



Proposed Conversion of Digital Advertising Display to Full Motion Display

1-11 Oldham Road, Manchester

Highway Safety Report 01

Prepared for



Wildstone Estates Limited

January 2026
5434-HSR01



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1.0 INTRODUCTION

1.1 Purpose of This Report

- 1.1.1 Axis has been appointed by Wildstone Estates Ltd (the applicant) to provide highways and transportation advice in support of a planning application for the proposed conversion of an existing digital LED advertising display to full motion operation. The existing display is situated on land to the north of Oldham Road, Manchester.

1.2 Overview

- 1.2.1 Large format roadside advertising is a traditional form of out-of-home advertising which has been commonplace in the UK for decades. The format of such advertisements has evolved over time from simple static images to the introduction of lightboxes, the move towards scrolling sheets or rotating prisms, and more recently the introduction of digital technology, which allows flexibility with regard to running multiple adverts and real time campaigns. Although these digital signs allow for sequentially changing images, these images are still static in the majority of cases.
- 1.2.2 Signs conveying the impression of motion in roadside advertising have also been used for many years, through co-ordinated arrangements of neon and lightbulbs. Another technique is the use of subtle motion, which uses limited motion of a repetitive nature, generally only on a limited part of the display, e.g. to convey the movement of waves, clouds, smoke, hair, etc. There have also been standalone roadside digital signs successfully displaying full motion images present in several UK cities for a number of years.
- 1.2.3 Modern digital technology allowing the display of content with motion is also increasingly being used within shop window displays across the UK. Such advertising does not require advertising planning consent, but it is becoming increasingly popular in locations which are visible from the adjacent highway network, in conjunction with existing roadside full motion displays.



1.3 Planning History

- 1.3.1 A planning application for the erection of the existing conventional digital advertising display, which replaced a traditional paper-and-paste hoarding in the same location, was allowed at appeal in April 2013 (appeal ref. APP/B4215/H/13/2189817). The planning application (application ref. 100370/AOH/2012/N1) had been refused by the Local Planning Authority (LPA), Manchester City Council (MCC), for reasons of both amenity and public safety. However, the Planning Inspector found that the proposed LED display would be acceptable in terms of amenity and public (highway) safety.
- 1.3.2 The existing 96-sheet LED advertising display was subsequently erected in 2016, replacing a traditional externally illuminated paper-and-paste hoarding in the same location. The advertising display has operated without issue or concern since first erected and is now an established and accepted feature of the street scene for passing highway users.
- 1.3.3 The planning consent for the existing digital display is subject to a number of planning conditions. These conditions restrict the use of visual effects and prohibit the display of moving images.
- 1.3.4 The following section of this Highway Safety Report (HSR) therefore provides a review of the proposed full motion LED display in the context of the local highway network, including an appraisal of the recent accident history within the vicinity of the proposed sign location, in order to demonstrate that the proposed erection of a full motion LED display will not result in an undue risk to public safety compared to the existing static digital LED display.

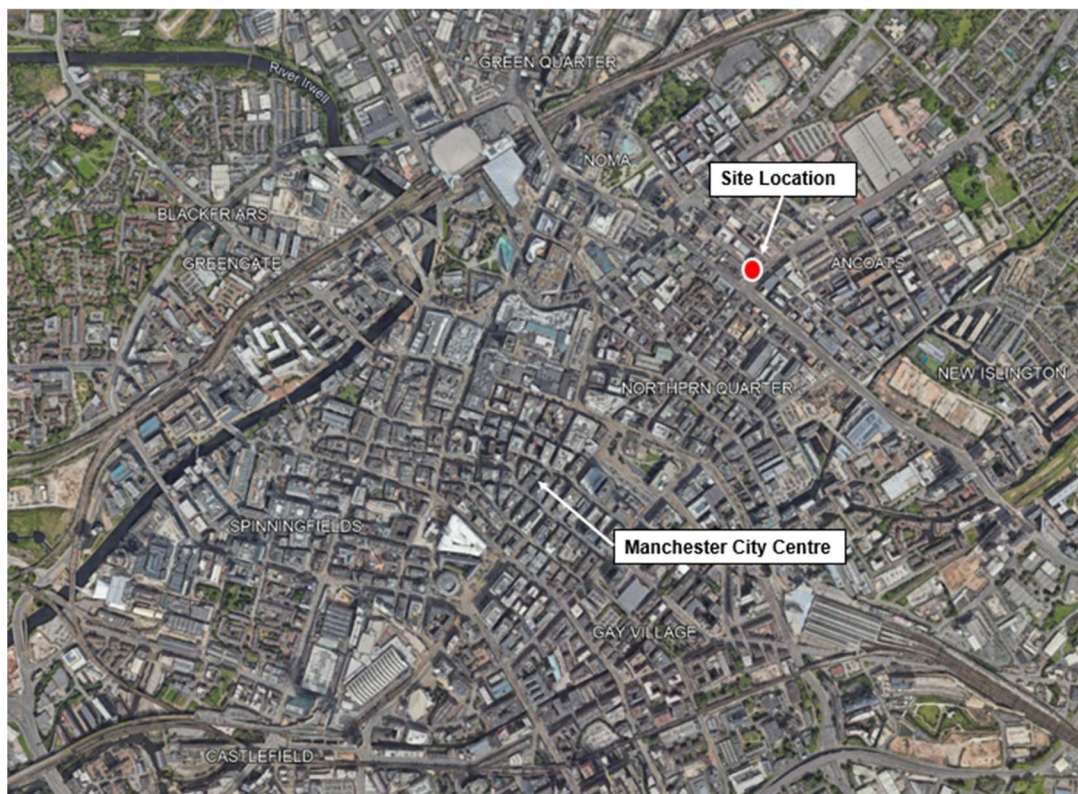


2.0 SCHEME PARTICULARS

2.1 Overview

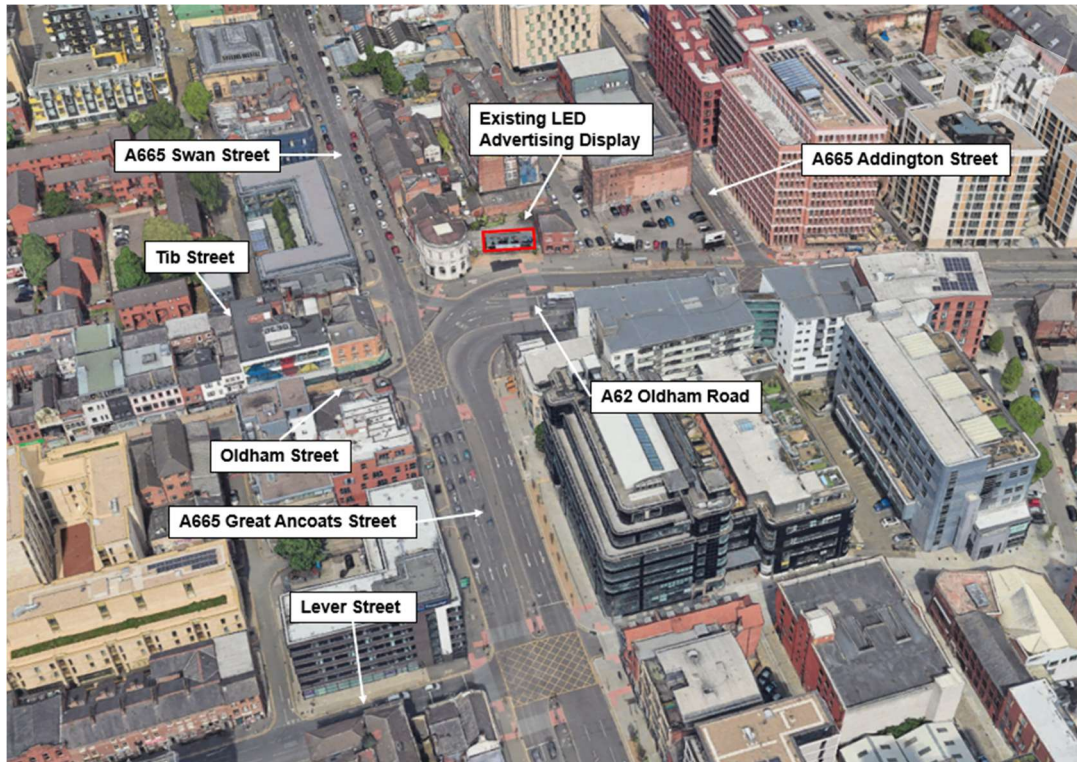
- 2.1.1 The proposed advertisement panel will be situated on land to the north of Oldham Road, Manchester. The proposed display location is situated adjacent to the A62 Oldham Road / A665 Great Ancoats Street signal-controlled junction, at the north-eastern edge of Manchester City Centre, as shown on **Image 2.1**.

Image 2.1 – Site Location Plan



- 2.1.2 The existing internally illuminated digital media screen comprises a single 96-sheet (12m x 3m) LED screen, positioned at a height of 2.5m above the ground. The proposed digital display would comprise the direct replacement of the existing display with a 96-sheet digital display capable of displaying full motion images. The location of the proposed display within the context of the local highway network in the immediate vicinity is illustrated on **Image 2.2**.

Image 2.2 – Site Location – Local Highway Network Context



- 2.1.3 The A62 Oldham Road is a local distributor road which runs in a general north-east / south-west alignment between Oldham and Manchester City Centre. The A665 Great Ancoats Street / Swan Street comprises part of the Manchester City Centre Ring Road.
- 2.1.4 In the vicinity of the proposed display location the prevailing land use is a mix of residential, commercial and hospitality use. The location of the proposed display is therefore situated in a busy and active urban environment.
- 2.1.5 As noted above, the proposed full motion digital advertisement display would be a direct replacement for the existing 96-sheet static digital LED display, which has been in situ since 2016.

2.2 Surrounding Road Network

- 2.2.1 The existing digital advertising display is situated on the northern side of the A162 Oldham Road, adjacent to the Oldham Road / Great Ancoats Street / Swan Street signal-controlled junction. The display is positioned to face south-east and such is primarily visible to traffic travelling in the north-west bound direction along Great Ancoats Street, although it is also visible for a short distance when approaching in the westbound direction along Oldham Road.

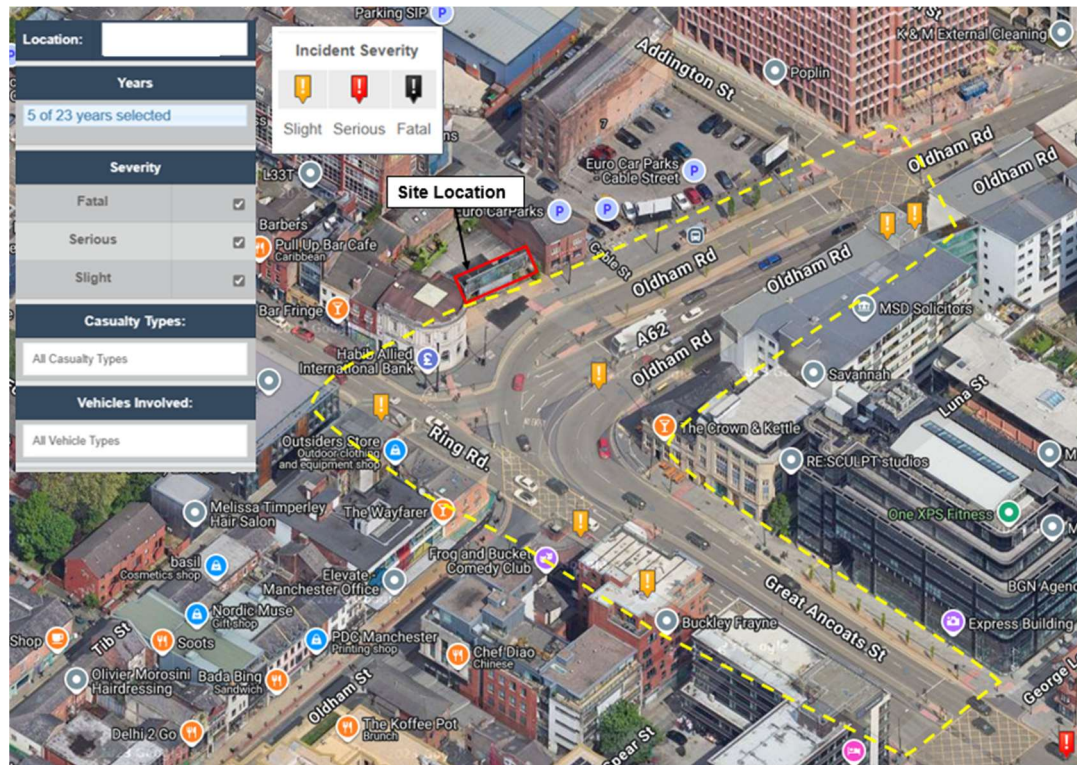
- 2.2.2 In the vicinity of the display location, the A162 Oldham Road is a two-way dual carriageway road. To the north-east of Addington Street Oldham Road features two lanes in each direction, but south-west of Addington Street, in the immediate vicinity of the existing LED display, the south-westbound carriageway widens to four lanes approaching the junction with Great Ancoats Street.
- 2.2.3 Great Ancoats Street forms the north-eastern section of the inner Ring Road around Manchester City Centre. It comprises a two-way dual carriageway road with two lanes in each direction, widening to three lanes at junctions where separate right-turn lanes are provided, including in the north-westbound direction approaching the junction with Oldham Street.
- 2.2.4 To the north-west of Oldham Street, the Ring Road splits into separate one-way sections. Traffic travelling north-west continues directly on past Oldham Street onto Swan Street. Traffic travelling in the south-eastbound direction travels along Addington Street before turning right onto Oldham Road for approximately 60m in order to join Great Ancoats Street.
- 2.2.5 Street lighting is present and there are footways on both sides of each road. The proposed display location is situated within a 30mph zone which covers all of the principal roads in the vicinity. To the south-west of Great Ancoats Street, Tib Street, Oldham Street and Lever Street are all subject to a 20mph speed limit. However, Tib Street and Oldham Street are both one-way streets in the south-westbound direction. Lever Street is a one-way street in the north-eastbound direction, although the existing LED display is not visible until vehicles turn onto Great Ancoats Street.
- 2.2.6 Dedicated pedestrian crossing facilities, including pedestrian / cyclist crossing signal stage call buttons, dropped kerbs, tactile paving and central refuges are present across all arms at the Oldham Road / Great Ancoats Street / Swan Street junction.

