



Highway Safety Report – Entry & Exit to Petrol Filling Stations (PFS)

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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 digital advertising at Petrol Filling Stations (PFS);
 - 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 highway characteristics at PFS; 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 at Petrol Filling Stations (PFS)

Introduction

- 2.1 The proposed digital advertising display is situated in the vicinity of a PFS. 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 A PFS is an established commercial roadside environment where motorists already expect to encounter signage, including fuel price displays and forecourt branding. As such, drivers approaching or passing these locations are accustomed to the presence of commercial messaging within the roadside environment.
- 2.3 The expectation of advertising and promotional signage within these settings means that such features form part of the typical visual context associated with PFS. Therefore, the presence of a digital display in proximity to this type of commercial land use would be consistent with the established character of the location and would not represent an unusual or unexpected roadside feature from a driver's or pedestrians' perspective.
- 2.4 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 PFS. Data from such locations show that where digital displays have been installed at these junctions, collision rates have not increased following their introduction when compared to highway safety conditions prior to installation.

Compliance with Guidance

- 2.5 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 does not obscure or interact with any required visibility splays associated with the PFS site accesses or junctions, in particular the sightlines associated with vehicles leaving the PFS.
 - The display does not conflict with existing highway conditions within the PFS forecourt.
 - The display does not obstruct any pedestrian routes or driver sightlines.
 - 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

- 2.6 In summary, from a highway safety and planning perspective, PFS and such environments where advertising in general is expected and therefore it can be safely accommodated for at this location, 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/m² at nighttime (for illuminated area over 10m²) and increased to 5,000cd/m² 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/m²;
 - 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

