



# Highway Safety Report – Signal Controlled Crossings

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## 1.0 Introduction

### Report Introduction

- 1.1 This Highway Safety Report (HSR) has been prepared by SLR Consulting Limited to support a digital advertising application. The purpose of this report is to assess the potential highway safety implications and present evidence that the proposed digital display can be implemented without risk to road users.
- 1.2 This HSR draws upon current research, published guidance and relevant precedents from across the UK, relating to the operation of digital roadside advertising.
- 1.3 It must be recognised that digital advertising displays are now a common and established part of the UK's highway environment. Their presence forms part of the contemporary visual landscape encountered by drivers, and where appropriately designed and controlled, digital advertising can safely exist.

### Report Contents

- 1.4 Following the introduction, the structure of this report is as follows:
  - i) **Chapter 2** assesses specific highway feature safety considerations relevant to signal controlled crossings;
  - ii) **Chapter 3** describes the proposed advertising controls that will be in place;
  - iii) **Chapter 4** reviews up-to-date precedents and examples from across the UK, including sites with comparable traffic conditions and in proximity to signal controlled crossings; and
  - iv) **Chapter 5** sets out the summary and conclusions of the report.
- 1.5 **Appendix A** at the end of this report provides a review of research on digital advertising and its relationship to collision risk. **Appendix B**, also included at the end of the report, presents a policy review outlining general development principles and policies specific to digital advertising.



## 2.0 Digital Advertising around Signal Controlled Crossings

### Introduction

- 2.1 The proposed digital advertising display is situated in the vicinity to a signal-controlled pedestrian crossing. In assessing its suitability, a number of considerations have been taken into account, to demonstrate that the proposed location is appropriate and will not compromise highway safety or unacceptably divert driver attention.

### Location Advantages

- 2.2 Where signal-controlled crossings are located, they are low-speed decision points and approach speeds are typically less than 30 mph and often lower near crossing stop lines. Research shows that distraction risk reduces significantly at lower speeds, particularly where drivers are anticipating stopping. Therefore, at this location, driver exposure to the display will predominantly occur during low-speed conditions.
- 2.3 In addition, the signal-controlled arrangement regulates traffic movements, meaning overall driver cognitive demand is naturally managed and generally lower than in less controlled highway environments.
- 2.4 Signal controlled crossing points by their very nature are usually located in built-up, commercial areas where advertising is expected. Therefore, the proposed display is located as such that drivers will expect it.
- 2.5 As shown in **Chapter 4** of this report, there are numerous examples across the UK where advertising screens are positioned in close proximity to, or directly adjacent to where a single or multiple signal-controlled crossing points are located. Data from such locations show that where digital displays have been installed at these locations, collision rates have not increased following their introduction when compared to highway safety conditions prior to installation.

### Compliance with Guidance

- 2.6 The advertisement fully complies with the Town and Country Planning (Control of Advertisements) Regulations 2007, and guidance issued by the Department for Transport regarding roadside advertising as:
- The display will not obscure or conflict with the traffic signals associated with the nearby crossing point(s).
  - The display will not obscure any required visibility / forward visibility of the crossing(s) or waiting pedestrians (or other active travel users).
  - The display does not distract drivers from pedestrians (or other active travel users).
  - The display is located as such that it does not conflict with the adjacent pedestrian environment and does not interact with any green and red man signals that control the crossing(s).
  - The display will not conflict with road signs.



- The display will not conflict with sightlines critical to driver decision-making at this location.
- The proposed display will be subject to strict technical controls and brightness levels will be controlled ensuring visibility without causing glare or distraction (discussed in detail in **Chapter 3**).

## Chapter Summary

- 2.7 In summary, from a highway safety and planning perspective, signal-controlled crossing points and such environments provide a controlled, low-speed environment where digital advertising can be safely accommodated, provided strict controls over brightness, motion and content timing are secured by condition