2.3 Existing Road Safety Record

- 2.3.1 The road safety record of the local highway network in the vicinity of the proposed display location has been examined for the most recently available five-year period (2020 to 2024 inclusive), using the online CrashMap resource (www.CrashMap.co.uk). The location and severity of the accidents are shown on **Image 2.3**.



Image 2.3 – Road Safety Record (2020 – 2024 Inclusive)



2.3.2 The record shows that during the most recent five-year period a total of 6 accidents have occurred within this study area, all of which resulted in slight injury. Volumetrically, this equates to approximately 1.2 accidents per year, on average.

2.3.3 An analysis has also been undertaken of the long-term pattern of accidents in the vicinity of the proposed display location, within the same study area illustrated in **Image 2.3** and including the period immediately prior to the installation of the existing LED display, using CrashMap data. This data is summarised in **Table 2.1**.

Table 2.1 – Accidents by Year and Severity – Pre and Post Installation of Existing LED Display

Severity / Year	Fatal	Serious	Slight	Total
Pre-Opening Accident Data				
2013	0	0	2	2
2014	0	0	1	1
2015	0	0	1	1
Post-Opening Accident Data				
2016	0	1	0	1
2017	0	0	4	4
2018	0	0	2	2
2019	0	0	1	1
2020	0	0	1	1
2021	0	0	1	1

2022	0	0	2	2
2023	0	0	1	1
2024	0	0	1	1
Total	0	1	17	18

2.3.4 This demonstrates that the other than a very slight increase in the 12-month period immediately following the initial installation of the existing LED display, the number of accidents per year has generally been consistent with the pattern observed over the three-year period immediately prior to the installation of the digital display, at 1 to 2 accidents per year.

2.3.5 The accident data therefore demonstrates that there is no inherent increased risk of accidents associated with the presence of the existing LED display. As such, the accident record within the study area does not therefore represent a cause for concern. It is considered unlikely that the proposed introduction of full motion images at this site will result in an increased risk of accidents occurring due to driver distraction.

3.0 APPLICATION PROPOSALS

3.1 Overview

3.1.1 As mentioned in Section 2, the application proposal comprises the updating of the existing 96-sheet LED advertising display at 1-11 Oldham Road, Manchester, to enable to the display of full motion images.

3.1.2 The hoarding will measure 6.1m height x 12.5m width x 1m, with a screen size of 3m height x 12m width, fixed at a height of 2.5m above the ground.

3.2 Proposed Conditions

3.2.1 The LED display will operate in line with best practice standards for digital posters and will have the following features.

- i) The display will show a cycle of advertisements and each advertisement will be displayed every 10 seconds, with advertisements changing with a rapid fade, in order to avoid flashing whilst also limiting eye dwell time;
- ii) With regard to the proposed minimum message display duration, the advertisements would cycle almost instantaneously (0.1 seconds or less). As such the transition between images would be near seamless and be unlikely to cause any material distraction; and
- iii) The intensity of the illumination of the display will be no greater than 300 candela/m² at night in accordance with the recommendations of the Institute of Lighting Professionals (ILP)¹. The daytime levels will adjust according to the ambient light to prevent glare in low light conditions (much like the screen of a modern smart phone).

3.2.2 As well as the above standard operating conditions for digital signage, the applicant would propose additional operational controls specific to full motion-capable signage, in common with the operating conditions currently in place at other full motion digital advertising sites, including nearby similar installations in Manchester such as the NQ

¹ Institute of Lighting Professionals (2023). *PLG05/23 The Brightness of Illuminated Advertisements including Digital Displays*



Digital Tower on Miller Street and the Gateway Piccadilly tower on Ducie Street.

These controls would include the following:

- i) The display will not be illuminated by intermittent or flashing lighting;
- ii) Any changes to brightness will be made so as to not cause visual distraction through significant adjustments to screen brightness at any one time;
- iii) A maximum length of three minutes for a single piece of content; and
- iv) No “live” content shall be displayed unless prior approval is received from MCC.

3.2.3 Since there is already an operational static digital LED advertising display at this location, the principal of digital advertising in this location is well established, and the primary consideration in this case is to establish that the proposed use of moving images does not pose any increased risk to public safety compared to the existing static-image display.

3.2.4 With specific regard to the display of full-motion images, a number of case study sites have been examined, as discussed in **Section 4.0**. Of particular relevance, an analysis of accident data in the vicinity of the NQ Digital Tower site on Miller Street, approximately 460m north-west of the proposed display location, identified that the number of accidents per year during the period in which the display had been operating with full motion was generally consistent to the period prior to the installation of a full motion-capable display. This indicates that there is no significant correlation between the frequency of accidents and the presence of full motion-capable advertising.

4.0 RESEARCH ON FULL MOTION ADVERTISING

- 4.1.1 It is a recognised fact that roadside advertising is intended to be visible and attractive. There have been various studies which have investigated the effect of roadside advertising signs on road safety. In particular, a Transport Research Laboratory (TRL) report² published in 2009 investigated the effect of static and motion advertising based on the use of a car driving simulator. A subsequent report was jointly published in February 2019 by TRL, the SWOV Institute and the Vias Institute in Belgium³.
- 4.1.2 The general conclusions of these reports were that a causal relationship between roadside advertising and the number of crashes has never been directly and unambiguously established. The studies also identified the need to validate the simulator results against on-road tests.
- 4.1.3 In an attempt to fill the gap in research regarding the real-world implications of full motion advertising on highway safety, a study was undertaken by Waterman Infrastructure & Environment on behalf of JC Decaux and Wildstone in 2017⁴. This study undertook a real-life examination of whether advertising displays that show moving images at the roadside have affected recorded injury accidents at 17 sites in major cities in the UK. The study found no evidence that the introduction of full motion displays at the sites considered had been a factor in the accidents that had occurred nearby, or that the introduction of full motion advertising signs had adversely affected accident rates.
- 4.1.4 The Waterman study was subsequently reviewed and updated by Axis on behalf of Wildstone in 2022⁵. This study reviewed the most recent accident data across a similar set of case study sites as that included in the Waterman study. It also took into account the accident data analysed in the Waterman study, to provide an accident dataset covering a period of more than 10 years.

² Published Project Report PPR409, Investigating driver distraction: the effects of video and static advertising

³ Assessing Distraction of Vehicle Drivers in Europe from Roadside Technology-based Signage (ADVERTS)

⁴ Full Motion Digital Roadside Advertising: Investigation of the effect on Accidents of Full Motion Digital Roadside Advertising (June 2017)

⁵ Full Motion Digital Roadside Advertising Highway Safety Study (May 2022)



- 4.1.5 The Axis study considered a total of 12 case study sites across five locations around the UK, including five existing sites within Greater Manchester. The study found no evidence that shows that the introduction of full motion displays at the sites analysed was a factor in the accidents that occurred nearby, and that there was generally an above average decrease in the number of accidents per year over the last 10 years, compared to the wider constituencies within which they are located.
- 4.1.6 The evidence clearly demonstrated that the presence of full motion-capable advertising did not have an adverse impact on accident rates at the case study sites included in the study, and there was no indication of any discernible impact on highway safety as a result of LED advertisement signage at any of the sites considered. As such it can be concluded that full motion advertising can be acceptable in similar environments. The characteristics that the majority of the case study sites shared in common were that they are located alongside relatively low speed roads, are only visible for any significant distance from a single direction rather than from multiple approaches and are often sited in locations where traffic movements are restricted to reduce the number of conflicting movements.
- 4.1.7 The report detailing the findings of the Axis study summarised above is included for reference as **Appendix A**. A summary of the accident analysis on the highway network surrounding the case study sites is included as **Appendix B**.

5.0 PLANNING ASSESSMENT

5.1 Suitability of Proposed Sign Location

- 5.1.1 The findings of the '*Full Motion Digital Roadside Advertising Highway Safety Study*' identified a number of factors that influence the suitability of a site for hosting a full motion-capable advertising display.
- 5.1.2 These factors were used to establish a simple checklist appraisal to help quickly establish the suitability of a site in relation to a number of key criteria linked to two primary aspects – Site Characteristics and Accident History.
- 5.1.3 A Site Identification Toolkit has been completed for the proposed display location, included as **Appendix C**. This identifies that the proposed display location has a majority of criteria in common with, and is broadly comparable to, the case study sites included in the '*Full Motion Digital Roadside Advertising Highway Safety Study*'. The proposed display location is therefore considered to be generally suitable for hosting a full motion-capable advertising display.
- 5.1.4 As a general principle, it should also be noted that drivers are almost always continually assimilating sensory inputs from multiple sources whilst driving. It is not considered that the presence of the proposed full motion-capable LED advertisement display at this location would represent a material departure from the types of features that drivers are used to seeing at the roadside.

5.2 Proposed Operational Controls

- 5.2.1 In order to ensure that the proposed full motion advertising display will operate safely and minimise the risk to public safety resulting from driver distraction, it is proposed that the display will operate in accordance with industry best practice. A number of operational controls have been put forward in this regard, as detailed in **Section 3.2** above.
- 5.2.2 In common with other prominent examples of consented full motion advertisements, it is proposed that the display will not be illuminated by intermittent or flashing lighting and will not display any "live" content unless prior approval is received from MCC.



6.0 SUMMARY AND CONCLUSIONS

- 6.1.1 Axis has been appointed by Wildstone Estates Ltd (the applicant) to provide highways and transportation advice in support of a planning application for the proposed conversion of an existing digital LED advertising display to full motion operation. The existing display is situated on land to the north of Oldham Road, Manchester.
- 6.1.2 This Highway Safety Report has reviewed the proposed full motion LED display in the context of the local highway network, including a review of the recent accident history within the vicinity of the existing display location, in order to demonstrate that the proposed display of full motion images will not result in undue risk to highway or pedestrian safety as a result of significant driver distraction.
- 6.1.3 The proposed LED advertisement display would have the following features:
- i) 6.1m height x 12.5m width x 1m depth hoarding size, fixed at a height of 2.5m above the ground, with a screen size of 3m height x 12m width;
 - ii) The display will show a cycle of advertisements, and each advertisement will be displayed every 10 seconds, with advertisements changing with a rapid fade, in order to avoid flashing whilst also limiting eye dwell time; and
 - iii) The intensity of the illumination of the display will be no greater than 300 candela/m² at night, significantly below the maximum threshold recommended by the ILP. The daytime levels will adjust according to the ambient light to prevent glare in low light conditions.
- 6.1.4 Additional operational controls have also been put forward which mirror the consents granted at other prominent consented full motion advertisements within the UK.
- 6.1.5 It is likely that the advertisement content shown on the proposed display will be simple, clear, and easy to disseminate by passing motorists. As a general principle, it should also be noted that drivers are almost always continually assimilating sensory inputs from multiple sources while driving. Modern digital technology allowing the display of content with motion is also increasingly being used within shop window displays across the UK, in locations which are visible from the adjacent highway network. It is not considered that the presence of the proposed full motion



LED advertisement display at this location would represent a material departure from the types of features that drivers are used to seeing at the roadside all the time.

- 6.1.6 A review of the local accident record has been undertaken using data obtained from CrashMap. The record shows that during the most recently available five-year period (2020-2024), a total of 6 accidents occurred in positions from which the existing LED display was visible.
- 6.1.7 This equates to 1.2 accidents per year on average, compared to a long-term average of 1.1 accidents per year in the 9 years for which the existing LED display has been present, and 1.3 accidents per year in the three-year period immediately before the existing digital display was installed. This demonstrates that the number of accidents per year has generally been consistent with the pattern observed prior to the installation of the digital display, at 1 to 2 accidents per year.
- 6.1.8 As such, the accident record within the study area does not therefore represent a cause for concern. It is considered unlikely that the proposed introduction of full motion images at this site will result in an increased risk of accidents occurring due to driver distraction.
- 6.1.9 A summary of previous studies and research into the impact of digital advertising on public safety has been presented. This includes a review of highway safety records at case study sites of existing full motion advertising signs in the UK, both before and after their installation. This analysis demonstrated that there has been no adverse impact on public safety at any of the case study sites considered following the introduction of full motion advertising. It has been demonstrated that the proposal site shares similar characteristics to the case study sites.
- 6.1.10 It is therefore considered that the proposed conversion of the existing static-image digital LED advertising display at 1-11 Oldham Road to a full motion-capable display would not result in undue risk to highway or pedestrian safety road users compared to the existing static digital LED display.
- 6.1.11 It is concluded that based on the information presented in this report, there should be no reason to withhold planning permission from a public safety perspective.

Appendix A – Full Motion Digital Roadside Advertising Highway Safety Study



Full Motion Digital Roadside Advertising, Highway Safety Study

Highways Technical Note 01

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APPENDIX C – EXAMPLE SITE IDENTIFICATION TOOLKIT

1.0 INTRODUCTION

1.1 Overview

- 1.1.1 Large format roadside advertising is a traditional form of out-of-home advertising which has been commonplace in the UK for decades. The format of such advertisements has evolved over time from simple static images to the introduction of lightboxes, the move towards scrolling sheets or rotating prisms, and more recently the introduction of digital technology, which allows flexibility with regard to running multiple adverts and real time campaigns. Although these digital signs allow for sequentially changing images, these images are still static in the vast majority of cases.
- 1.1.2 Signs conveying the impression of motion in roadside advertising have also been used for many years, through co-ordinated arrangements of neon and lightbulbs. Another technique is the use of subtle motion, which uses limited motion of a repetitive nature, generally only on a limited part of the display, e.g. to convey the movement of waves, clouds, smoke, hair, etc. There have also been standalone roadside digital signs displaying full motion images present in several UK cities for a number of years.
- 1.1.3 Modern digital technology allowing the display of content with motion is also increasingly being used within shop window displays across the UK. Such advertising does not require advertising planning consent, but it is becoming increasingly popular in locations which are visible from the adjacent highway network.
- 1.1.4 However, fundamental concerns are sometimes raised by highways engineers and safety officers as to the effect of motion displays on highway safety. The view that changes in the displayed content has the potential to increase the risk of driver distraction, resulting in an increased risk of collisions, is often raised as an objection when proposals for full motion advertising signs come forward. Although this is a valid concern, such views are generally based on a subjective view of a perceived risk. Very few studies have been undertaken to provide empirical evidence as to the real-world effect of digital full motion advertising on road safety.
- 1.1.5 Furthermore, the roadside advertising signs capable of displaying full motion images that do exist are clustered within a small number of Local Planning Authority (LPA)

areas, compared to static digital advertising which has become much more widespread. Best practice guidance exists regarding the siting of static digital displays. However, no research has been undertaken to identify why certain LPAs have permitted full motion signs, and whether there is any commonality between the sites where full motion signs do exist that would help to identify these sites as being particularly suitable as a location for full motion advertising, with regard to minimising any potential impact on highway safety.