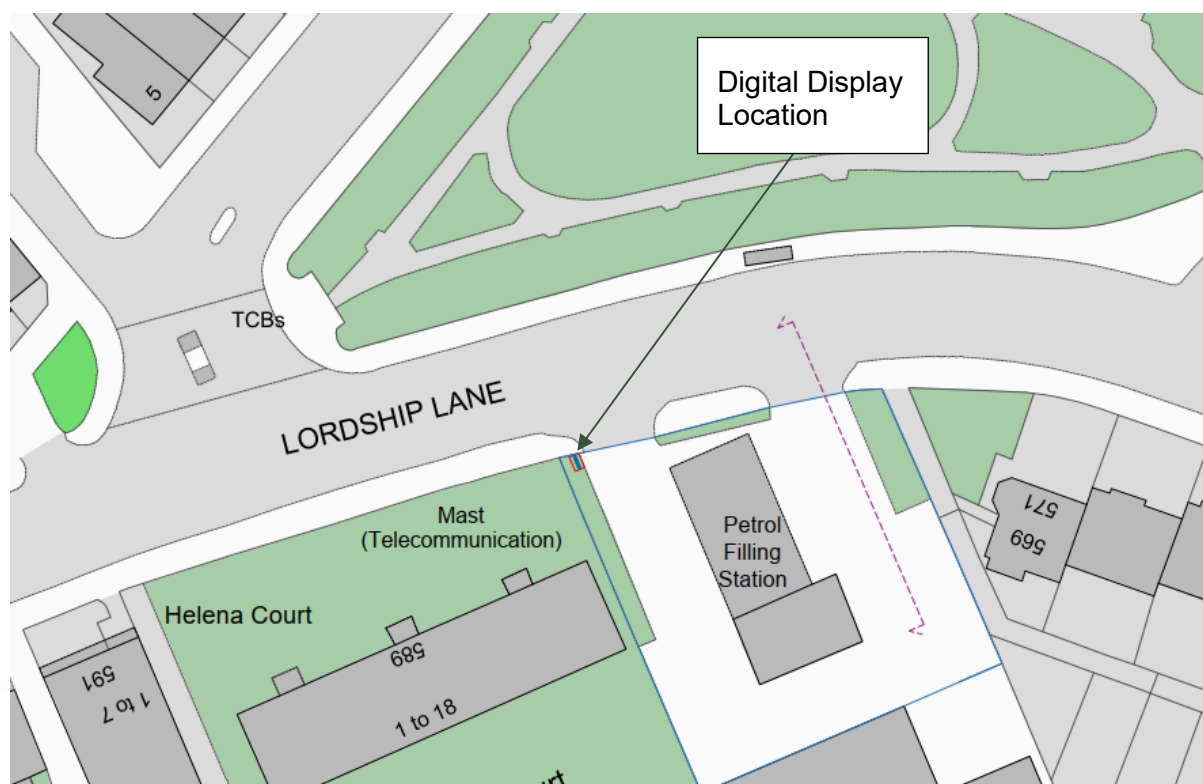
Introduction

- 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 PFS.
- 4.2 This chapter provides examples of other sites where digital advertising displays have been introduced and approved in similar highway environments and at / around PFS.

575 Lordship Lane, Haringey

- 4.3 An advertising application (HGY/2024/1599) was submitted to Haringey Council for a digital (D6) advertising application at 575 Lordship Lane, Wood Green. The display is visible to those traveling westbound along the highway, as well as the entrance and exit to the forecourt area (Figure 4.1).

Figure 4.1: 575 Lordship Lane, Haringey Digital Display



- 4.4 Haringey Council refused the application, however in June 2025 the application was approved via appeal, with the inspector concluding that the proposal would not result in an unacceptable effect upon or risk to public safety:

“For westbound drivers entering the forecourt, the advertisement would be set back, in a discrete location and viewed with the context of the existing more prominent forecourt signage, limiting its effect on these motorists. Further, the proposal would be setback behind the



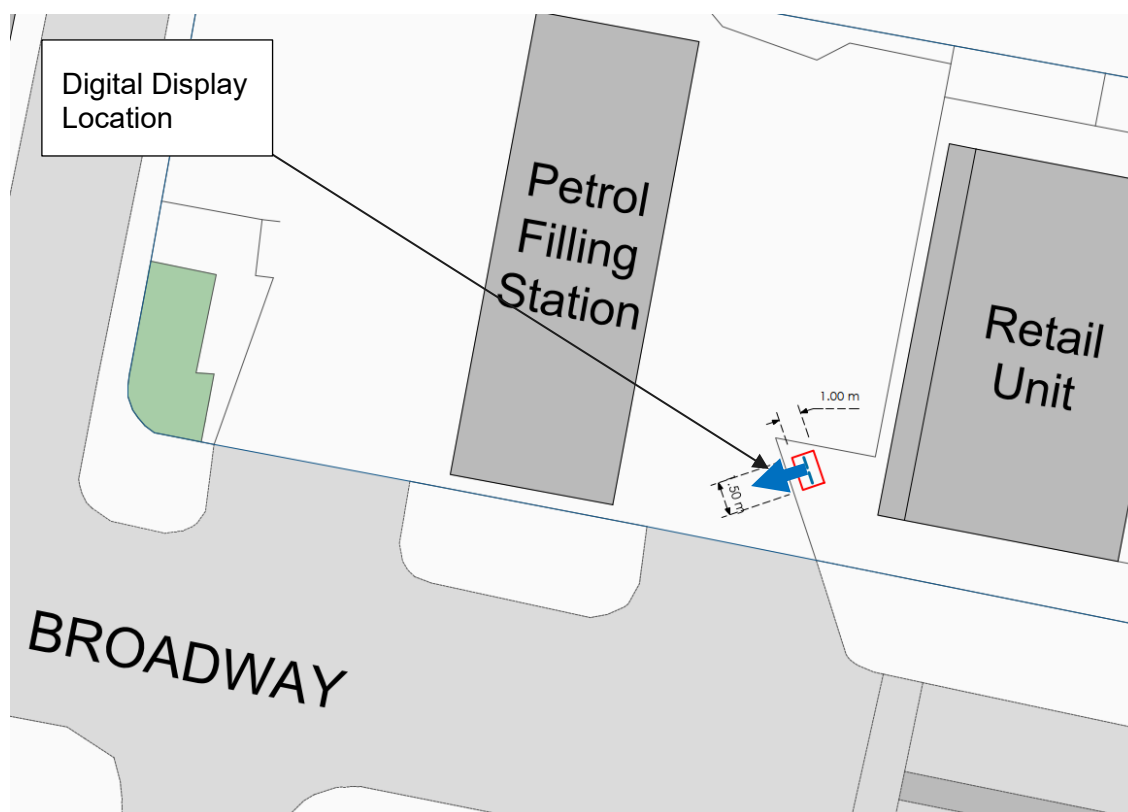
footway, behind the driver position at the forecourt junction. It would therefore not obstruct driver sightlines when exiting the forecourt onto Lordship Lane.

