NATIONAL HIGHWAYS SUPPORT FOR FRESNEL LENS SUPPLY AND DISTRIBUTION

1 INTRODUCTION

1.1 This document outlines the requirements for the supply and distribution of Fresnel Lens'. This product is intended to reduce the number of Left-Hand Drive Heavy Goods Vehicles (HGV), Light Goods Vehicles (LGV) and all vans involved in side-swipe collisions on the Strategic Road Network (SRN) contributing to National Highways' targets to reduce Killed and Severely Injured (KSI) collisions and specifically a reduction in commercial vehicle KSIs.

1.2 The contents of this document as detailed below may not be varied by suppliers without prior written confirmation from the National Highways Commercial Vehicle Incident Prevention (CVIP) Team.

1.3 The Supplier will be responsible for the production, supply, packaging, distribution and shipping costs of the Fresnel Lens, which may include delivery to various different sites.

2 DEFINITIONS

A list of definitions referenced throughout this document can be found below.

2.1 **Customer**
National Highways

2.2 **Supplier**
Appointed Supplier responsible for supply and distribution of the Fresnel Lens.

2.3 **Operator**
National Highways

2.4 **National Highways Commercial Vehicle Incident Prevention Team**
The team responsible for the delivery and management of the National Highways support for Fresnel Lens supply and distribution.

2.5 **Unit**
The Fresnel Lens supplied for use for CVIP Team projects and safety events.

3 Background

3.1 Specific Fresnel Lens - Safety viewing device for Heavy Goods Vehicle (HGV) Drivers

3.1.1 There is an on-going safety requirement to provide truck drivers with a downwards Field of View (FOV), close to and around the cab's passenger door of Heavy Goods Vehicles (HGV), in order to eradicate or reduce the blind spot area adjacent to that door. This area is not already covered by mirrors that provide a wider angle of view, for example 'close proximity' mirrors. Enabling a driver's view into this area will greatly assist in countering multi-lane roads including change of lane, motorway merging, sideswipe incidents, and carrying out turning manoeuvres at junctions, intersections and roundabouts

3.2 Wide Angle Lens View as a Safety Solution

3.2.1 Fresnel lenses for use in vehicles as a driver viewing safety device, are typically manufactured in soft, flexible, clear Polyvinyl chloride (PVC) material, The lens has a smooth face that is able to press fit to a vehicle's window glass (usually the nearside passenger door) and has a faceted (grooved) lens face visible from the inside of the vehicle. The lens should be thin and flat and made from a shatterproof material.

3.2.2 The materials used should be ethically sourced, and the Supplier should attempt to use recycled or recyclable products where possible.

3.2.3 The concentric circle pattern within the lens grooves affords the driver a wide-angle view downwards and outwards, beyond the passenger door into a recognised blind-spot area.

3.3 Specific Fresnel Lens - A Light Goods Vehicle Sideswipe Avoidance, Viewing Safety Device

3.3.1 The application determines the requirement for a very specific Fresnel Lens type that will provide the driver of a high-sided LGV an enhancement to his/her normal Field of View (FOV) out of the nearside passenger door window glass. Typically, a driver's 'line of sight' view will enable him/her to see a downward view of only 12 to 15 degrees horizontally below, beyond the passenger door window ledge.

3.3.2 In order for the driver to see a smaller vehicle such as a car in an adjacent lane, alongside his truck cab, an enhanced angled downwards view of approximately an extra 30 degrees is required. (i.e., 40-45 degrees below the ledge). The enhanced view through the Fresnel Lens will enable the driver a clear view of a vehicle moving within close proximity to the truck cab, in the next lane.

3.3.3 Customised National Highways branded packaging to be designed in collaboration with National Highways communications teams. All Lenses are to include fitting instructions suitable for a non-English speaking end user (e.g., graphical instruction with minimal text). This may be the Inclusion of National Highways campaign messages and information within lens package.