## 3.0 Proposed Advertising Controls

### Applicability Across the UK

- 3.1 The TfL document 'Guidance for Digital Roadside Advertising and Proposed Best Practice' (2013) is UK and England specific guidance and provides advice regarding the acceptable form of, or location for, digital roadside advertising. The guidance acknowledges that there is no demonstrable proof that advertisements cause traffic collisions or are inherently unsafe. It recognises that static digital advertising is likely to be acceptable in locations where static advertising exists or would be accepted. It also concludes that with the use of appropriate controls, digital advertising should be no more or less acceptable than traditional forms of advertising such as poster and paste.
- 3.2 It is considered that the guidance document provides a good framework for assessing the suitability of sites for digital roadside advertising throughout the UK. It is fully endorsed by TfL, and this document is applied by London Boroughs as well as TfL. It is also important to note that the presence of digital advertising displays adjacent to principal routes in urban areas is increasingly commonplace in the UK in terms of them being part of the roadside environment that drivers are familiar with assimilating.
- 3.3 With the use of appropriate controls, digital advertising should be no more or less acceptable than traditional forms of advertising such as poster and paste and it is possible to control the type, brightness, rate of change and interval between advertisements.

### Controlled Operation

- 3.4 'The Institute of Lighting Professionals Guidance Technical Note 5: Brightness of Illuminated Advertisements (2023)', acknowledges that digital advertisements are highly controllable and concludes that with the use of appropriate controls, digital advertising should be no more or less acceptable than traditional forms of advertising such as poster and paste formats. These appropriate controls are as follows to ensure that the level of luminance from the proposed digital advertising display will not have an unacceptable impact in terms of driver distraction and on public safety:
- Display of static information;
  - No intermittent light sources, flashing lights, moving parts or features, exposed cold cathode tubing, animation or retroreflective material;
  - Will not imitate traffic signals or alike;
  - Illumination in a manner reasonably required to fulfil the purpose of the advertisement; and
  - Maximum permitted luminance level of 300cd/m<sup>2</sup> at nighttime (for illuminated area over 10m<sup>2</sup>) and increased to 5,000cd/m<sup>2</sup> during daytime to ensure advertisements remain visible during all conditions (e.g. bright sunlight). Light sensors and other display controls will be used to control the lighting output to within acceptable limits and to reflect the local approach to street lighting.



## Proposed Planning Conditions

- 3.5 In light of the above, the following planning conditions are proposed by the applicant to control the operation of the digital advertising display to ensure that the screen operates in a safe manner:
- The display will be controlled by conditions in accordance with the Institution of Lighting Professionals 'Brightness of Illuminated Advertisements' (2023) guidance, with nighttime luminance limited to 300cd/m<sup>2</sup>;
  - Daytime illumination levels of the proposal will adjust according to the ambient light during all conditions (e.g. low light, direct sunlight);
  - The advertising screen shall not display any moving, or apparently moving images;
  - The sequential advertisements shall not change more than once every 10 seconds, which is the commonly established industry standard; and
  - Any sequential change between advertisements will take place over a period no greater than one second, unless otherwise agreed with the Local Authority.

## Chapter Conclusion

- 3.6 The proposed digital advertising display has been designed and will be operated in accordance with established UK best practice and recognised technical guidance. Through the implementation of strict controls on luminance and transition effects, the display will function in a predictable and non-intrusive manner within the roadside environment.
- 3.7 Accordingly, the operational characteristics of the proposal ensure that the display will not result in undue driver distraction, glare, or interference with safety-critical highway features, and is therefore considered acceptable in highway safety terms.



## 4.0 Comparable Sites

### Introduction

- 4.1 Advertisements are now a common sight on roads and as such, are not an ‘unusual’ or ‘surprising’ distraction for drivers. Across the UK, many local highway authorities accept digital advertising at and around signal-controlled crossing points.
- 4.2 This chapter provides examples of other sites where digital advertising displays have been introduced and approved in similar highway environments, in close proximity to signal controlled crossing points.