1.2 Purpose of This Report

- 1.2.1 AXIS has been appointed by Wildstone Estates Ltd to investigate existing digital roadside advertising screens used to display full motion images and located next to urban traffic routes in the UK, in order to identify any potential public safety issues associated with such sites.
- 1.2.2 This research would then help to identify similar suitable sites for full motion displays in other LHA areas, identify any common factors which may present a risk to achieving planning consent, and provide a methodology for objectively assessing the likely acceptability of full motion sites.
- 1.2.3 The purpose of this report is therefore to present the findings of this research and develop a 'toolkit' of potential factors that could be used to help gauge the suitability of potential sites for supporting full motion advertising signs and identify any common elements which may present a risk to achieving planning consent. From this a standard template Highway Safety Report will be created, condensing the findings of this study into a summarised, outward-facing version suitable for submitting as supporting evidence with planning applications.

1.3 Report Structure

- 1.3.1 Following this introductory section, the structure of this report is as follows:
 - **Chapter 2** sets out the study objectives in more detail and describes the study approach;
 - **Chapter 3** provides a review of previous studies and research that has been undertaken in respect of full motion digital roadside advertising;
 - **Chapter 4** provides an overview of the case study sites used for this study;
 - **Chapter 5** presents the findings of the analysis of each case study site;

- **Chapter 6** sets out a toolkit to assist with determining the suitability of potential sites for accommodating full motion advertising; and
- **Chapter 7** provides the summary and conclusions.

2.0 STUDY OBJECTIVES AND APPROACH

2.1 Objectives

2.1.1 The objectives of the study are to:

- Identify whether large format full motion digital roadside advertising has affected the rates and characteristics of road traffic accidents nearby; and
- Identify specific aspects relating to the location of existing full motion digital displays which could help to identify potential suitable sites in other locations.

2.2 Approach

2.2.1 The approach to the study will primarily take the form of a case-study review of existing full motion LED sign sites. This review has considered a range of site-specific elements in order to build up a general picture of factors which may influence highway safety or mark a site out as being suitable for hosting a full motion digital advertising display.

2.2.2 The factors that have been considered in this review include:

- The nature of the local highway network in the vicinity of each sign, including consideration of vehicle speeds and pedestrian flow;
- The character of the surrounding area. For example, is the site in a city centre or edge of town location; what is the facing and prominence of the sign; what is the proximity of the sign to nearby junctions or pedestrian crossings;
- A review of accident data covering the period before and after the full motion sign became operational, where possible, to identify trends in the accident data with the aim of demonstrating an absence of potential highway safety issues that could be attributed to the presence of the advertising display; and
- Consideration of the planning history at each site, for example did the sign receive planning consent or go to appeal; what was the general view of the LPA; what supporting information, if any, was provided with the application to allow assessment and determination of the application by the LPA.

3.0 REVIEW OF PREVIOUS RESEARCH

3.1 Overview

3.1.1 Various studies have investigated the effect of roadside advertising signs on road safety. It is a recognised fact that roadside advertising is intended to be visible and attractive. It is also recognised from the evidence of previous studies that motion content is likely to be more attractive than static displays.

3.1.2 The following sections provide a summary of the findings and conclusions of some of these previous studies, with particular focus on any conclusions and recommendations relating to full motion advertising signs.

3.2 Transport Research Laboratory: PPR409 (2009)

3.2.1 A study by the Transport Research Laboratory (TRL) “*Published Project Report PPR409, Investigating driver distraction: the effects of video and static advertising*” (June 2009) compared the effect of static and motion advertising based on use of a car driving simulator. It found, when compared to their behaviour when passing static advertisements, that participants in the study:

- *‘spent longer looking at video adverts;*
- *glanced at video adverts more frequently;*
- *tended to show greater variation in lateral lane position with video adverts;*
- *braked harder on approach to video adverts;*
- *and drove more slowly past video adverts.’*

3.2.2 The study concluded that *‘this combination of results indicates that video adverts caused a significantly greater impairment to driving performance than that caused by static adverts’*.

3.2.3 TRL proposed further work to establish drivers’ normal (driving and visual) behaviour when adverts are not present aimed at helping understand the true level of impairment caused by the various advertising configurations and commented that: *‘further possible studies may investigate:*

- *on-road / on-track validation of simulator results*
- *simulator study involving greater density of static/video advertising*
- *examining the effects of different sizes of static/video advertising*
- *benchmarking the effect of different content types (high vs low distraction)*

- *review of collisions in London in relation to the presence of nearby advertising.*

3.2.4 The case study sites included within the Waterman Study, summarised below, and also within this study, include analysis of collisions in the vicinity of full motion-capable advertising sites in London, and as such helps to fill some of the gap in the evidence base that was noted by TRL.

3.3 SWOV Factsheet (2012)

3.3.1 A factsheet published in April 2012 by the SWOV Institute for Road Safety Research in The Netherlands drew on several previous studies, including studies in the UK, to provide an overview of what was known about distraction by advertising and information billboards.

3.3.2 With regard to moving image billboards, the factsheet referenced a number of previous studies, including the TRL study summarised above, which had presented evidence from driving simulator tests suggesting that outside distractions can affect driving behaviour, and that moving content can attract more attention than static images.

3.3.3 However, the factsheet's conclusions noted that '*a causal relation between roadside advertising and the number of crashes has never been established directly and unambiguously*'.

3.4 CEDR ADVERTS Report (2019)

3.4.1 The SWOV Institute and TRL, along with the Vias Institute in Belgium, subsequently co-published the study '*Assessing Distraction of Vehicle Drivers in Europe from Roadside Technology-based Signage (ADVERTS)*'. The findings of this were published in February 2019 and were presented as a series of recommendations for Local Authorities.

3.4.2 In relation to billboards capable of displaying full motion, the study recommended that "Advertisements with moving images and animations should never be used". However, this conclusion was reached primarily because "*there is a lack of clear evidence to define an amount of movement that is 'acceptably safe'*".

3.4.3 The study took the form of a literature review of previous studies into the impact of advertising on road safety and did not include any direct research. The report noted that "*There are limited direct studies on this issue, due to the relative novelty of the technology; however when video billboards were included in the studies, these*

billboards had the most deteriorating effect on gaze behaviour and driving performance, especially for young drivers". This finding was drawn from the simulator-based research included in the 2009 TRL report referred to above.

- 3.4.4 The report goes on to state that "*The precise impact of the amount of movement on gaze behaviour in this context is a gap in research; there is currently an absence of clear evidence on thresholds that might be deemed acceptable. Research on the specifics (such as how much movement is needed to draw attention) might in the future help to inform the debate. The safest assumption at this stage is therefore that moving images should not be used*".

3.5 Waterman Study (2017)

- 3.5.1 The study '*Full Motion Digital Roadside Advertising: Investigation of the effect on Accidents of Full Motion Digital Roadside Advertising*' prepared in June 2017 by Waterman Infrastructure & Environment on behalf of JC Decaux and Wildstone, was an attempt to fill the gap in research regarding the real-world implications of full motion advertising on highway safety.
- 3.5.2 This study undertook a real-life examination of whether advertising displays that show moving images at the roadside have affected recorded injury accidents at 17 sites in major cities in the UK.
- 3.5.3 The study found no evidence that shows that the introduction of full motion displays at the sites considered had been a factor in the accidents that had occurred nearby, or that the introduction of the Full Motion advertising signs had adversely affected accident rates.
- 3.5.4 The study also found that although the signs assessed had the capability or consent to display full motion images, in practice they often showed static images or a mixture of static images and moving images.
- 3.5.5 The case study sites considered in the Waterman report are broadly the same range of signs that are in situ at present, and which will form the basis of this study.

4.0 DESCRIPTION OF CASE STUDY SITES USED

4.1 Case Study Sites

- 4.1.1 Fourteen sites were selected by Wildstone for consideration in this study. The site locations around the UK are shown in **Figure 4.1** below. Two of the sites are in Glasgow, one is in Liverpool, five are in Manchester, three are in Birmingham, and one is in London. The sites identified are those permitted to operate with movement or that are known to have been actively used to display moving images.

Figure 4.1 – Location of Full Motion Advertising Sign Case Study Sites



- 4.1.2 Location maps and photographs of each of these sites are included in **Appendix A**.

4.1.3 **Table 4.1** below provides a summary of the location of each site, details of the planning consent, and the approximate dates from which each sign has been available for full motion advertising.

Table 4.1 – Site Details

Ref	Address	City	Operator	Planning Ref	Planning Level	Date of Consent	Approx. Date Available for Full Motion
A	City Screen, Glasgow Central, Union Street	Glasgow	Ocean	N/A	N/A	N/A	July 2013
B	The Screen@Glasgow Western Gateway, Great Western Road	Glasgow	Ocean	12/02580/DC	Application	01/03/2013	September 2013
C	UK Fast Campus, Greenheys Lane West	Manchester	UK Fast	103962/AOH/2013/S1 130459/AOH/2021	Application	01/03/2016	June 2016
D	The Screen@Manchester One, Portland Street	Manchester	Ocean	102189/AOH/2013 APP/B4215/H/13/2203371	Appeal	07/01/2014	April 2014
E	The Screen@Gateway Piccadilly, Ducie Street	Manchester	Ocean	112306/AOH/2016/C2 APP/B4215/2/16/3157805	Appeal	20/01/2017	April 2018
F	ECP Car Park, Deansgate	Manchester	City Outdoor	098751/AOH/2012 APP/B4215/H/12/2180069	Appeal	04/03/2013	April 2014
G	Northern Quarter Digital Tower, Miller Street	Manchester	City Outdoor	098753/AOH/2012 APP/B4215/H/12/2182939	Appeal	04/03/2013	April 2014
H	Liverpool Media Wall, Lime Street	Liverpool	Ocean	07A/2324 & 12A/2128	Application	09/10/2007 & 01/11/2012	February 2008
I	The Screens@Broad Street, Broad Street	Birmingham	Ocean	2012/05742/PA	Application	12/10/2012	April 2013
J	The Screen@Bullring North, Smallbrook Queensway	Birmingham	Ocean	2012/06418/PA & 2014/02990/PA	Application	26/10/2012 & 26/06/2014	April 2013
K	The Screen@Bullring South, Moat Lane	Birmingham	Ocean	2012/02654/PA	Application	12/06/2012	December 2012
L	Piccadilly Circus, Shaftesbury Avenue	London	Ocean	13/03101/ADV & 16/03719/FULL	Application	10/05/2013 & 11/08/2016	November 2013

4.1.4 Further analysis of the specific details of each site, including particulars of the planning process, the general context of each sign in relation to the surrounding streetscape, and an analysis of the highway safety record before and after each sign was available for full motion, is covered in the following section of the report.

4.2 Other Full Motion Advertising Sign Examples

4.2.1 During the course of undertaking the study, a number of other roadside advertising sign sites displaying full motion images have also been identified. These sites have not been included in the main case study analysis, either because they do not appear as a prominent feature to road traffic, or because they have been installed too recently to obtain any useful comparison data to assess the impact of the sign on highway safety. However, a brief description of these sites has been provided to illustrate the increasing prevalence of full motion-capable advertising signs.

4.2.2 Printworks, Withy Grove, Manchester – Partial motion since 2000. Sign refurbished in 2016 and 2019. Limited view of sign for road traffic. Primarily visible along pedestrian/tram only section of Corporation Street. Approximately 30 accidents in total in the vicinity of the sign since the original sign was erected in 2000, but only 5

since 2012, and only 2 since 2017. The sign displays a combination of static, partial motion and full motion advertisements.

- 4.2.3 Piccadilly Gardens, Manchester – Planning consent for LED sign on the side of Piccadilly Plaza was granted in 2005. Full motion since at least 2012. Predominantly faces onto pedestrianised Piccadilly Gardens, so limited view of sign for road traffic. 22 accidents in vicinity of the sign in last 10 years, but only 6 in the last 5 years. Sign displays a combination of static, partial motion and full motion advertisements.
- 4.2.4 Wood Street, Kingston-upon-Thames – Planning consent for full motion-capable sign on Wood Street was granted in March 2014, with the sign being operational from approximately September 2014. This sign was included as a case study site in the Waterman study. The original sign was replaced with a newer sign around March 2021. During a site visit by AXIS in 2022 it was observed that the sign was only displaying static advertisements, with no moving images. As such, the site has been removed from detailed consideration as a case study example. Planning consent for a second full motion-capable sign on Wood Street, located adjacent to Kingston railway station, was granted at the same time, although this sign was not ultimately erected until 2021 due to ongoing improvement works at the railway station. Although full-motion capable, this second sign was also observed to be displaying static images only.
- 4.2.5 Grand Central / New Street Station, Birmingham – Full motion since approximately 2015. Implemented as part of the refurbishment of the eastern gateway to New Street Station and Grand Central shopping centre, and situated approximately 75m north-west of Site J. The sign displays full motion images and is visible to vehicles travelling along Smallbrook Queensway.
- 4.2.6 King Street, Hammersmith – Planning consent for a full motion-capable sign was granted as part of a planning application for the refurbishment of Kings Mall Shopping Centre in Hammersmith in 2018. The sign was subsequently erected in late 2018. However, although the planning consent permits the display of moving images, a site visit by AXIS in 2022 observed that the sign did not appear to be operating for the purpose of displaying advertisements and was displaying a single static image. As such, the site has been removed from detailed consideration as a case study example.

5.0 ANALYSIS OF CASE STUDY SITES

5.1 Site Analysis Methodology

5.1.1 The following sections provide an analysis of the case study sites listed above, with consideration of the local highway context, the characteristics of the surrounding area, and any relevant features linked to the planning application process, for example comments by the Local Planning Authority or Planning Inspector, or any supporting evidence presented with the application.

5.1.2 Also presented is an analysis of the personal injury accident history at each site. This draws on accident data generally dating from 2008 to 2021, in order to try to obtain as accurate a picture as possible regarding any trends in accident occurrence before and after each of the signs was erected.