4. Figures 1-4. Instructions for Fresnel Lens Application, and Potential National Highways Branding/Packaging

Figure 1.

Figure 2.

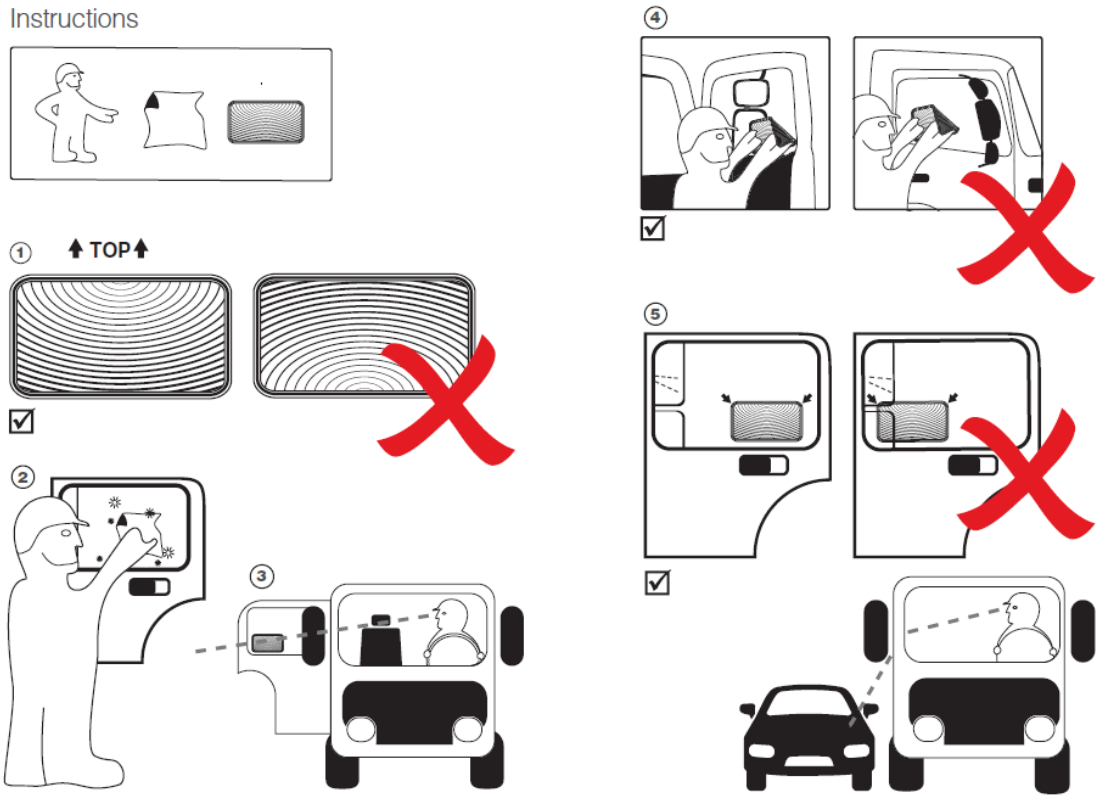

Figure 3.