### 289 Chorley Road, Salford

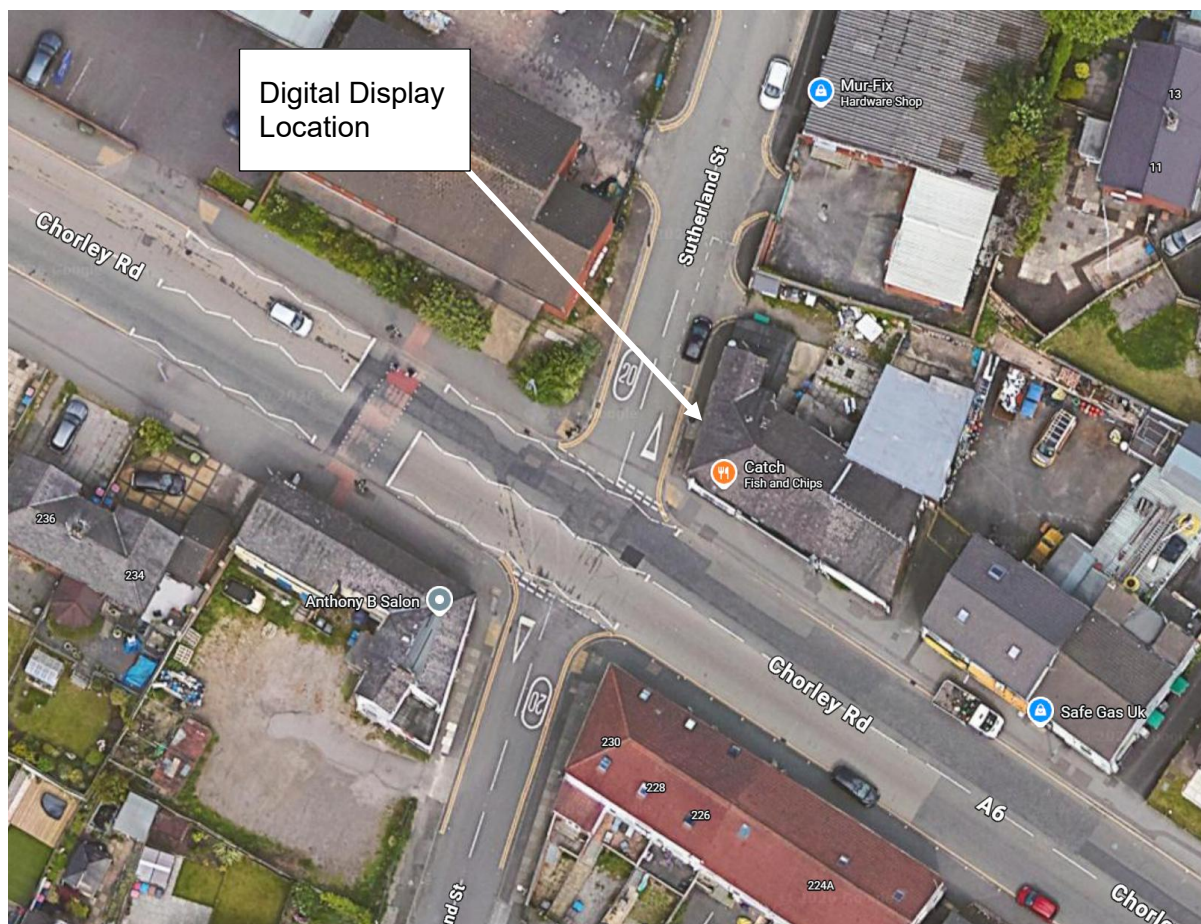
- 4.3 This advertising application (*Salford City Council application reference 20/76280/ADV*) relates to a D48 digital advertising screen located on the gable end of a hot food takeaway. The site is located in proximity to a signal-controlled pedestrian crossing
- 4.4 The application was granted consent in January 2021 with the local highway authority concluding that the proposed digital display would have no over sailing issue to the public highway nor safety:

*“The proposed sign is fixed to the side elevation of the building and has no over sailing issue to the highway. The advertisement would not cause any pedestrian obstruction as the sign would not be on a pedestrian walkway.*

*This has been reviewed by Salford City Councils highways team who have confirmed it is an acceptable level of illuminance to ensure the sign does not appear too bright/ cause a distraction for drivers.”*



**Figure 4.1: 289 Chorley Road, Salford Digital Display** (ref: 20/76280/ADV) (Source – Google Maps)



## 705 – 707 Oldham Road, Rochdale

- 4.5 This advertising application (*Rochdale Borough Council advertising application reference 19/01282/ADV*) sought advertising consent to support a digital LED display at 705-707 Oldham Road. The site is located immediately downstream to a push button signal controlled crossing.
- 4.6 The local highway authority had no objections regarding this proposal and the advertising application was granted advertisement consent in January 2020 and installed during 2021.



**Figure 4.2: Oldham Road Digital Advertising Site Location** (Source – Google Maps)



- 4.7 A review of personal injury collision data has been undertaken for the road network surrounding the proposed advertising display to identify any change in accident trends before and after the installation of the screen, where it would have been visible to drivers. The analysis compares collision frequencies in the years preceding installation with those recorded in the subsequent years. The results of this assessment are summarised in **Table 4.1** below.