5.2 Site A – City Screen, Glasgow Central

General Description		
Sign Orientation	Single-sided, North facing	
Nature of Local Highway Network	Renfield St north of Gordon St is two-lane, single-carriageway, one-way (SB), 30mph speed limit.	
	Union St south of Gordon St is two-lane, single-carriageway, restricted access (buses/taxis/authorised vehicles only), 20mph speed limit.	
	Gordon St west of Union St is single-lane with on-street parking, single-carriageway, one-way (EB) with contra-flow cycle lane, restricted access (taxis only), 30mph speed limit.	
	Gordon St E of Union St is single-lane with on-street parking, single-carriageway, one-way (EB) with contra-flow cycle lane, 30mph speed limit.	
Character of Local Area	The Union St/Renfield St/Gordon St junction is signalised with ped crossing facilities. Existing junction arrangements only implemented in 2020. Union St previously open to all traffic & Gordon St E was two-way (with restricted access).	
	City Centre site with very high pedestrian flow as adjacent to Glasgow Central railway station. Sign is located on station roof so is only visible when approaching from north along Renfield St, however the sign is visible for over 500m in this direction, through 6 signalised junctions.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	No planning application details available.	
Any Supporting Information	No planning application details available.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least May 2014, and that a different sign existed in September 2012. Assumed date of 16/07/13 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,023 (from 01/01/2008)	2,906 (to 30/06/2021)
No. of Accidents near Sign	72	41
Ave. No. of Accidents per Year	13.0	5.1
Comments	No contributory factor information. Data provides only location, severity and date. Accident study area takes in full length of Renfield St along which sign is visible, as far as junction with Renfrew St.	

5.3 Site B – The Screen @ Glasgow Western Gateway

General Description		
Sign Orientation	Single-sided, South-East facing	
Nature of Local Highway Network	A82 Great Western Road is two-way, two-lane dual-carriageway, 30mph speed limit. Ascot Ave N of A82 & Fifth Ave S of A82 are two-way, single-lane, single-carriageway, 20mph speed limit (Ascot Ave mandatory, Fifth Ave advisory). A82/Ascot Ave/Fifth Ave junction is complex signalised junction with walk-with-traffic ped facilities.	
Character of Local Area	A82 is primary distributor route into Glasgow from north-west. High traffic flow. Edge of town, suburban location. Surrounding land use is primarily residential. Bus stops are present on both sides of A82, and the sign is located close to Anniesland railway station, so relatively high pedestrian flow. The sign is situated adjacent to a railway bridge and offset from carriageway so is only visible to traffic on the WB approach on Great Western Rd for approx. 150m, and for approx. 25m on Ascot Ave & Fifth Ave. Sign located approx. 80m beyond stop line on A82 WB.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	Planning consent granted at application stage. LHA comments noted that " <i>I do not envisage it to be a cause for driver distraction</i> ". Planning conditions limit brightness to 600cd/sqm, and states sign to be at least 6m from carriageway & 2.25m above footway. No specific reference to full motion in supporting statement, but no specific exclusion of full motion stipulated in decision notice.	
Any Supporting Information	No supporting highway safety evidence submitted.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least May 2014, and that a different sign existed in September 2012. Assumed date of 01/09/13 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,070 (from 01/01/2008)	2,860 (to 30/06/2021)
No. of Accidents near Sign	5	4
Ave. No. of Accidents per Year	0.9	0.5
Comments	No contributory factor information. Data provides only location, severity and date.	

5.4 Site C – UK Fast Campus, Greenheys Lane West

General Description		
Sign Orientation	Single-sided, South facing	
Nature of Local Highway Network	A5103 Princess Rd is two-way, three-lane dual-carriageway (two-lanes N of Geenheys Lane), 30mph speed limit. Greenheys Lane is two-way, single-lane, single-carriageway (widening to 3 lanes at junction with A5103), 30mph speed limit. A5103/Greenheys Lane junction is complex signalised junction with walk-with-traffic ped facilities & separate cycle crossings.	
Character of Local Area	A5103 is primary distributor route into Manchester from south. High traffic flow. Edge of town, suburban location. Surrounding land use primarily residential. Sign is prominently visible on A5103 NB approach for approx 150m. Visible at acute angle along Greenheys Lane WB for approx 340m & Greenheys Lane EB for approx 50m.	
Images Displayed	Primarily a combination of static & partial motion. Some full motion.	
Planning History		
Application Details / Relevant Planning Comments	Planning consent granted at application stage. Original advertising consent was until Nov 2018. Application for retention of sign approved in Oct 2021. Planning conditions stipulated min message duration 10s; Max illumination 300cd/sqm; No flashing error messages in event of breakdown; Moving images only permitted on upper half of screen. 2016 conditions also required submission of safety audit report. 2021 officer's report noted that " <i>the sign has been in operation for sometime and no reports of accidents attributed to this sign have been reported. Given this... it is considered in this instance that the proposed sign will not prove to be a distraction</i> ".	
Any Supporting Information	Road safety audit provided with 2021 application. Highlighted risk of distraction but no detailed accident analysis included.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least July 2014, although planning consent was not granted until March 2016. Assumed date of 01/06/16 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	3,074 (from 01/01/2008)	1,887 (to 31/07/2021)
No. of Accidents near Sign	37	19
Ave. No. of Accidents per Year	4.4	3.7
Comments	Contributory factors gave no indication that the sign was a factor in any of the accidents that occurred after the sign became available for full motion. Distraction was not recorded as a contributory factor for any of the accidents, and the sign was not mentioned in any of the accident descriptions.	

5.5 Site D – The Screen @ Manchester One

General Description		
Sign Orientation	Double-sided, North-East & South-West facing	
Nature of Local Highway Network	Portland St is two-way, two-lane (1+bus lane NEB), single-carriageway, 20mph speed limit.	
Character of Local Area	City Centre, high pedestrian flow as close to Chorlton St bus/coach station. Sign is visible for approx. 150m in SWB direction, and approx. 170m in NEB direction, through 2 signalised junctions. Sign is not prominently visible from any side-roads connecting to Portland St.	
Images Displayed	Primarily a combination of static & partial motion. Some full motion.	
Planning History		
Application Details / Relevant Planning Comments	Sign allowed at Appeal. Inspector noted that they were content that position of sign is such that full motion could be operated without being detrimental to highway safety.	
Any Supporting Information	Highway safety report submitted with planning application which included detailed accident analysis.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least November 2020. The current sign is a replacement for a similar sign which had been in place since at least September 2012, although express consent for full motion was not granted until January 2014 (Appeal decision date 07/01/14). Assumed date of 07/04/14 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	1,832 (from 01/04/2009)	2,673 (to 31/07/2021)
No. of Accidents near Sign	59	31
Ave. No. of Accidents per Year	11.8	4.2
Comments	Contributory factors gave no indication that the sign was a factor in any of the accidents that occurred after the sign became available for full motion. Distraction was not recorded as a contributory factor for any of the accidents, and the sign was not mentioned in any of the accident descriptions.	

5.6 Site E – The Screen @ Gateway Piccadilly

General Description		
Sign Orientation	Single-sided, North-West facing	
Nature of Local Highway Network	A6 Piccadilly/London Rd is two-way, single lane (1+bus lane SB), single-carriageway, 20mph speed limit. Auburn St W of London Rd is two-lane, one-way EB, 20mph speed limit. Ducie St E of London Rd is two-way, single lane, single-carriageway, 20mph speed limit. London Rd/Ducie St/Auburn St junction is signalised with ped crossing facilities.	
Character of Local Area	City Centre, high pedestrian flow as adjacent to Manchester Piccadilly railway station. Sign is elevated to approx 4th floor height and angled so is only visible when approaching from the north along Piccadilly. Sign is visible for approx 220m in this direction, and for approx 20m on Auburn St. Ducie St closed to through traffic from Piccadilly/Auburn St in 2020.	
Images Displayed	Primarily a combination of static & partial motion. Some full motion.	
Planning History		
Application Details / Relevant Planning Comments	Original application for full motion refused on amenity grounds, not public safety. Allowed at Appeal. No reference to any public safety issues in either planning decision or appeal decision.	
Any Supporting Information	Highway safety report submitted with planning application which included detailed accident analysis.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least May 2018, although a previous sign existed at this site for at least 10 years prior to this. As advised by Wildstone, the previous sign was also full motion capable. Assumed date of 01/01/00 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	0 (Sign present throughout study period)	5,236 (to 31/07/2021)
No. of Accidents near Sign	0	22
Ave. No. of Accidents per Year	N/A	1.5
Comments	Contributory factors gave no indication that the sign was a factor in any of the accidents that occurred after the sign became available for full motion. Distraction was not recorded as a contributory factor for any of the accidents, and the sign was not mentioned in any of the accident descriptions.	

5.7 Site F – ECP Car Park, Deansgate

General Description		
Sign Orientation	Single-sided, South facing	
Nature of Local Highway Network	Bridgewater St & Trafford St are two-way, single-lane, single-carriageway, 20mph speed limit providing access only, joining Deansgate via priority junctions. Existing lane arrangements on Deansgate implemented in 2021. Previously 1 lane + right-turn lane NB.	
Character of Local Area	City Centre, relatively high pedestrian flow as close to Deansgate-Castlefield tram stop and Castlefield tourist attractions. Sign situated adjacent to office building so only visible when approaching from S along Deansgate. Sign is visible for approx 100m along Deansgate & Trafford St, and for approx 50m on Bridgewater St. Sign not visible when approaching any stoplines at Deansgate/Whitworth St signalised junction.	
Images Displayed	Primarily a combination of static & partial motion. Some full motion.	
Planning History		
Application Details / Relevant Planning Comments	Consent for LED sign granted at Application stage. Consent for motion during transition between images gained at appeal, but appeal decision specifically excludes moving images on individual advertisements.	
Any Supporting Information	Highway safety report submitted with planning application which included detailed accident analysis.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least July 2014 and did not exist in September 2012. Express consent for full motion was granted in January 2014 (Appeal decision date 17/01/14). Assumed date of 17/04/14 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,207 (from 01/04/2008)	2,663 (to 31/07/2021)
No. of Accidents near Sign	16	10
Ave. No. of Accidents per Year	2.6	1.4
Comments	Contributory factors gave no indication that the sign was a factor in any of the accidents that occurred after the sign became available for full motion. Distraction was not recorded as a contributory factor for any of the accidents, and the sign was not mentioned in any of the accident descriptions. Of the 10 accidents that occurred after sign was installed, 5 occurred at Bridgewater St/Whitworth St junction south of railway bridge, with 4 occurring to the north of the sign location. The sign is not prominently visible at either of these locations.	

5.8 Site G – Northern Quarter Digital Tower

General Description		
Sign Orientation	Single-sided, South-East facing	
Nature of Local Highway Network	A665 Miller St is one-way, two-lane, 30mph speed limit. Road layout changed extensivley in 2013. Previously two-way, two-lane road along A665 with signalised junction with Dantzic St.	
Character of Local Area	Edge of City Centre, located on inner ring road. Relatively high pedestrian flow as close to Manchester Victoria railway station. Signalised pedestrian crossing located approx 30m SE of sign, but no other conflicting vehicle movements as surrounding streets are pedestrianised. Sign visible for approx 230m when approaching from SE. Not visible when approaching any stoplines at A664 Rochdale Rd/A665 Swan St signalised junction.	
Images Displayed	Primarily a combination of static & partial motion. Some full motion.	
Planning History		
Application Details / Relevant Planning Comments	Consent for LED sign granted at Application stage. Consent for motion during transition between images gained at appeal, but appeal decision specifically excludes moving images on individual advertisements.	
Any Supporting Information	Highway safety report submitted with planning application which included detailed accident analysis.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least May 2014 and did not exist in September 2012. Express consent for full motion was granted in January 2014 (Appeal decision date 17/01/14). Assumed date of 17/04/14 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,207 (from 01/04/2008)	2,663 (to 31/07/2021)
No. of Accidents near Sign	11	11
Ave. No. of Accidents per Year	1.8	1.5
Comments	Contributory factors gave no indication that the sign was a factor in any of the accidents that occurred after the sign became available for full motion. Distraction was not recorded as a contributory factor for any of the accidents, and the sign was not mentioned in any of the accident descriptions. Of the 10 accidents that occurred after sign was installed, 5 occurred at Rochdale Rd/Swan St junction. The sign is not prominently visible at this location.	

5.9 Site H – Liverpool Media Wall

General Description		
Sign Orientation	Single-sided, North-East facing	
Nature of Local Highway Network	A5038 Lime St / St George's Place is two-way, one-lane, 30mph road. Road layout changed extensively in 2021. Previously Lime Street was two-way, two-lane through road, connecting with St George's Place via signalised junction.	
Character of Local Area	City Centre, high pedestrian flow as adjacent to Liverpool Lime Street railway station and St Johns shopping centre. Prior to 2021 high usage of signalised pedestrian crossings at Lime St/St George's Place. Sign affixed to side of St Johns shopping centre, aligned so only visible to traffic approaching along Lime St from the north. Sign is visible for approx 310m in this direction, through A5038/A5047 signalised junction, and for approx 130m along Skelthorne St.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	Planning consent for digital sign at this location originally granted in October 2007. Subsequent application to retain media wall was granted consent in November 2012. No planning application documents available for either application.	
Any Supporting Information	No planning application documents available.	
Assumed Date Full Motion Available	Original consent for full motion was granted in October 2007, so sign available for full motion from this date. Assumed date of 01/02/08 to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,953 (from 01/01/2000)	4,899 (to 30/06/2021)
No. of Accidents near Sign	117	79
Ave. No. of Accidents per Year	14.5	5.9
Comments	No contributory factor information. Data provides only location, severity and date.	

5.10 Site I – The Screens @ Broad Street

General Description		
Sign Orientation	Double-sided, North-East & South-West facing	
Nature of Local Highway Network	A456 Broad St in vicinity of sign converted to tram line in 2020. Previously two-way, single-lane (1+bus lane SWB), single-carriageway, 30mph speed limit. Broad St NW of sign was converted to bus-only route in 2016.	
Character of Local Area	City Centre, relatively high pedestrian flow. NE-facign sign visible for approx 220m along Broad St and 30m along Bridge St. SW-facing sign visible for approx 100m along Broad St.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	Full motion permitted in planning consent. Planning conditions stipulate maximum brightness of 600cd/sqm and no flashing error messages in event of breakdown. Time limited to 5 years but no subsequent extension application. Advertisement management strategy required, to include definition of 'static, part and full motion'.	
Any Supporting Information	None provided.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least May 2014 and did not exist in August 2012. Planning consent was granted in October 2012 (decision date 12/10/12). Assumed sign available for full motion from 12/04/13 (6 months from planning consent) to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	1,916 (from 12/01/2008)	3,002 (to 30/06/2021)
No. of Accidents near Sign	19 (10)	20 (6)
Ave. No. of Accidents per Year	3.6 (1.9)	2.4 (0.7)
Comments	No contributory factor information. Data provides only location, severity and date. Figures in brackets above include only those accidents involving direction of travel towards signs.	