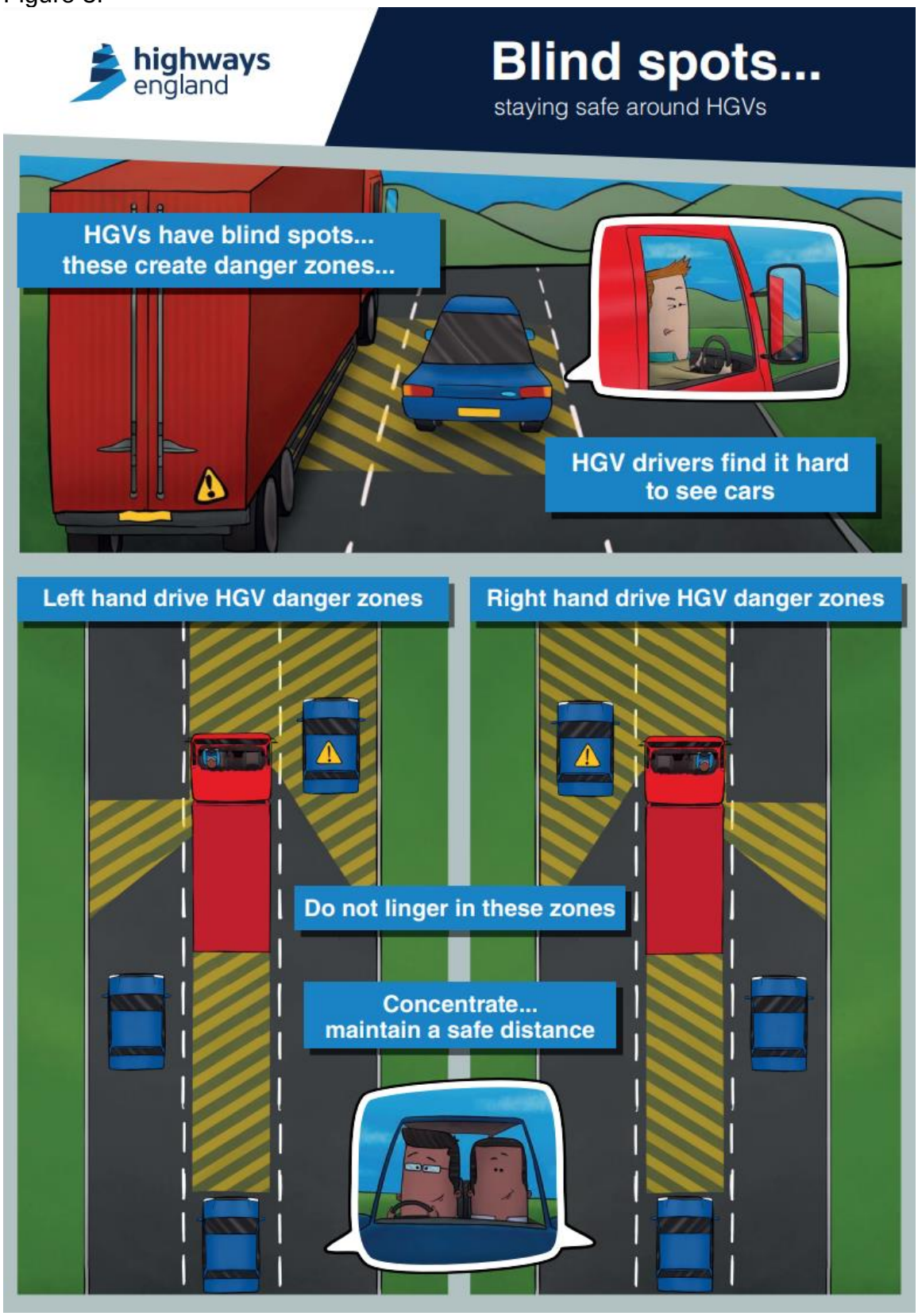
highways england
Blind spots...
staying safe around HGVs
HGVs have blind spots...
these create danger zones...
HGV drivers find it hard
to see cars
Left hand drive HGV danger zones
Right hand drive HGV danger zones
Do not linger in these zones
Concentrate...
maintain a safe distance

Figure 4.