**Table 4.1 – Accident Data: 705 – 707 Oldham Road in the Vicinity of the Site** (Source - Crashmap)

|              | Pre-Screen                   | Post-Screen                  |
|--------------|------------------------------|------------------------------|
|              | January 2019 – December 2021 | January 2022 – December 2024 |
| <b>Total</b> | <b>1</b>                     | <b>1</b>                     |

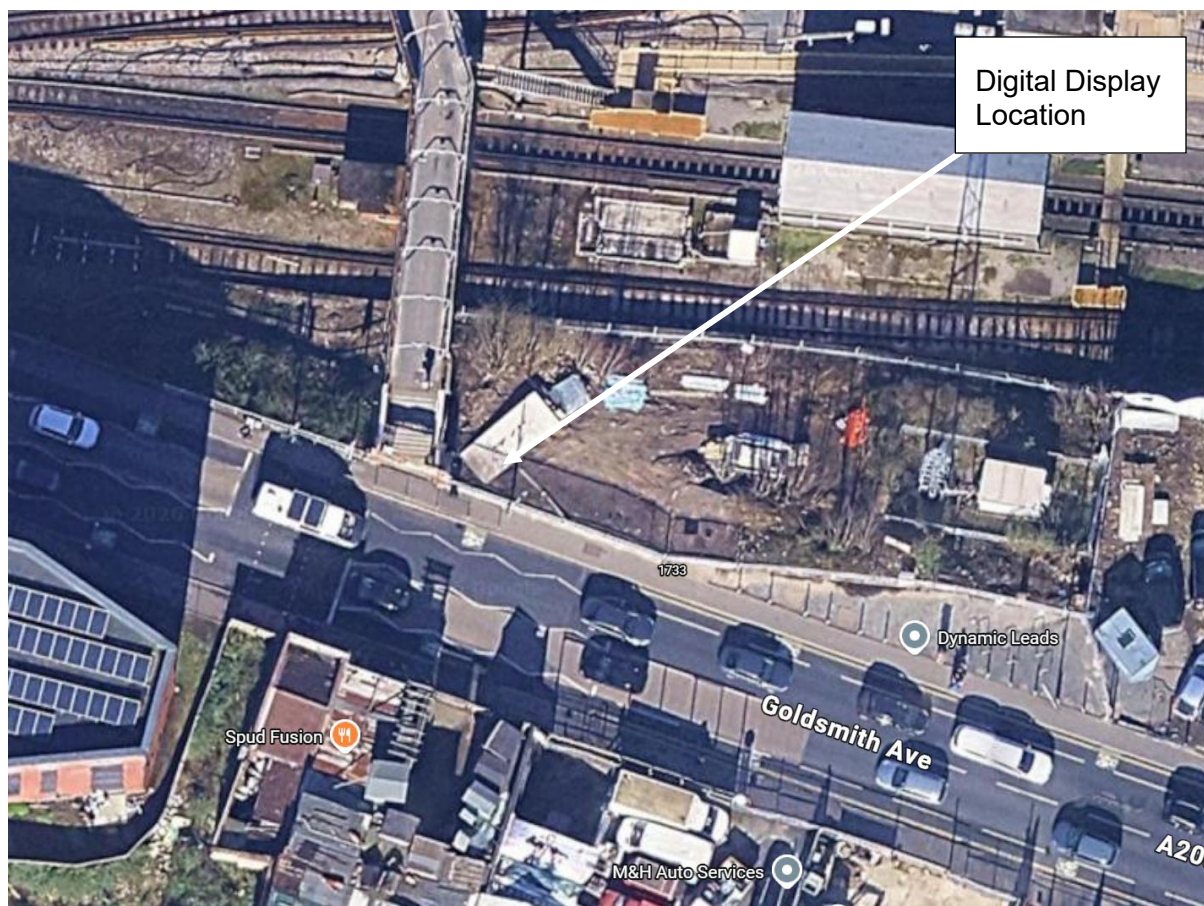
- 4.8 The review of recent accident data does not demonstrate any upward trend in accidents since the erection of the advertising display at this location in the three years after its implementation.
- 4.9 Therefore, it is not considered that the subsequent consent to display a digital advertising display at this location, has in no way resulted in any negative impact on the local highway network.