Based on the above, the level of increased risk caused by the proposed advertisement would be very minor and overall, it would not result in an unacceptable effect upon or risk to public safety, alone or cumulatively. Insofar as they are relevant, the proposal would accord with the relevant provisions of Policy DM3 of the DMDPD which requires advertisements to not cause a hazard to pedestrians or road users.”

246 – 258 Broadway, Bexleyheath

- 4.5 The advertising application (24/01881/ADV) is located at 246 – 258 Broadway. The proposed advertisement display is located within the curtilage of a petrol filling station (**Figure 4.2**).

Figure 4.2: 246 – 258 Broadway, Bexleyheath



- 4.6 The London Borough of Bexley refused the planning application stating that the digital advertising display due to its position and orientation, would be likely to constitute a distraction to drivers thus being prejudicial to highway safety.
- 4.7 In August 2025 this advertising application was successful on appeal (appeal reference APP/D5120/Z/24/3353974), with the inspector concluding the following:

“I consider that the proposal would not have an unacceptable impact on highway safety, and the residual cumulative impacts on the road network would not be severe. Consequently, the proposed advertisement would not be harmful to public safety.



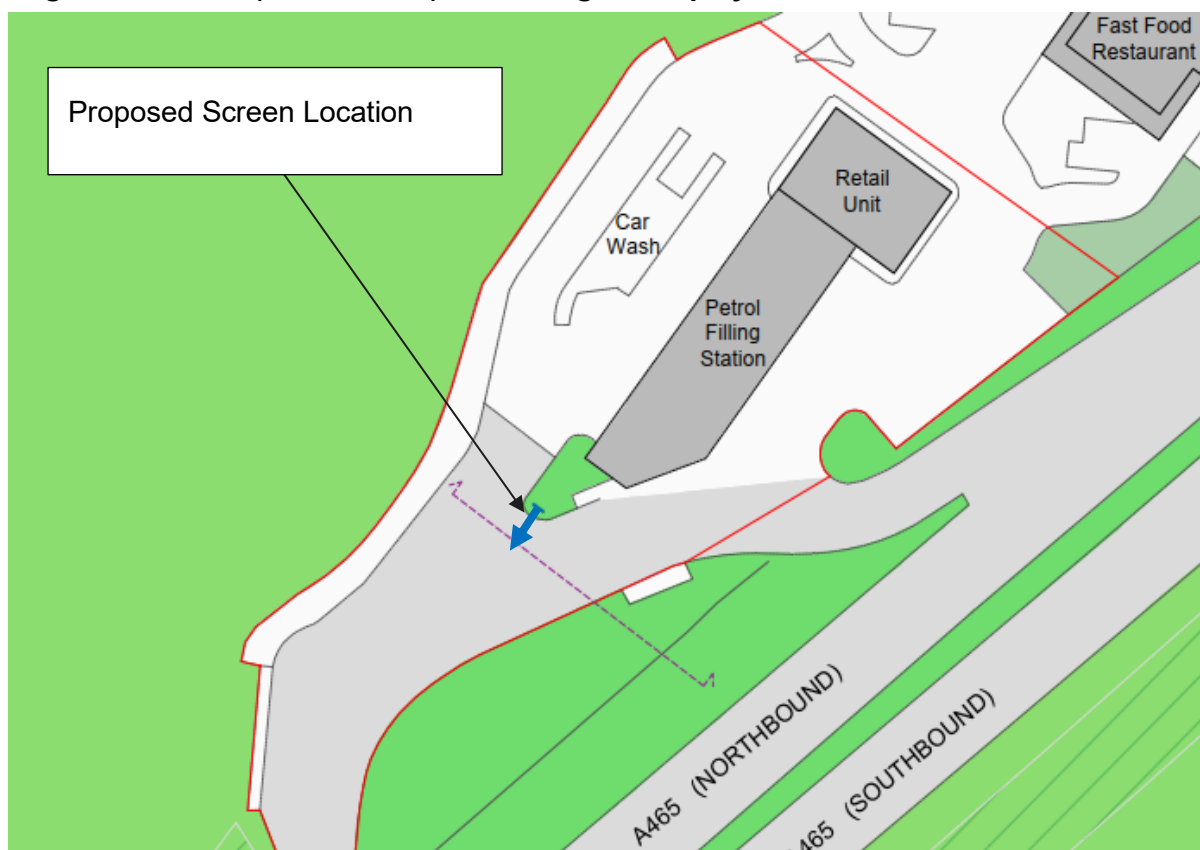
I have had regard to Policy DP11 and DP24 of the Bexley Local Plan (adopted 2023), Policy D8 of the London Plan (2021) and the relevant paragraphs of the Framework which aim to ensure that new advertisements do not have an adverse effect on public safety, including when considering cumulative impacts. As I have concluded that there would be no harm to public safety, there would be no conflict with the relevant elements of these policies.