Fresnel Lens: Technical Criteria	Working Environment: The Fresnel Lens must be capable of being functionable in regular vehicle temperatures from -20°c to +45°c. Also, it must function in a cab's relative humidity which can vary from 10% to 100%. The Fresnel Lens type required should meet the following general criteria as a minimum: a) Be able to attach simply to side window glass by a dry, 'peel back' adhesive surround press fit, (without need for a wet glass lamination). b) The Focal Point (optical centre) of the Fresnel Lens should be situated at the central point of the lens width (so allowing for use by both left and right-hand drive trucks) and be situated towards the upper edge of the lens, so enabling the use of the maximum number of lens facets (concentric grooves) available throughout the radius of the lens, resulting in an enhanced downwards viewing capability. c) The Focal Length measurement of the Fresnel Lens is selected to optimise the required wide-angle downwards view. The Focal Length is therefore determined to be a negative measurement in order to achieve the required lens downwards viewing angle of 40-45 degrees below the truck's passenger door window ledge. d) The lens must not have a Focal Length inside the cab. e) The lens material (soft PVC) will be flexible and not be able to shatter or cause injury in the range of temperature/humidity -20°c to +45°c, 10% to 100% f) Be supplied in a package with full colour instruction on fitting (such artwork to be supplied) g) Be packed in suitable multi-unit packaging so a pack can be lifted by one person. Be packaged with a lens tissue wrap that can also be utilised to clean the window glass prior to fitment.
Fresnel Lens: Product Technical Specification	In addition, the Fresnel lens shall meet the following production specification: a) The lens size specified is a small footprint model having maximum dimensions of 20.3 x 11cms (AKA an A5 model). b) The maximum PVC lens thickness is 1.10mm ± 0.10mm c) The Focal Point (FP) is to be situated at the central point of the lens' width of 20.3mm and inset from the lens' edge by 8mm d) The specified lens is required to achieve a minimum downwards viewing angle of 30° and therefore the Fresnel Lens Focal Length (FL) measurement is to be determined accordingly. e) The Fresnel Lens Facet Groove Pitch shall be 0.50mm

	f) The lens is to be marked with the words “Vision Aid Only” on at least one lens edge. g) The lens’ corners shall be cut at an angle of 45°, so allowing easy up/down passage through a truck door window’s rubber weather seal. h) The lens shall be manufactured in ‘water clear’ PVC material that will remain UV stable, soft, pliable and not dis-colour during its useful lifetime. i) Lens to be UV stable, not changing colour and remaining soft and flexible during its useful lifetime of 3 years from manufacture, j) A thin ‘peel-back’, double-sided adhesive strip, with maximum thickness of 8mm shall be affixed to the four smooth (non-facet sided) lens edges to enable an easy, strong, ‘dry’ bond to truck window glass. k) Lens for internal fitment to near side window of HGV/LGV cab, with a thickness/design such that the window can still be opened.
Warranty	The lens shall be fit for purpose and free from manufacturing defects. The warranty will guarantee the lens against UV degradation for a minimum period of 3 years.
Lead Time	Maximum of 30 days from the award date – delivery locations and dates (tbc)
Number of units (Fresnel Lens)	Supply and distribution of Fresnel Lenses with an approximate order quantity of 5,000 lenses for the initial order A non-binding option by National Highways to order additional Lenses during the contract period, including the initial order – this will be subject to performance, demand and additional funding availability as instructed by the Project Manager on a periodic basis.
Delivery period	All Fresnel Lens (qty. to be finalised) to be delivered no later February 2025 and invoiced no later than 30 March 2025.
Additional information	The successful Supplier will be asked to print the National Highways branded cover sleeve for the Fresnel Lens and package it accordingly. This PDF graphic file will be provided by National Highways. The successful Supplier will be provided with printed copies of the National Highways Driving on England’s motorways leaflet to insert in the Fresnel Lens packaging. The successful Supplier will be asked to deliver Fresnel Lens units to various delivery locations. Supplier to also quote for delivery of units containing 250 Fresnel Lens per unit. If insurance is required for this, Supplier to also include this in their quote.

	From the previous projects run by DVSA and National Highways and following various user trials and feedback forums, the risks that have been identified from previous projects and therefore need to be specifically addressed by the successful Supplier are: - • Fresnel Lens falling off of the cab window or coming off inside the door skin, • Fresnel Lens footprint that is too large and not being able to see over the top when at junctions. • Glare and misting effect in lens producing an unclear image.

