) Vehicle Standards Bulletin 14
- EWFA (2013) Window Film Legislation in Europe, European Window Film Association www.ewfa.org
- Federal Assistant Minister for Infrastructure and Regional Development, (2014) Letter from The Hon Jamie Briggs MP to ITEANZ.
- Gregory, P. (1995). The darker side of window tinting. Cyclist, June-July, 20-21.
- IWFA (2013) State Window Tinting Rules & Laws International Window Film Association www.iwfa.com
- Municipal Association of Victoria (2013) State Council Resolutions October 2013, <http://www.mav.asn.au/about-us/state-council-representatives/Pages/default.aspx>
- National Highway Traffic Safety Administration (1991). Report to Congress on Tinting of Motor Vehicle Windows. Silver Spring MD: Accents Publications Service.
- NRMA (2013) Email from Alex Pittaway Corporate Affairs NRMA to ITEANZ.
- Pedestrian Council of Australia (2012) Policy Statement on Tinted/Blackened/Opaque Windows & Windscreens www.walk.com.au
- Proffitt, D.R., Joseph, J. E., Bhalla, M., Durgin, F.H., Bertamini, M., Lynn, C. & Jernigan, J.D. (1995). External viewing of vehicle contents under varying window tinting and illumination conditions. Virginia Transportation Research Council. (Final Report No. VTRC 95-R3).
- RACV (2013a) Window Tinting www.racv.com.au (My Car / Car safety / Safety equipment / Window tinting)
- RACV (2013b) Email from Brian Negus on Motor Vehicle Window Tinting.
- Statewide Community Road Safety Group (2013) Sharing Roads and Paths.
- Sunguard (2013) The Law on Vehicle Window Tinting www.sunguard-tinting.co.uk
- Tay, R. (2013) Effects of Darker Window Tint on Vehicle Crashes in Victoria, A proposal by the Chair in Road Safety Management Faculty of Business, Economics and Law La Trobe University

TAC (2013) Vehicle Purchase Policy <http://www.tac.vic.gov.au/road-safety/safe-driving/fleet-safety/fleet-policies/vehicle-purchase-policy>

Transport for NSW (2013) Letter from Dave Stewart Director General to ITEANZ.

VicRoads (1998) Advice to the Minister for Roads and Ports. Attached to letter by Minister for Roads and Ports dated 2 May 1998.

VicRoads (2013a) www.vicroads.vic.gov.au

VicRoads (2013b) Letter from Minister for Roads to the Member for Narre Warren North.

VicRoads (2013c) Letter from Minister for Roads to Mr B Fraser.