5.11 Site J – The Screen @ Bullring North

General Description		
Sign Orientation	Double-sided, North & South facing	
Nature of Local Highway Network	Smallbrook Queensway is two-way dual-carriageway in vicinity of sign, two-lane S of sign, single-lane N of sign. 30mph speed limit S of sign, 20mph N of sign.	
Character of Local Area	City Centre, high pedestrian flow as adjacent to New Street railway station & Bullring and Grand Central shopping centres. Signalised pedestrian crossings adjacent to north-facing sign, with conflicting vehicle movements into/out of New St Station car park. New St Station car park access converted to taxi-only access/egress in approx 2014. Sign located underneath connecting bridge between shopping centres, and due to alignment of carriageway both sides of sign are only visible for approx 100m along Smallbrook Queensway.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	Full motion permitted in planning consent only for south-facing panel. Planning conditions stipulate brightness limit of 600cd/sqm and No flashing error messages in event of breakdown. Time limited to 5 years but no subsequent extension application. Static digital images on north-facing sign permitted in 2014 p/a but not full motion. Advertisement management strategy required, to include definition of 'static, part and full motion'.	
Any Supporting Information	None provided.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least November 2015 and did not exist in July 2012. Planning consent was granted in October 2012 (decision date 26/10/12). Assumed sign available for full motion from 26/04/13 (6 months from planning consent) to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	1,917 (from 26/01/2008)	2,988 (to 30/06/2021)
No. of Accidents near Sign	9 (6)	13 (6)
Ave. No. of Accidents per Year	1.7 (1.1)	1.6 (0.7)
Comments	No contributory factor information. Data provides only location, severity and date. Figures in brackets above include only those accidents involving direction of travel towards signs.	

5.12 Site K – The Screen @ Bullring South

General Description		
Sign Orientation	Single-sided, East facing	
Nature of Local Highway Network	B4100 Moat Lane is two-way dual-carriageway forming signalised gyratory junction between Moor St, Digbeth, Bradford St & Upper Dean St. B4100 Digbeth is two-way, three-lane dual-carriageway, 30mph speed limit. Sign is located at eastern end of gyratory, adjacent to Moat Lane/Digbeth junction (two-stage signalised junction with ped crossing facilities). Circulatory right-turn lane on Moat Lane appears to have been closed to traffic since approx 2016.	
Character of Local Area	City Centre, relatively high pedestrian flow. Sign affixed to eastern corner of office building and oriented so only visible for approx 200m when approaching from west along Digbeth.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	No full motion permitted in planning consent.	
Any Supporting Information	None provided.	
Assumed Date Full Motion Available	Review of Google Streetview indicates the sign has existed in its current form since at least August 2020. Current sign replaced a similar sign which was present since at least May 2014. A previous, non-LED, sign exist at this site until at least July 2012. Planning consent for first LED sign was granted in June 2012 (decision date 12/10/12). Although no express consent granted, assumed sign available for full motion from 12/12/12 (6 months from planning consent) to be consistent with approach taken in Waterman study.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	1,552 (from 12/09/2008)	3,123 (to 30/06/2021)
No. of Accidents near Sign	8 (6)	20 (9)
Ave. No. of Accidents per Year	1.9 (1.4)	2.3 (1.1)
Comments	No contributory factor information. Data provides only location, severity and date. Figures in brackets above include only those accidents involving direction of travel towards sign.	

5.13 Site L – Piccadilly Circus

General Description		
Sign Orientation	Curved, Single-sided, primarily South facing	
Nature of Local Highway Network	A4 Piccadilly is two-way, two-lane dual-carriageway to SW of Piccadilly Circus. A4 Coventry St is one-way EB to east of Piccadilly Circus. A401 Shaftesbury Ave is two-way, single-lane, single-carriageway to north of Piccadilly Circus (bus-only SB). A4201 Regent St is two-way, two-lane dual-carriageway NW of Piccadilly Circus, one-way NB to south of Piccadilly Circus. All 20mph speed limit. Piccadilly/Regent St/Shaftesbury Ave junction is signalised crossroad with ped facilities. Piccadilly/Shaftesbury Ave were one-way NB through PC prior to approx 2012.	
Character of Local Area	City Centre. Very high ped flow. Prior to 2017 display comprised 6 separate screens. Converted to single large screen in 2017. Screens removed for conversion between Jan & Oct 2017. Screens visible for approx 80m on Piccadilly approach, 140m on Regent St EB approach, 170m on Regent St/St Jame's NB approach & 100m on Shaftesbury Ave approach.	
Images Displayed	Combination of static, partial and full motion.	
Planning History		
Application Details / Relevant Planning Comments	2013 planning consent was for replacement of one of the existing LED screens with a full motion capable sign. 2016 planning consent was for replacement of all six screens with a single large full motion capable display.	
Any Supporting Information	None provided.	
Assumed Date Full Motion Available	Assumed sign available for full motion from 10/11/13 (6 months from 2013 planning consent) to be consistent with approach taken in Waterman study, although in reality some or all of Piccadilly Lights screens have been full motion capable for many years.	
Accident History		
	Without Full Motion Sign Present	With Full Motion Sign Present
Duration of Accident Data (Days)	2,140 (from 01/01/2008)	2,913 (to 31/10/2021)
No. of Accidents near Sign	66	89
Ave. No. of Accidents per Year	11.3	11.2
Comments	The sign is in a recognised display area, with multiple advertising displays, some of which have displayed full motion images throughout the study period. Only 2 accidents between 2008 & 2016 indicated external distraction as a contributing factor. No contributory factors available for accident data post-2016, and data included 17 accidents which occurred north of Denman St/Great Windmill St junction, from where the display is not visible. A further 9 occurred on Regent St involving vehicles travelling away from Piccadilly Circus. These accidents have been excluded from the total above. Data indicates that since 2008, the highest number of accidents in a single year occurred during 2017, when sign was non-operational for approx. 9 months.	

5.14 Analysis of Site Locations

- 5.14.1 Of the 12 case study sites, 9 are situated in city centre locations, in areas with generally high pedestrian flows. Of the remainder, 2 are in edge of city centre locations adjacent to primary distributor routes, with 1 being in an edge of city centre location adjacent to an inner ring road.
- 5.14.2 In terms of proximity to major junctions, 8 of the 12 case study sites are situated within 100m of a signalised junction. However, of these only 2 (Sites B and C) are junctions where average vehicle speeds are likely to exceed 20mph. The others are on city centre roads where vehicle speeds are likely to be restricted by a combination of 20mph speed limits, proximity to adjacent junctions, and high volumes of pedestrian movements. Also of note is that 3 of these city centre sites were installed close to junctions where one or more of the approach roads is a one-way street (or permitting some restricted movements, e.g. bus or taxi only). This reduces the number of conflicting vehicle movements at these junctions. A further 2 sites (Sites E and H) have had junction improvement works carried out since the sign has been in situ to reduce the number of conflicting vehicle movements.

- 5.14.3 In common with most large static advertising signs, at each of the case study sites the signs are orientated so as to be generally only prominently visible in a single direction for a distance greater than 50m. Even the case study sites that are situated adjacent to large, signalised junctions are offset from the carriageway and oriented so that they are only prominent to one approaching stream of traffic and are only visible for short distances or at an acute angle when approaching from the other directions.

5.15 Analysis of Planning History

- 5.15.1 All of the case study sites achieved planning consent at the application stage with the exception of the sites in Manchester, of which all went to appeal. No planning application details were available for Sign A.
- 5.15.2 As noted, Manchester City Council were the only LPA to refuse planning consent for each of the signs located within their jurisdiction. It should be noted, though, that one of these, Sign E, was originally refused on amenity grounds, not public safety. Two others, Signs F and G, did receive consent for static LED displays, but an Appeal was required to gain consent for moving images. It is also noted that the appeal decision wording only granted consent for movement between images and excluded movement on individual advertisements. However, both of these signs were observed to display some content that included elements of motion.
- 5.15.3 The case study sites in Manchester were also the only ones which were accompanied by supporting evidence in the form of a highway safety appraisal, which included a detailed accident analysis. This evidence appears to have been key, since all of these sites were subsequently allowed at Appeal.

5.16 Analysis of Accident History

- 5.16.1 Detailed accident data including accident descriptions were only obtainable for the sites in Manchester and London, and only the data for the sites in Manchester included information on contributory factors. For the other sites, accident data from the online CrashMap resource (www.crashmap.co.uk) has been analysed. For all sites, the total number of accidents that occurred at locations from which each sign was visible have been included in the analysis, regardless of direction of travel. The accident data analysed for each site is included as **Appendix B**.

- 5.16.2 The accident data analysis has also taken into account the accident data previously included in the Waterman study, in order to present a full picture of the accident history at each case study site.
- 5.16.3 The accident data indicates that the average number of accidents per year is generally lower at each site during the period after the full motion sign was installed, compared to the period before it was present. This decrease in accident rates was observed at 9 of the 12 sites. This is consistent with the findings of the Waterman study, which observed a similar reduction in accident rates at 14 of the 17 sites analysed in that study.
- 5.16.4 The only site where the accident rate was observed to increase since the installation of a full motion advertising sign was Site K (Moat Lane, Birmingham). For Site K, however, the study area primarily covered the B4100 Digbeth, which is a dual carriageway to the east of the sign location. When accidents which occurred on the eastbound carriageway (i.e. travelling away from the sign location) were excluded from the dataset, the accident rate was shown to decrease slightly during the period after the sign was installed.
- 5.16.5 The remaining two sites, Site E (Piccadilly, Manchester) and Site L (Piccadilly Circus, London), effectively had LED advertising sign present throughout the study period, and so did not allow for a before-and-after comparison. However, Site L was non-operational for approximately 9 months in 2017 due to renovation works. **Table 5.1** provides a summary of the number of accidents per year in the vicinity of this sign.
- 5.16.6 The accident data indicates that the number of accidents recorded in the vicinity of the sign increased during 2017 and were higher during that year than in any other year during the period considered (since 2008). The fact that accident rates did not decrease when the screens were switched off is perhaps the clearest indication that there is no significant correlation between the frequency of accidents and the presence of full motion-capable advertising.

Table 5.1 – Accident History: Piccadilly Circus (2008 – 2021)

Year	All Accidents	Excluding Accidents where Sign Not Visible
2008	19	n/a
2009	15	n/a
2010	9	n/a
2011	8	n/a
2012	17	n/a
2013	18	n/a
2014	15	n/a
2015	8	n/a
2016	13	9
2017	21	15
2018	15	9
2019	19	16
2020	10	6
2021	13	10

- 5.16.7 As noted above, only the accident data for the case study sites in Manchester, and for Site L for the period 2008 – 2016, included contributory factors. Driver distraction was not recorded as a contributory factor in any of the accidents at any of the Manchester sites. At Piccadilly Circus only 2 accidents between 2008 and 2016 indicated external distraction as a contributing factor.
- 5.16.8 **Table 5.2** provides a combined analysis of the accident data across all of the case study sites, excluding Site L (Piccadilly Circus, London), since this has no data prior to installation. The data includes a total of approximately 68.2 years of accident data before full motion capable signs were available, and 105.7 years of data after the signs were installed.
- 5.16.9 The combined data indicates an average annual accident rate of 5.48 accidents per year without full motion displays available, and 2.77 accidents per year when full motion displays were available. This represents a decrease of approximately 50%.

Table 5.2 – Combined Analysis for All Sites (except Site L)

Site		Without Full Motion Sign		Full Motion Sign Present	
		Days	Accidents	Days	Accidents
A	Glasgow Central, Union Street	2,023	72	2,906	41
B	Great Western Road	2,070	5	2,860	4
C	UK Fast Campus	3,074	37	1,887	19
D	Portland Street	1,832	59	2,673	31
E	Piccadilly	0	0	5,336	22
F	Deansgate	2,207	16	2,663	10
G	Miller Street	2,207	11	2,663	11
H	Media Wall, Lime Street	2,953	117	4,899	79
I	Broad Street	1,916	19	3,002	20
J	Smallbrook Queensway	1,917	9	2,988	13
K	Moat Lane	1,552	8	3,123	20
Total		21,751 (i.e. 59.6 years)	353	35,000 (i.e. 95.9 years)	270
Accidents per Year		5.92		2.82	
Average Site		1,977 (i.e. 5.4 years)	32.1	3,182 (i.e. 8.7 years)	24.5
Average Site Accidents per Year		5.93		2.81	

5.16.10 Road accident rates in the UK have generally reduced over recent years anyway, so even without the implementation of these signs the accident rates at each site would be expected to have reduced anyway. **Table 5.3** summarises the total number of accidents in the UK over the last 10 years (2011-2020). Data for the Manchester Central and Birmingham Ladywood Constituencies has also been analysed, since 8 of the 14 case study sites are located within these two constituencies, along with data for the Cities of London and Westminster constituency, to provide a comparison with the accident record in the vicinity of the Piccadilly Circus advertising.

Table 5.3 – UK Reported Personal Injury Road Accidents

Year	GB – All Accidents	Manchester Central	Birmingham Ladywood	Cities of London & Westminster
2020	91,199	197	430	804
2019	117,536	334	690	1436
2018	122,635	386	674	1395
2017	129,982	422	650	1582
2016	136,621	282	678	1503
2015	140,056	313	737	1514
2014	146,322	424	646	1576
2013	138,660	433	560	1477
2012	145,571	495	471	1557
2011	151,474	538	534	1489

- 5.16.11 The data in **Table 5.3** indicates that nationally, the total number of accidents has decreased by approximately 22% over the last 10 years, excluding 2020 when the data is likely to have been skewed due to reduced traffic flows as a result of Covid-19 lockdowns. This is noticeably less than the reduction of approximately 50% calculated for the case study sites.
- 5.16.12 The localised data indicates an overall reduction in the number of accidents of approximately 38% in Manchester Central, and an increase of approximately 29% in Birmingham Ladywood. By contrast, at the case study sites within these constituencies, the accident rate reduced by approximately 53.5% (from 4.82 to 2.24 accidents per year) for the sites in Manchester, and by approximately 13.1% (from 2.44 to 2.12) for the sites in Birmingham.
- 5.16.13 There is insufficient data to be able to conclusively state that the presence of full motion advertising signs has been a key factor in achieving above average reductions in accident rates compared to the surrounding areas. The reason for the greater reduction in accident rates at the case study sites is likely to be the result of a number of factors. For instance, Broad Street in Birmingham was converted to a tram line during this period, and some of the sites are in areas where highway improvement works aimed at reducing traffic flows and speeds have taken place during the study period. However, it clearly demonstrates that the presence of full

motion-capable advertising has not had an adverse impact on accident rates at the case study sites included in this study.