## Fratton Station Entrance, Fratton, Portsmouth

- 4.10 This approved digital advertising application is situated in proximity to the main pedestrian entrance into Fratton Station and located in an offside position, just downstream from a busy signal-controlled pedestrian crossing.
- 4.11 This application was approved by Portsmouth City Council in April 2022 (*planning application: 22/00316/ADV*).

**Figure 4.3: Fratton Station Approved Digital Display** (Source - Google Maps)



## 38 Commercial Road, Leeds

- 4.12 This advertising application (*19/00843/ADV*) sought consent for the replacement of a 48 sheet static advertisements with one digital LED display of the same size. The proposed digital advertising display is in the background of the signalised junction of Commercial Road and Savins Mill Way heading into Leeds City Centre and has a long sightline towards the proposed screen (**Figure 4.4**). The junction has numerous pedestrian / cycle crossings that are signal controlled.
- 4.13 The Council originally refused the planning application, raising concerns that the digital display will distract drivers who are approaching the traffic lights and signalised junction. They also stated that the location is next to a high trafficked junction set with a number of intersecting lanes and various well used crisscrossing pedestrian routes which gives a highly complex

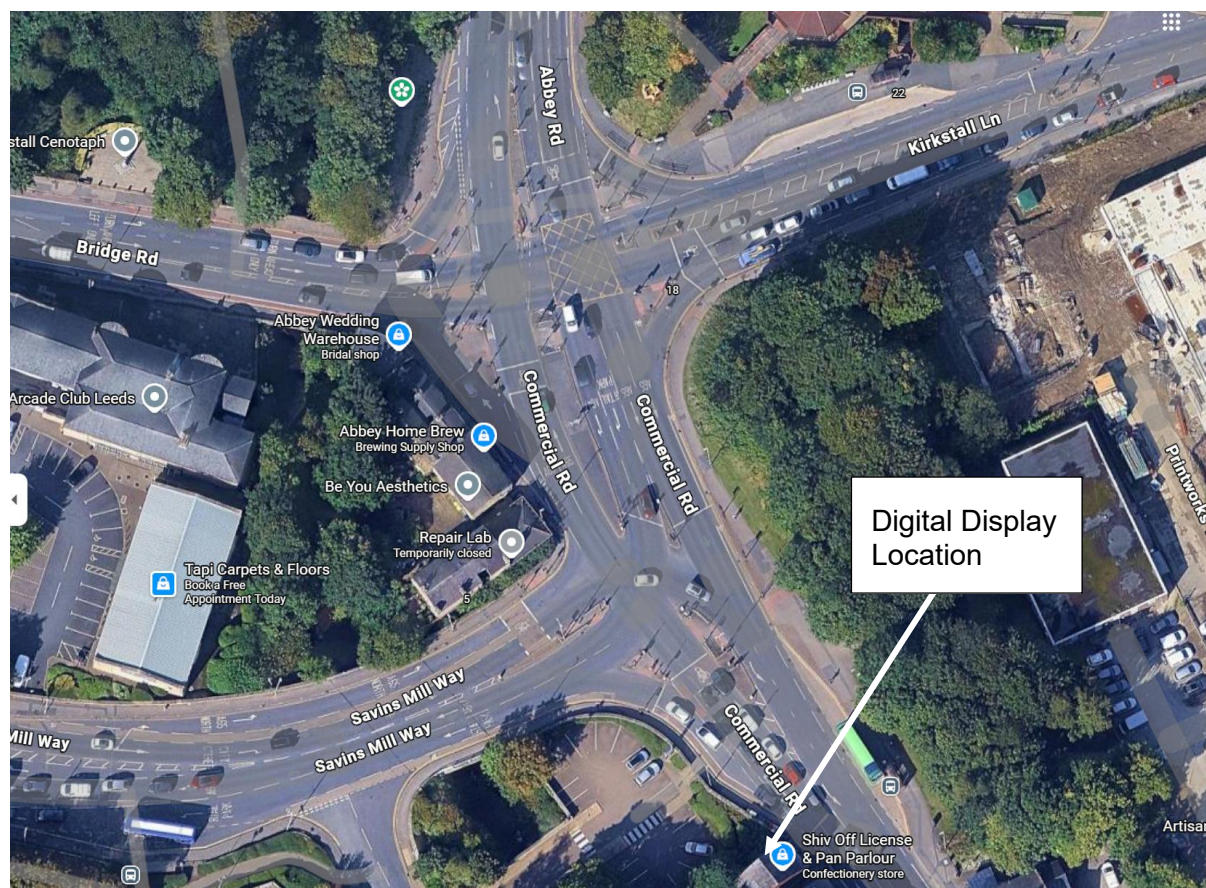


arrangement where distractions can further negatively affect driver attention from what is a very busy tight configuration of road systems linking the A65 and B6157 roads.