For the reasons given above and having had regard to all other matters raised, I recommend that the appeal should be allowed subject to conditions.”

A465 (Northbound), Neath

- 4.8 An advertising application (*reference P2025/0019*) was submitted to Neath Port Talbot County Borough Council and was subsequently refused. This application was subsequently permitted at appeal in December 2025 (*reference A2025/0009*).
- 4.9 This permitted digital display is located within a PFS off the A465 (northbound approach) and is visible to traffic as they enter the forecourt area (**Figure 4.3**).

Figure 4.3: A465 (Northbound), Neath Digital Display



Esso Armley Road, Leeds

- 4.10 A digital advertising screen is located at the Esso PFS located on Armley Road, on the outskirts of Leeds City Centre. This permitted and operational site is located in a built-up urban location and is visible to southeast bound traffic travelling on the A647 Armley Road, with



some visibility also from the Armley Retail Park access road. There is also a signalised pedestrian crossing in the vicinity. This application is currently operational with no concerns to highway safety.

Figure 4.4 – Esso Armley Road Digital Display Source – Google Maps



The A1203, London, E1W 2BU

- 4.11 Two digital advertising screens are located adjacent to the Jet PFS on the A1203 in the London Borough of Tower Hamlets. Both screens are visible to highway users travelling on the A1203, with both digital displays rolling adverts at a rate of 10 seconds per advert. Both these applications were approved and are currently operational, with no concerns to highway safety and road users (**Figure 4.5**).



Figure 4.5 – The A1203 London Digital Displays Source – Google Maps



Chapter Conclusion

- 4.12 This chapter has reviewed existing sites and advertising applications for digital displays in similar highway environment across the UK that have gained advertising consent and are now operational with no concerns for highway safety nor distraction. As is shown there are many precedents for digital advertising being located at or in the vicinity to PFS.



5.0 Report Conclusion

Conclusion

- 5.1 Having regard to national policy, statutory regulations, technical guidance, research evidence, operational controls, and real-world precedents at or in the vicinity to PFS, 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 PFS. 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/m² at nighttime (for illuminated area over 10m² - 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 ²
Not more than 10m ²	600
More than 10m ²	300

Table 9.2: Luminance limits in Wales & Northern Ireland

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