- 5.16.14 The data for London indicates apart from slight annual fluctuation, accident numbers were fairly consistent between 2011 and 2019, with a peak in 2017. This correlates with the accident record in the vicinity of Piccadilly Circus and reinforces the evidence that there is no significant correlation between the frequency of accidents and the presence of full motion-capable advertising.
- 5.16.15 The analysis presented in **Tables 5.2** and **5.3** shows no indication that the presence of full motion digital advertising signs has adversely affected accident rates at any of the case study sites. Furthermore, there is no evidence to suggest that the introduction of full motion displays at the case study sites has been a factor in the accidents that have occurred nearby.

6.0 SITE IDENTIFICATION TOOLKIT

6.1 Overview

- 6.1.1 Based on the analysis in the previous section, a number of different factors which influence the suitability of a site for hosting a full motion capable advertising sign can be identified.

6.2 Toolkit Criteria

- 6.2.1 The site identification toolkit is intended to be used as an internal document that would assist with identifying the relative suitability of a site from a public safety perspective, but that can also be submitted alongside planning applications to provide a record of the appraisal process and explain the site selection criteria.
- 6.2.2 As such, the criteria included in the toolkit need to be relatively broad and simple to appraise without the need for any specialist highway engineering or transport planning knowledge. The purpose of the toolkit will be to help identify where further, detailed evidence may need to be provided to support a planning application.
- 6.2.3 The toolkit therefore takes the form of a simple checklist approach. The checklist considers two primary aspects – Site Characteristics and Accident History.
- 6.2.4 For Site Characteristics, the checklist focuses on characteristics that have been identified through the course of this study as being the main defining features that act as pointers to whether a site is likely to be suitable for accommodating a full motion digital sign. These features include the speed limit of the principal road or roads adjacent to the sign location, the proximity of the nearest junction, whether there is any restriction on vehicular movements that might help to reduce the number of conflicting turning movements, and whether the sign location is visible along multiple approaches.
- 6.2.5 For Accident History, the checklist focuses simply on the number of accidents over the most recent three-year period, and whether any of these were serious or fatal.
- 6.2.6 The scoring criteria is intended to operate on a simple 'yes/no' basis, where possible. Where a yes or no answer is not possible, a single dividing threshold has been applied to keep checklist completion as simple as possible. This threshold has been identified based on consideration of the evidence available across all of the case study sites investigated in this study.

- 6.2.7 This is not to imply that all sites that fall outside the identified threshold will automatically be unsuitable, or vice versa. It is simply intended to help identify where generic supporting evidence is likely to be sufficient to support a planning application for a potential site, or where a detailed, site-specific specialist highway safety study is likely to be required as supporting evidence.
- 6.2.8 Furthermore, it is not intended that the checklist should represent a prescriptive, unchanging methodology for site identification. In practice, there may well be site that appear suitable which are not supported by planning authorities. Similarly, there may be occasions where planning authorities do not find issues with sites that look may appear to be unsuitable. In time, the identification thresholds used in the checklist may need to be amended based on experience gained through applications submitted. Additional criteria may also come to light as being a relevant factor in identifying site suitability. It is therefore intended that the checklist can be easily updated or amended as required.
- 6.2.9 A template Site Identification Toolkit checklist is included as **Appendix C**.

7.0 SUMMARY AND CONCLUSIONS

- 7.1.1 AXIS has been appointed by Wildstone Estates Ltd to investigate existing digital roadside advertising screens used to display full motion images and located next to urban traffic routes in the UK, in order to identify any potential public safety issues associated with such sites.
- 7.1.2 Large format roadside advertising is a traditional form of out-of-home advertising and has been commonplace in the UK for decades. Advertising giving the impression of motion has been used for decades in a roadside environment, for example at Piccadilly Circus in central London.
- 7.1.3 In recent years, digital display technology has advanced rapidly and is becoming an increasingly common means of displaying roadside advertising. Whilst most roadside digital displays show static images, digital displays that show content with motion have been used in several cities in the UK for a number of years. Additionally, some commercial premises with roadside frontage and extensive glazed facades also display motion advertising visible both within their building and from the adjacent highway network.
- 7.1.4 Concerns are commonly raised about the potential for Full Motion roadside advertising content to distract drivers from the driving task and thereby increase the potential for accidents. This study undertakes a real-life examination of whether advertising displays that show moving images at the roadside have affected recorded injury accidents at 12 sites in major cities in the UK.
- 7.1.5 The approach to the study has been to:
- Undertake a review of the findings of previous studies;
 - Visit sites with digital displays used for display of full motion advertising and observe use of the display in the context of the highway environment. The factors that have been considered in this review include:
 - The nature of the local highway network in the vicinity of each sign, including consideration of vehicle speeds and pedestrian flow;
 - The character of the surrounding area. For example, is the site in a city centre or edge of town location; what is the facing and prominence of the sign; what is the proximity of the sign to nearby junctions or pedestrian crossings;

- Consideration of the planning history at each site, for example did the sign receive planning consent or go to appeal; what was the general view of the LPA; what supporting information, if any, was provided with the application to allow assessment and determination of the application by the LPA.
- A review of accident data on the local highway network in the vicinity of each sign has been undertaken, covering the period before and after the full motion sign became operational, where possible, to identify trends in the accident data with the aim of demonstrating an absence of potential highway safety issues that could be attributed to the presence of the advertising display;
- The accident analysis has included combining the data for the sites to create a larger data set for analysis of accident trends.

7.1.6 Although the signs assessed in this study have the capability or consent to display full motion images, in practice they often show static images or a mixture of static images and moving images. It is considered, however, that this range of content is representative of typical current usage patterns for signs consented to display full motion.

7.1.7 This study has found no evidence that shows that the introduction of full motion displays at the sites in this study has been a factor in the accidents that have occurred nearby. Furthermore, the data indicates that there has been an above average decrease in the number of accidents per year over the last 10 years at sites where full motion advertising is present, compared to the wider constituencies within which they are located. There is insufficient data to be able to conclusively state that the presence of full motion advertising signs is a key factor in achieving above average reductions in accident rates. However, it clearly demonstrates that the presence of full motion-capable advertising has not had an adverse impact on accident rates at the case study sites included in this study.

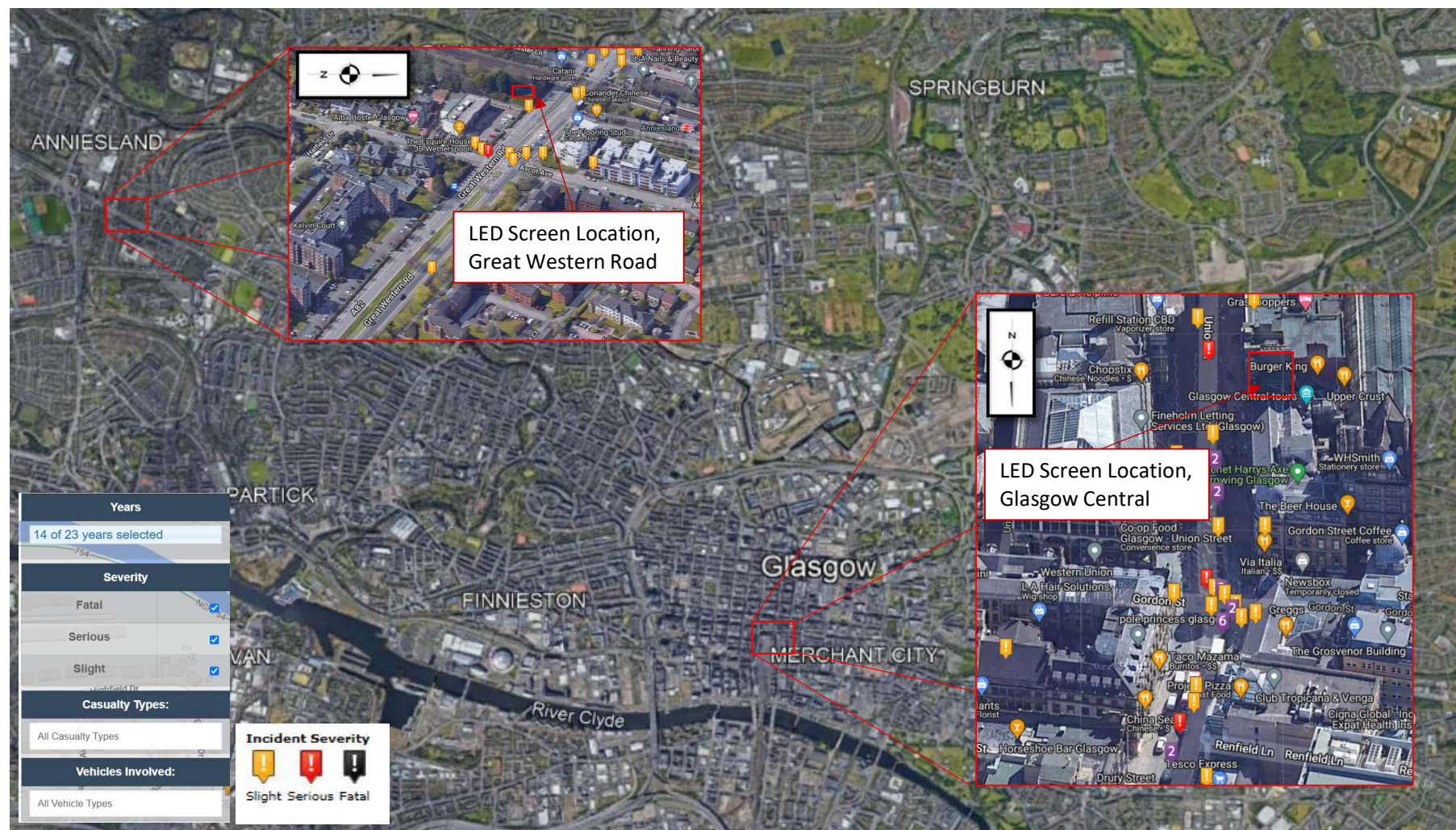
7.1.8 The analysis of site context and accident history has been used to derive a standard checklist for use in identifying the suitability of potential sites for accommodating full motion-capable advertising signs.

7.1.9 The site identification toolkit is intended to be used as an internal document that would assist with identifying the relative suitability of a site from a public safety perspective, but that can also be submitted alongside planning applications to provide a record of the appraisal process and explain the site selection criteria.

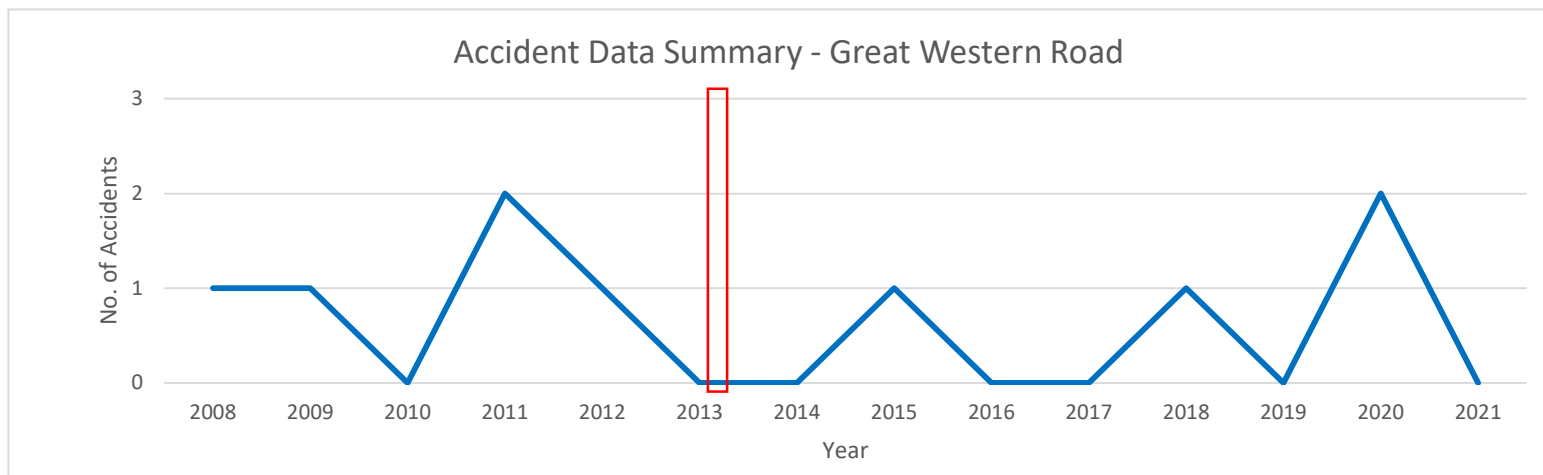
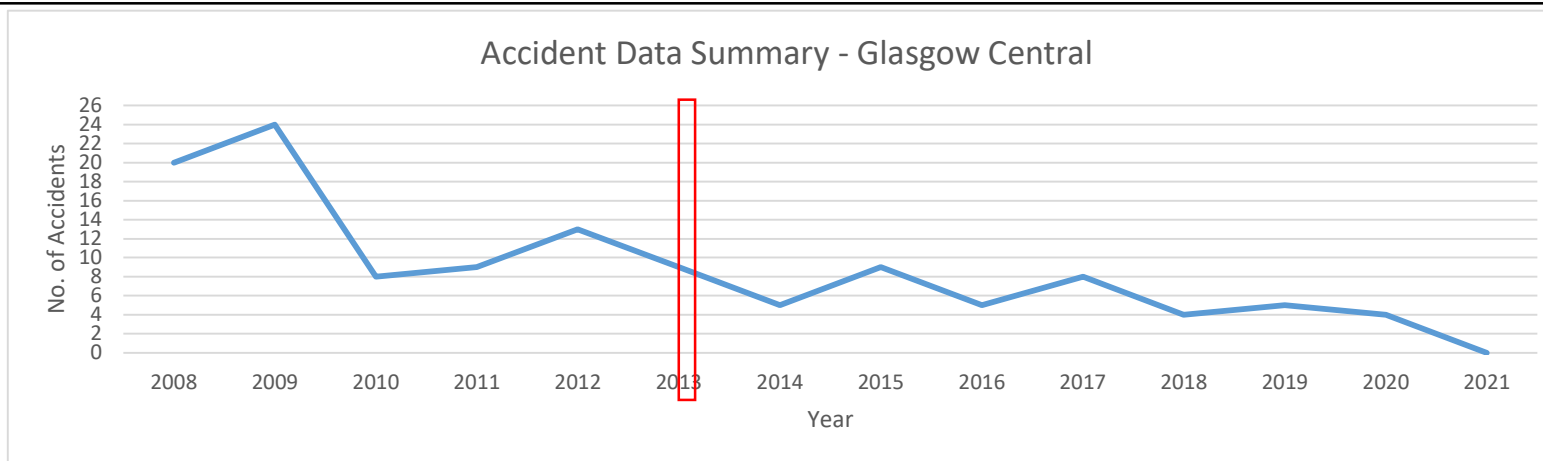
Appendix B – LED Advertisement Case Studies