- 4.14 However, this advertising application was successful on appeal, with the inspector concluding the following:

*‘Whilst the proposal would be illuminated and include sequentially changing adverts, there is no substantive evidence before me, on why in this instance, the digital advertisement proposed would be distracting to the point of creating a hazard’*

**Figure 4.4: 38 Commercial Road, Leeds Site Location – Digital Display in Operation**  
(Source – Google Maps)



## Chapter Conclusion

- 4.15 This chapter has reviewed existing sites and advertising applications for digital displays in other similar locations and highway environments across the UK. It has been shown that there are examples of digital advertising displays, which have similar characteristics that have gained advertising consent and are operational with no concern for highway safety.



## 5.0 Report Conclusion

### Conclusion

- 5.1 Having regard to national policy, statutory regulations, technical guidance, research evidence, operational controls, and real-world precedents near signal-controlled crossings, there is no evidence to indicate that the proposed digital advertising display at this location would result in a material or demonstrable harm to highway safety.
- 5.2 The display will be located in a controlled environment, designed to avoid conflict with highway infrastructure, and operated under strict luminance to minimise impact.
- 5.3 It is therefore concluded that from a highway safety perspective, the proposed digital advertising display is acceptable and satisfies the requirements of the relevant planning policy and advertisement control guidance.



## Appendix A – Research Review



## Existing Research: Digital Displays & Accident Risk

This Appendix presents a review of available research and empirical evidence relating to the highway safety implications of digital roadside advertising. Its purpose is to establish whether digital advertising displays are inherently associated with increased collision risk or whether, when appropriately designed and controlled, they can operate safely within the roadside environment.

### Review of Research

#### Historical Site Analysis – Jacobs (2014)

A piece of research by Jacobs (formerly CH2M Hill) was undertaken in 2014, which analysed five sites in Greater London in relation to the historical safety impact of roadside digital advertising installations. The piece of research looked at the following sites across Greater London:

- M4 The Torch, M4, Hounslow – (Operational from 1st April 2006);
- Westfield, Holland Park Roundabout, Hammersmith and Fulham – (Operational from 1st April 2008);
- M4 Silver Screen, M4, Hounslow – (Operational from 1st April 2009);
- Hammersmith Broadway, Hammersmith Road, Hammersmith and Fulham – (Operational from 1st April 2009); and
- Two Towers, A4, Hammersmith and Fulham – (Operational from 1st April 2011).

The results of the research indicated that there was no statistical relationship between digital advertising and increased accident rates and that an average reduction of 20% of accidents was observed across the five sites following the erection of the displays. Overall, across the five digital display advertisement sites that were analysed, the annual collision rate had been shown to have decreased from 4.0 to 3.2 collisions per year.

These findings indicate that properly sited digital displays can coexist safely with the surrounding highway network and do not inherently compromise driver safety or increase accident risk.

#### Driver Behaviour Study – CEDR (2016)

In 2016, CEDR, with the UK as a funded partner, conducted research to examine the safety effects of digital roadside advertisements. The study analysed several field studies where drivers followed a fixed route with multiple digital advertising displays while wearing a non-intrusive eye tracker.

The findings concluded that digital advertising did not lead to ‘unacceptably long glances away from the road’ and could not be considered a significant distraction, suggesting that digital advertising displays do not compromise driver attention or road safety.