3 SUPPLY AND DELIVERY REQUIREMENTS

3.1 The Supplier shall be expected to manage all aspects of the Fresnel Lens distribution, including contributing to identifying and implementing suitable distribution channels. The effectiveness of the distribution is critical to the success of this initiative. The Supplier should set out the proposed distribution model, with supporting evidence as part of their tender.

3.2 The Supplier shall be entirely responsible for delivering fit for purpose and defect free units.

3.3 Where the Supplier does not have an existing proven product that meets the specification, evidence must be provided as to how the supplier will test and prove the suitability of their proposed product.

3.4 The warranty period shall not commence until the units are delivered and accepted as fit for normal use.

3.5 No modifications shall be carried out by the Supplier or any of its sub-contractors which could adversely affect or invalidate the manufacturer's warranty.

3.6 The Supplier is to create, maintain and provide an up-to-date delivery plan including the number of lenses distributed, the number of lenses remaining on the shelf, completed distribution locations, quantities and dates and planned future deliveries with quantities and expected delivery dates.

3.7 National Highways will work with the supplier to develop the branded packaging, and campaign messages to accompany the lenses. All such work must be approved by National Highways and comply with National Highways visual identity guidelines.

3.8 Further information to be agreed post-award:

- Specific information and/or campaign messages to be included within lens packaging

3.9 The lenses must be free of charge to the end user.

3.10 Demand for lenses will vary over the duration of the contract and the supplier will be required to be flexible in the quantities delivered on a month-by-month basis and be prepared to work with the Project Manager to match the supply to the demand for lenses.

3.11 The Supplier will be expected to include payment for the costs of transport/packaging as part of their tender quotation.

3.12 The Supplier is expected to provide documented proof of delivery for each batch of lenses.

3.13 Lenses to be invoiced in arrears, per batch.

4 UNIT DELIVERY

4.1 The Supplier is to ensure that all units are delivered complete with a User Guide to addresses provided by the National Highways Commercial Incident Prevention Team.

4.2 The Supplier must notify National Highways prior to intended delivery to ensure that recipients are ready to accept on the intended delivery date.

4.3 The Supplier must ensure total protection of data provided by National Highways at all times.

4.4 The Supplier must attempt to bulk deliver units where possible in order to minimise waste packaging and delivery vehicle emissions. All packaging must be environmentally friendly and recyclable where possible. The size and delivery location of each batch will be agreed with the Project Manager (PM).

4.5 The Supplier should be able to achieve a lens manufacturing lead time of 6 weeks from receiving an order to lens being available in the UK for distribution. Also, achieve a lens distribution lead time of 2 weeks, from receiving our instruction to lenses arriving at the destination.

4.6 To support effective distribution of the lenses, National Highways may provide contacts with National Highways and external partner organisations that can assist in distribution of the lenses. However, the Supplier is encouraged to identify and put forward their own distribution channels.

4.7 Lenses may be distributed abroad directly to vehicles known to be visiting the UK at locations proposed by the Supplier and agreed by the PM e.g., at overseas ports serving the UK, or directly to non-UK vehicle operators whose vehicles travel to the UK

4.8 Lenses may be distributed within the UK e.g., at UK ports, ferry and tunnel operators, at truck stops servicing non-UK vehicles and DVSA check sites.

4.9 Lenses will be sent by courier from the Supplier to a range of locations where they can be distributed by partner organisations to left hand drive HGVs, the following is a list of potential delivery locations (This is not a definitive list and is provided as an indication only, list will be defined post award):

- National Highways offices and Traffic Officer Outstation locations.
- UK mainland police forces.
- DVSA offices and check sites.
- UK freight and vehicle ports.

- Identified truck stops dealing with high volume of left-hand drive vehicles such as those found close to Dover.
- Non-UK locations identified by the Supplier and agreed by the Project Manager.