Area	Site	Sign Present From (approx.)		Accident History	
				Without Full Motion Sign Present	With Full Motion Sign Present
Glasgow	Glasgow Central, Union Street	July 2013	Duration of Accident Data	2,023 (from 01/01/2008)	2,906 (to 30/06/2021)
			No. accidents near sign	72	41
			Ave. no. accidents per year	13	5.1
	Glasgow Western Gateway	September 2013	Duration of Accident Data	2,070 (from 01/01/2008)	2,860 (to 30/06/2021)
			No. accidents near sign	5	4
			Ave. no. accidents per year	0.9	0.5
Liverpool	Liverpool Media Wall	February 2008	Duration of Accident Data	2,953 (from 01/01/2000)	4,899 (to 30/06/2021)
			No. accidents near sign	117	79
			Ave. no. accidents per year	14.5	5.9
Manchester	UK Fast Campus, Greeheys Lane West	June 2016	Duration of Accident Data	3,074 (from 01/01/2008)	1,887 (to 31/07/2021)
			No. accidents near sign	37	19
			Ave. no. accidents per year	4.4	3.7
	Manchester One, Portland Street	April 2014	Duration of Accident Data	1,832 (from 01/04/2009)	2,673 (to 31/07/2021)
			No. accidents near sign	59	31
			Ave. no. accidents per year	11.8	4.2
	Gateway Piccadilly, Ducie Street	January 2000	Duration of Accident Data	0 (sign present throughout study)	5,236 (to 31/07/2021)
			No. accidents near sign	0	22
			Ave. no. accidents per year	N/A	1.5
	ECP Car Park, Deansgate	April 2014	Duration of Accident Data	2,207 (from 01/04/2008)	2,663 (to 31/07/2021)
			No. accidents near sign	16	10
			Ave. no. accidents per year	2.6	1.4
	NQ Digital Tower, Miller Street	April 2014	Duration of Accident Data	2,207 (from 01/04/2008)	2,663 (to 31/07/2021)
			No. accidents near sign	11	11
			Ave. no. accidents per year	1.8	1.5
Birmingham	Hyatt Regency Bridge, Broad Street	April 2013	Duration of Accident Data	1,916 (from 12/01/2008)	3,002 (to 30/06/2021)
			No. accidents near sign	19	20
			Ave. no. accidents per year	3.6	2.4
	Bullring North, Smallbrook Queensway	April 2013	Duration of Accident Data	1917 (from 26/01/2008)	2,988 (to 30/06/2021)
			No. accidents near sign	9	13
			Ave. no. accidents per year	1.7	1.6
	Bullring South, Moat Lane	December 2012	Duration of Accident Data	1,552 (from 12/09/2008)	3,123 (to 30/06/2021)
			No. accidents near sign	8	20
			Ave. no. accidents per year	1.9	2.3
London	Picadilly Circus, Shaftesbury Avenue	November 2013	Duration of Accident Data	0 (sign present throughout study)	5,053 (to 31/10/2021)
			No. accidents near sign	0	155
			Ave. no. accidents per year	N/A	11.2



	Accident Data from Crashmap - Location Plan	January 2026	5434
	Full Motion LED Screen Sites, Glasgow	Appendix B	



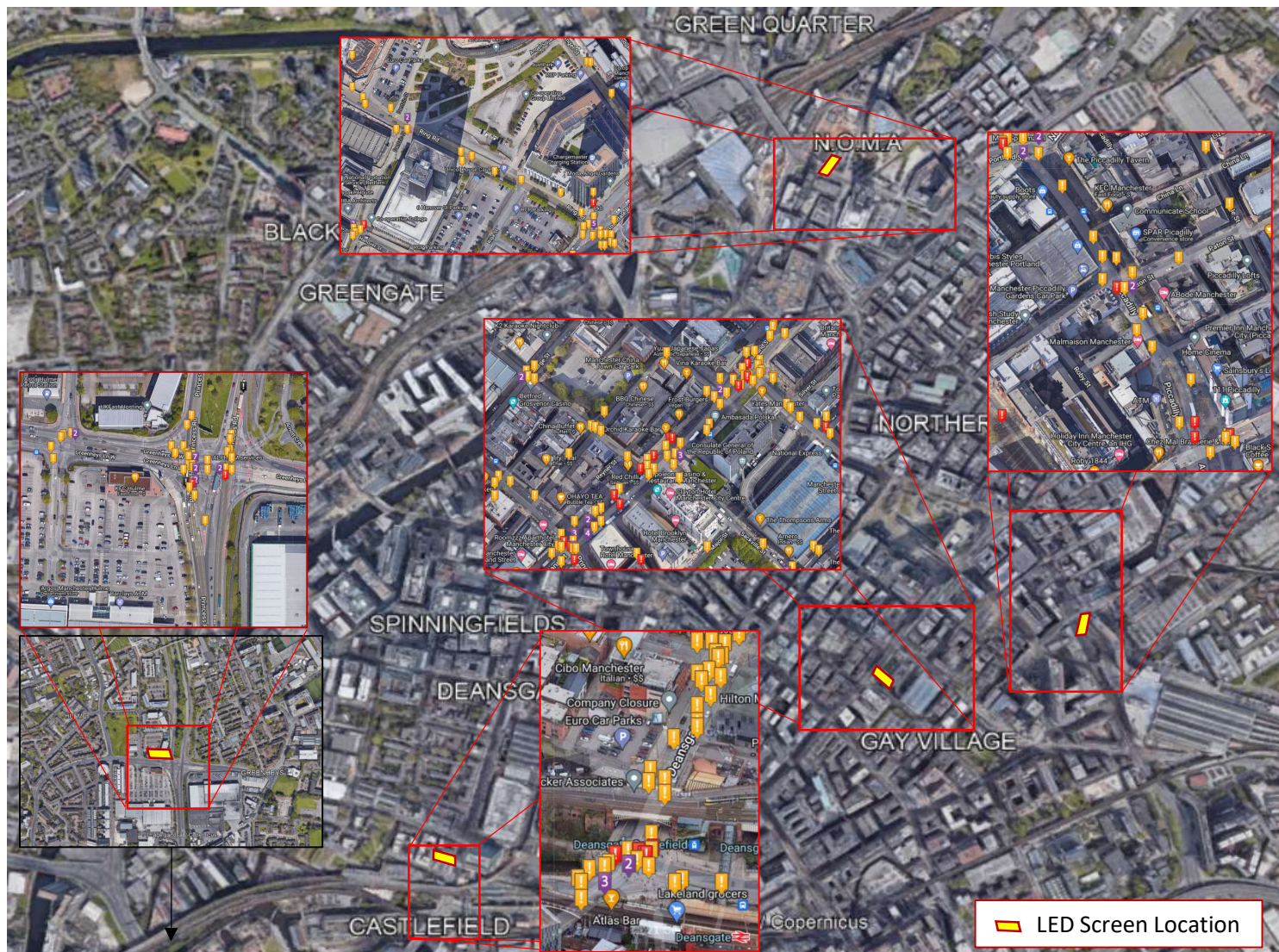
Key:

— Accident History

□ Approximate time LED Sign was Installed



	Accident Data from Crashmap - Analysis	January 2026	5434
	Full Motion LED Screen Sites, Glasgow	Appendix B	



Incident Severity

Slight Serious Fatal

Years

14 of 23 years selected

Severity

Fatal

Serious ☒

Slight ☒

Casualty Types:

All Casualty Types

Vehicles Involved:

All Vehicle Types



Accident Data from Crashmap - Location Plan

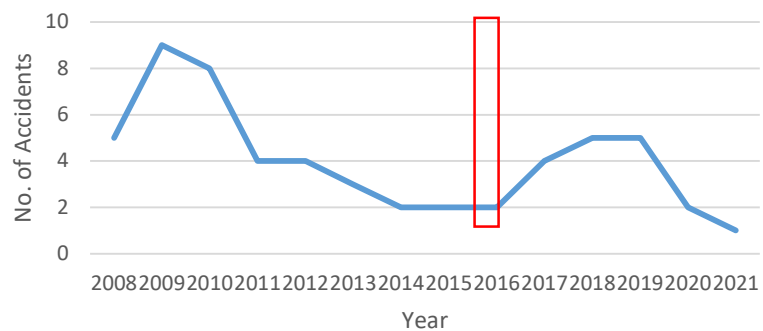
January 2026

5434

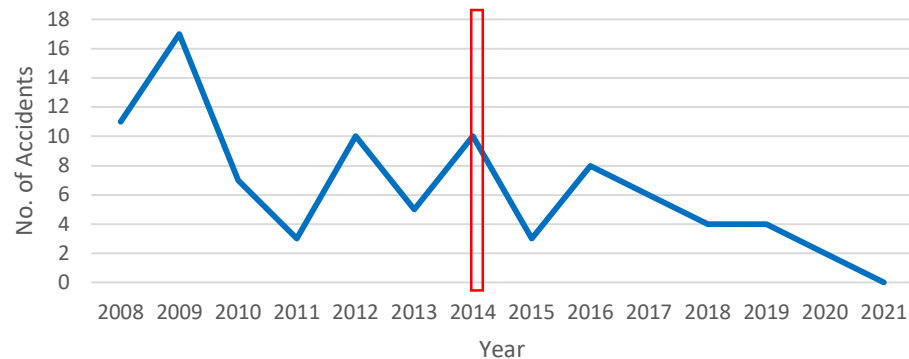
Full Motion LED Screen Sites, Manchester

Appendix B

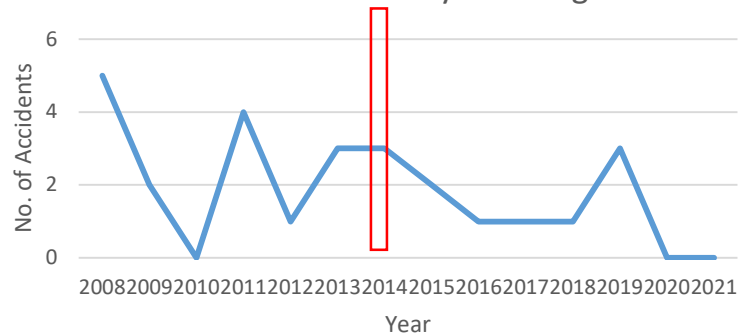
Accident Data Summary - UK Fast Campus



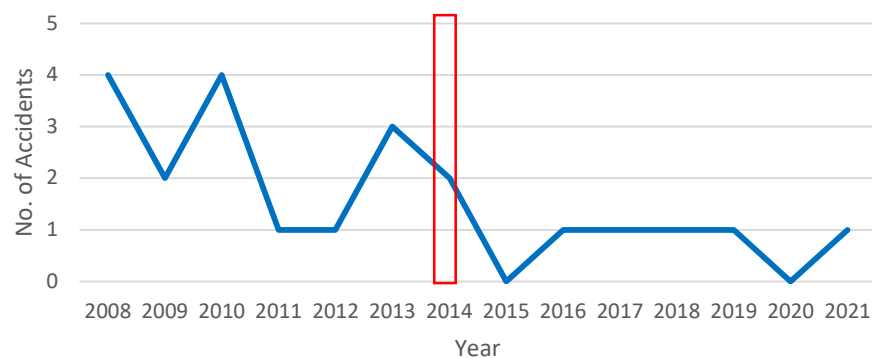
Accident Data Summary - Portland Street



Accident Data Summary - Deansgate



Accident Data Summary - Miller Street



Key:

— Accident History

□ Approximate time LED Sign was Installed



axis

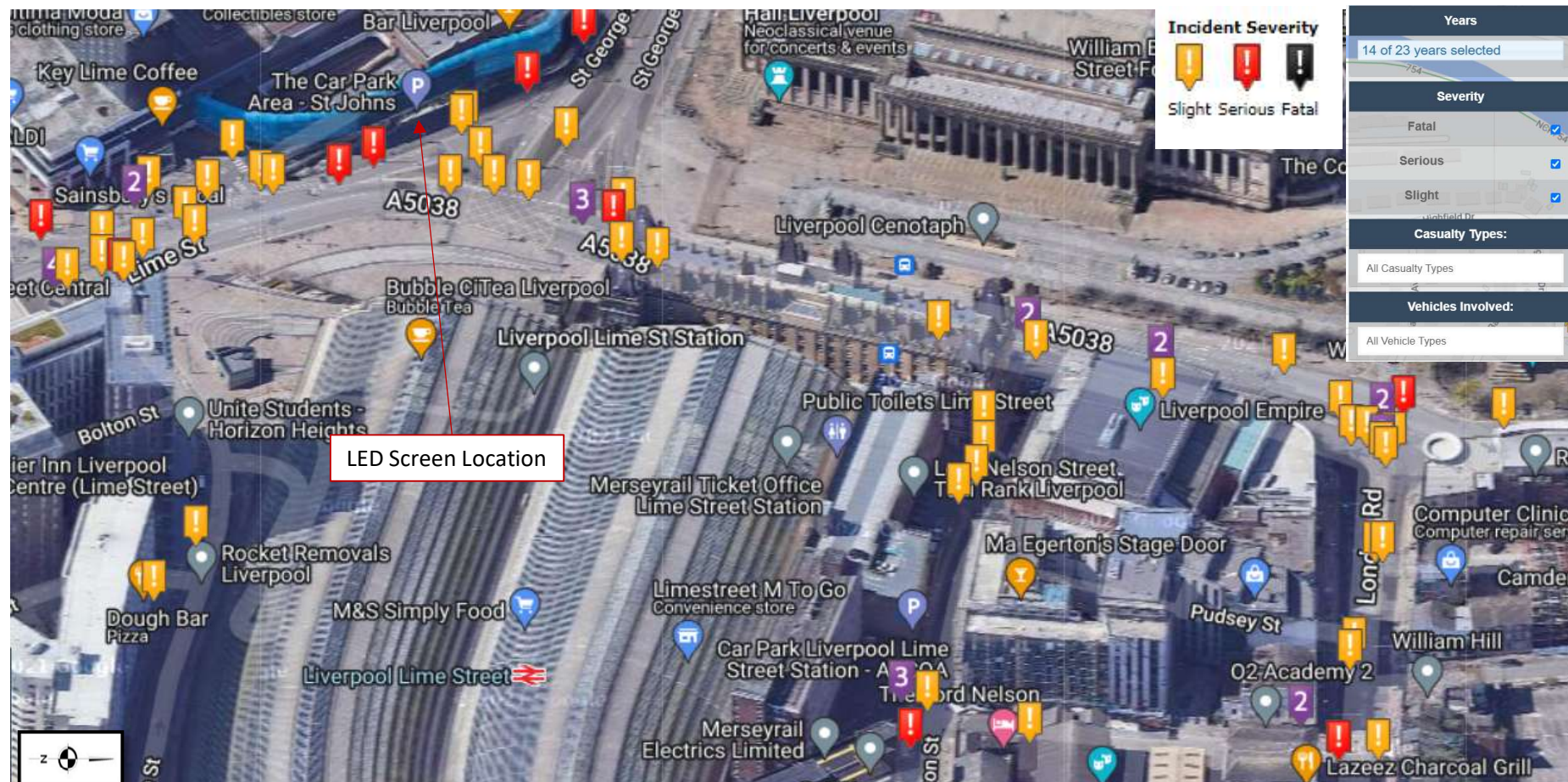
Accident Data from Crashmap - Analysis

January 2026

5434

Full Motion LED Screen Sites, Manchester

Appendix B



axis

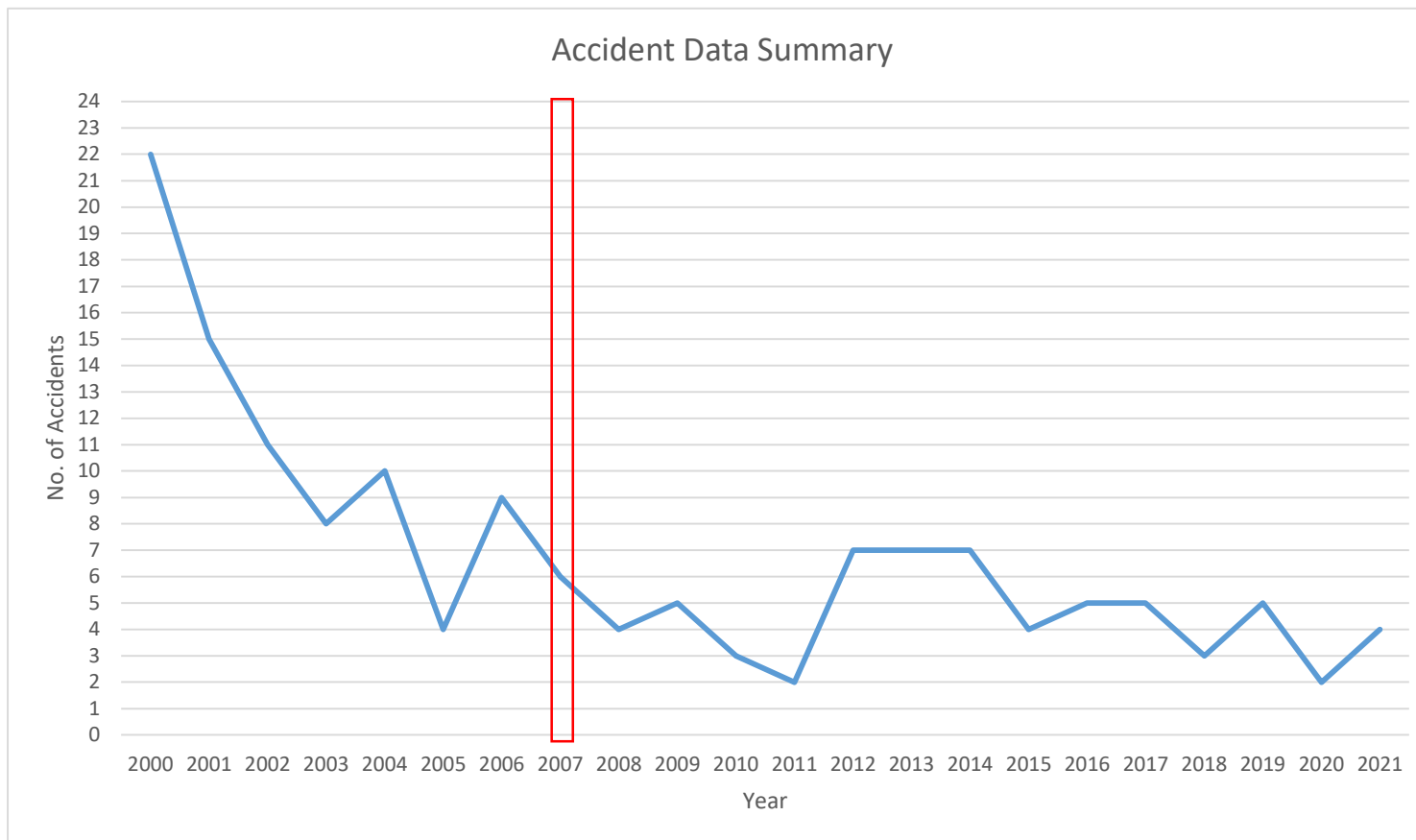
Accident Data from Crashmap - Location Plan

January 2026

5434

Full Motion LED Screen Site, Liverpool

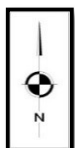
Appendix B



Key:

— Accident History

□ Approximate time LED Sign was Installed



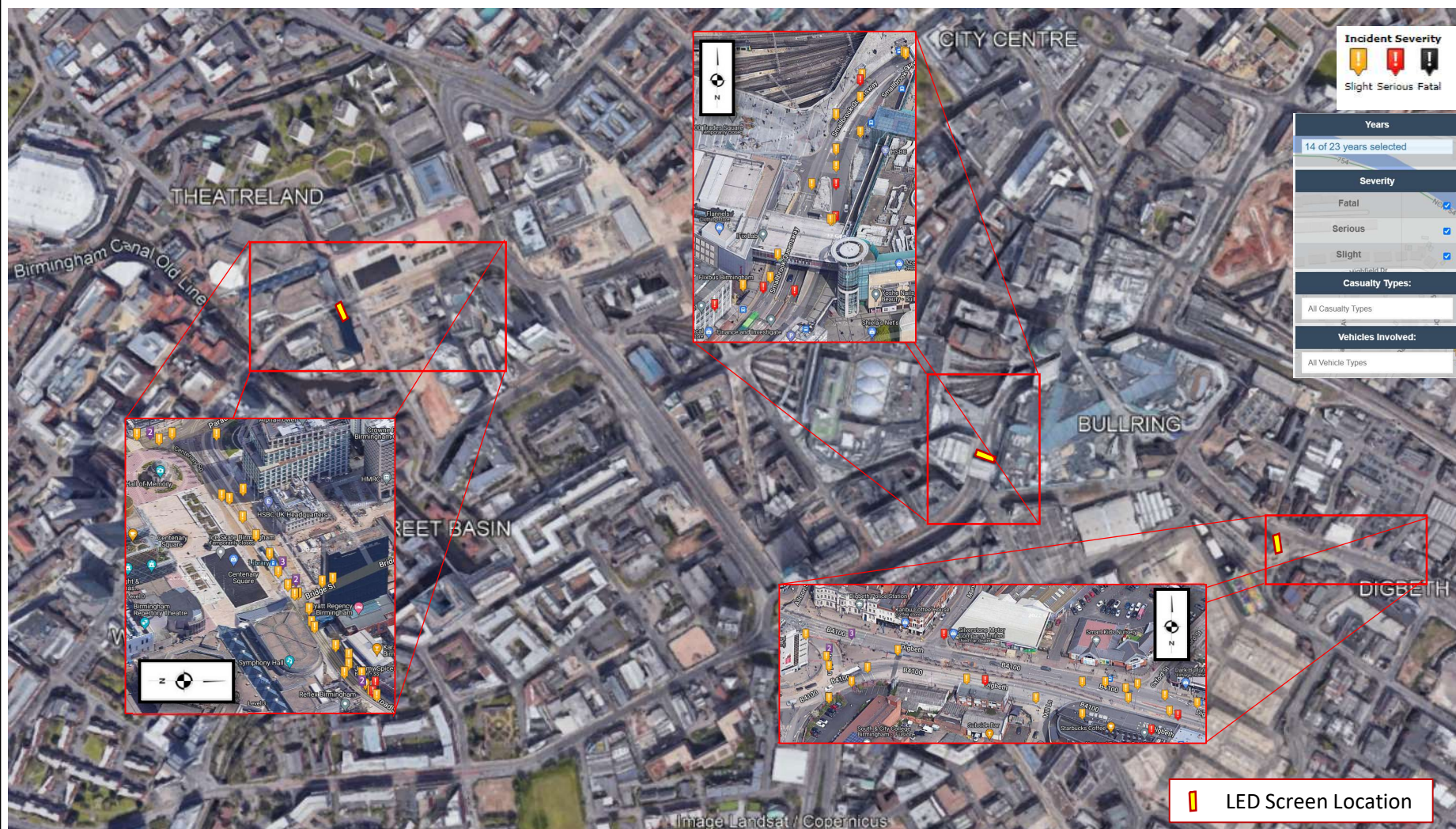
Accident Data from Crashmap - Analysis

January 2026

5434

Full Motion LED Screen Site, Liverpool

Appendix B



axis

Accident Data from Crashmap - Location Plan

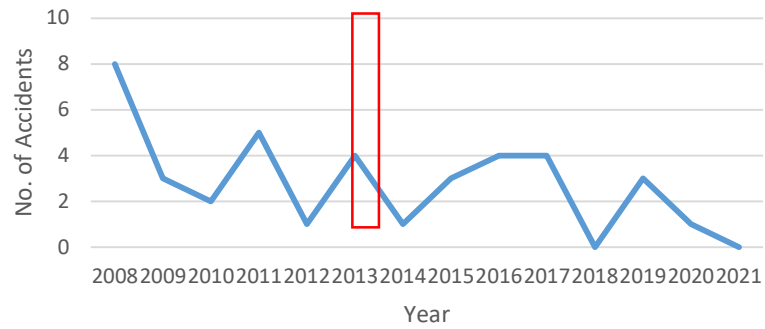
January 2026

5434

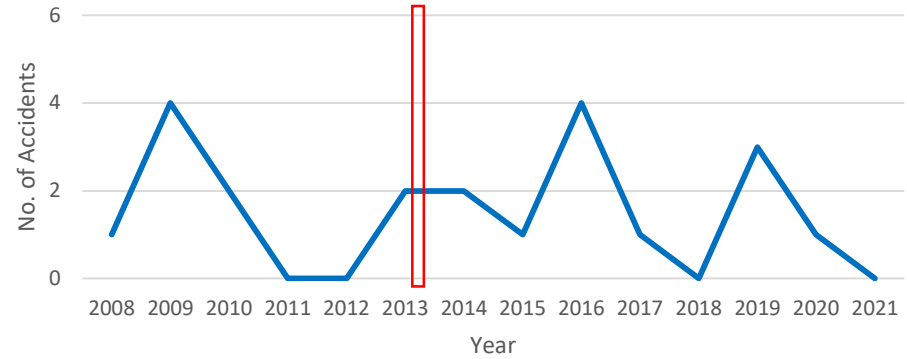
Full Motion LED Screen Sites, Birmingham

Appendix B

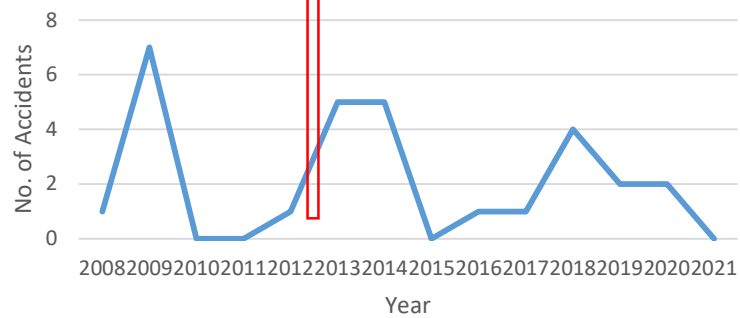
Accident Data Summary - Broad Street



Accident Data Summary - Bullring North



Accident Data Summary - Bullring South



Key:

— Accident History

□ Approximate time LED Sign was Installed



axis

Accident Data from Crashmap - Analysis

January 2026

5434

Full Motion LED Screen Sites, Manchester

Appendix B

Appendix C – Site Suitability Checklist



Site Identification Toolkit – 1-11 Oldham Road, Manchester

Identification of Site Suitability Checklist

Criteria	1	2
Site Characteristics		
Is the sign location in a City/Town Centre?	Y	N
Speed Limit of principal route adjacent to sign location?	20mph	30mph+
Proximity of nearest junction?	50m+	<50m
Are any of the roads at nearest junction one-way / restricted access streets?	Y	N
Is sign location visible to traffic from more than one approach?	N	Y
How far is proposed sign location visible for along principal approach?	<100m	>100m
Other than principal approach, is sign location visible for more than 50m along more than one other approach?	N	Y
How many signalised junctions is sign visible through?	0-2	3+
Accident History		
How many accidents within view of sign location over last 36 months?	0-5	6+
Have any serious/fatal accidents occurred in last 36 months?	N	Y
Comments		
<i>[Any other observations on factors that might influence site suitability, e.g. average speeds, number of pedestrian movements, presence of other existing digital advertising in vicinity, etc.]</i> The existing display is visible an acute angle along the Oldham Road approach for more than 50m, but only for a maximum distance of approx. 75m. The display is partially visible for >100m on the Great Ancoats Street approach but is only fully visible on this approach for a maximum distance of approx. 95m.		

Assessment of Site Suitability:

All responses in column 1 – Highly suitable. No supporting evidence likely to be required.

Most responses in column 1 – Generally suitable. Generic supporting evidence likely to be required.

Most responses in column 2 – Less suitable. Site-specific detailed supporting evidence likely to be required.

All responses in column 2 – Likely to be unsuitable. Site-specific detailed supporting evidence very likely to be required.

Notes on site location (see reverse):

Notes on site location:

Signs should be positioned where possible so as not to obscure or appear directly behind traffic signal heads or traffic signs.

Sign supports should be sited so as not to adversely impact movement of pedestrians and cyclists by significantly reducing usable footway/cycleway widths below required minimum standard.

Speed limits can be identified through Open Street Browser:

https://www.openstreetbrowser.org/#map=10/51.9405/-0.4319&categories=car_maxspeed

Accident history at a site can be identified using Crash Map: <https://www.crashmap.co.uk/search>