## Driving Simulator and Behaviour Studies

Several simulator-based investigations have examined how digital advertising displays influence driver performance and behaviour, with these being as follows:

- TRL's Investigating Driver Distraction study (2010), found that video-based adverts attracted more frequent and longer glances, were associated with greater lane position variation and changes in speed compared to static digital advertising. However, these were controlled simulator observations and did not directly link digital advertising with real-world crashes (*Source: TRL*)
- An experimental simulator study published in Accident Analysis & Prevention (2020) demonstrated that the presence of digital advertising affected driving performance measures such as speed variability and lane position but also showed that simpler content and longer dwell times mitigated these effects, so that there was no impact on highway safety and accident risk. (*Source: Accident Analysis & Prevention, Volume 145, September 2020*)

These studies indicate that although digital advertising can attract visual attention and influence certain driving behaviours, the nature and magnitude of these effects depend on content complexity, display timing and message change frequency. When subject to appropriate controls, roadside digital advertising has no to very little affect on driver behaviour.

## Statistical Analysis Studies

Some statistical analyses have investigated correlations between digital advertising and crash data, with these being as follows:

- International studies that have applied before-after and control group approaches to crash data, have reported no statistically significant correlation between the presence of roadside (digital and non-digital) advertising and increased crash rates in several examined sites within the Greater Athens area. (*Source: A statistical analysis of the impact of advertising signs on road safety, International Journal of Injury Control and Safety Promotion, May 2012*).
- Similarly, independent analyses of accident data at locations with digital roadside LED advertising in the United States found no relationship between digital advertising presence and crash frequency when compared with similar road sections without such signage. (*Source: LED Synergy*).

These findings parallel the results from the Jacobs (2014) Greater London analysis, reinforcing that where empirical crash studies exist, they do not demonstrate a causal increase in collisions attributable to the presence of digital advertising.

## Conclusion

The findings of these studies provide robust empirical support for the safe use of digital advertising at locations such as where signal-controlled crossing points are present. Consequently, when evaluating applications for digital displays, there is a strong evidence base indicating that with suitable design and operational controls, digital advertising can be



safely integrated into the highway environment without materially increasing the risk of accidents or driver distraction.



## **Appendix B – Policy Review**



## Policy Context

This Appendix summarises national planning policy and statutory guidance relevant to the implementation and control of digital advertising displays, with particular emphasis on highway safety. It establishes the policy basis for assessing the suitability of the proposed development.

## Policy Review

### National Planning Policy Framework (NPPF) (December 2024)

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF requires that development proposals, including advertisements are assessed in terms of their impact on both public amenity and safety.

The NPPF states that advertisements must not adversely affect public safety or amenity, and that signage should be located, designed, and operated in a manner that avoids danger or distraction to road users. Where development would result in an unacceptable impact on highway safety, it should be refused.

*Paragraph 116 states Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios.*

*Paragraph 117 (a–c) outlines key principles that should be applied to all development proposals. Applications for development should:*

*a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*

*b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*

*c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards.*

*Paragraph 141 states that the quality and character of places can suffer when advertisements are poorly sited and designed. A separate consent process within the planning system controls the display of advertisements, which should be operated in a way which is simple, efficient and effective. Advertisements should be subject to control only in the interests of amenity and public safety, taking account of cumulative impacts.*



Based on the above, the NPPF emphasises digital advertising must be carefully controlled in respect of size, siting, illuminance, and content (mitigation) to ensure that it does not create unacceptable hazards or contribute to driver distraction.

### **National Planning Practice Guidance (NPPG) – Advertisements**

The National Planning Practice Guidance (NPPG) on advertisements reiterates the principles of the NPPF by offering practical guidance on how to apply policy.

It requires consideration of factors such as size, brightness, location, orientation, and surrounding signage to avoid driver distraction and to ensure that highway safety is not compromised.

The NPPG states that while all advertisements are intended to attract attention, proposed advertisements at points where drivers need to take more care, are more likely to affect public safety.

It identifies the types of advertisements that may cause danger to road users, include those which could confuse official traffic signs, obscure sightlines, cause glare, or feature moving elements or frequent display changes. These are all relevant considerations when assessing digital displays.

The guidance therefore encourages a balanced assessment of both the visual impact and operational characteristics of digital displays.

### **Town and Country Planning (Control of Advertisements) Regulations 2007**

The Town and Country Planning (Control of Advertisements) Regulations 2007 provides the statutory framework for advertisement consent in England and is the primary legal instrument for controlling the display of all roadside advertising, including digital format.

Consent is assessed solely on amenity and public safety, explicitly including whether an advertisement would interfere with the safe operation of the highway.

The Regulations set standard conditions applicable to all advertisements, including requirements that no advertisement should obscure or hinder interpretation of official road signs or signals, and that displays must be maintained so as not to impair safety.

These regulations ensure compliance and the application of suitable planning conditions where necessary (for example, controls on luminance and transition frequency) to ensure that digital roadside advertising can operate safely.

### **Transport for London (TfL) Guidance for Digital Roadside Advertising and Proposed Best Practice (2013)**

The TfL guidance provides a practical, evidence-informed framework for assessing digital roadside advertising, particularly in relation to driver attention, public safety, and the implementation of appropriate controls. This guidance is applied throughout the UK, not just in London and it adopts a pragmatic approach that recognises digital displays as increasingly common but emphasises the need for safety-focused design and management of such installations.



The guidance acknowledges that there is no clear causal link between roadside advertising and collisions when managed appropriately, and that digital formats can be accepted where traditional static forms already exist or would be considered suitable.

The guidance also recognises that location and context matter:

- Where images do not move (static digital advertising) and changes are infrequent is typically acceptable in locations where static advertising would otherwise be considered appropriate.
- High cognitive demand locations (e.g., complex junctions, high-speed roads) are not automatically excluded, but they require careful site-specific assessment to ensure safety.

TfL advocates securing appropriate controls through planning conditions, particularly in locations with increased risk. Recommended measures include:

- No moving images or animation unless explicitly authorised.
- Minimum dwell times between message changes.
- Luminance limits that comply with recognised professional standards (such as those set by the Institute of Lighting Professionals), to avoid glare or dazzle.
- Conformance with statutory advertisement regulations (e.g., standard conditions of the Town and Country Planning (Control of Advertisements) Regulations).

TfL emphasises that, with suitable controls, digital advertising should be no more or less acceptable than traditional, non-digital formats (such as backlit or static panels). The focus is on ensuring that dynamic characteristics of digital displays (e.g., brightness, transitions) do not introduce additional safety risks beyond those associated with other signage.

### **The Institute of Lighting Professionals Guidance 05/23: The Brightness of Illuminated Advertisements Including Digital Displays (2023)**

The Institute of Lighting Professionals Guidance 05/23: The Brightness of Illuminated Advertisements Including Digital Displays (2023) acknowledges that digital advertisements are highly controllable and concludes that with the use of appropriate controls, digital advertising should be no more or less acceptable than traditional forms of advertising such as poster and paste formats. These appropriate controls are as follows to ensure that the level of luminance from the proposed digital advertising display will not have an unacceptable impact in terms of driver distraction and on public safety:

- Display of static information.
- No intermittent light sources, flashing lights, moving parts or features, exposed cold cathode tubing, animation or retroreflective material.
- Will not imitate traffic signals or alike.
- Illumination in a manner reasonably required to fulfil the purpose of the advertisement.



- Maximum permitted luminance level of 300cd/m<sup>2</sup> at nighttime (for illuminated area over 10m<sup>2</sup> - England) and daytime levels could be higher to ensure the signs remain visible. Light sensors and other display controls will be used to control the lighting output to within acceptable limits and to reflect the local approach to street lighting.

*Table 9.1: Luminance limits in England as per the Regulations*

| Illuminated area               | Maximum luminance cd/m <sup>2</sup> |
|--------------------------------|-------------------------------------|
| Not more than 10m <sup>2</sup> | 600                                 |
| More than 10m <sup>2</sup>     | 300                                 |

*Table 9.2: Luminance limits in Wales & Northern Ireland*

| Illuminated area                           | Maximum luminance cd/m <sup>2</sup> <sup>1</sup> |
|--------------------------------------------|--------------------------------------------------|
| Up to 0.5m <sup>2</sup>                    | 1,000                                            |
| >0.5m <sup>2</sup> to 2m <sup>2</sup>      | 800                                              |
| >2m <sup>2</sup> to 10m <sup>2</sup>       | 600                                              |
| For any size greater than 10m <sup>2</sup> | 400                                              |

## Conclusion

To summarise, national policy and legislation establish a clear and consistent position, which can be summarised as follows:

- Digital advertisements are not inherently unsafe.
- Their acceptability depends on siting, design and operational controls that are in place.
- The determining issue is whether the proposal would give rise to a demonstrable and material harm to highway safety, which is considered 'unacceptable' from a highway perspective.





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