

Analysis of 2021 Speed Data Through Hurst Green and History of A21 Upgrades

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Introduction

Residents in Hurst Green, East Sussex have anecdotally asserted that there has been a speeding problem on the A21 for several decades, however, the Roads Minister and Highways England have countered this by saying that this is not supported by the data. This document will review Hurst Green speed data taken from sensors and coalited by National Traffic Information Service (NTIS) with the aim to validate or repudiate the assertion that the '*data does not support the widely held belief that there is a demonstrable issue with speed*'¹ and that there are '*very few speeding incidents >35mph*' in Hurst Green.² This document will also look at speed in relation to noise pollution through Hurst Green, as well as community severance and the threat that speeding in Hurst Green poses to vulnerable road users by increasing the accident severity ratio. Furthermore, the speed data will be discussed within the context of the history of planned improvements along the A21 in Hurst Green.

History of the A21, Hurst Green

Hurst Green is a village located in Rother, East Sussex. The parish has a population of approximately 1575 persons.³ The Parish is bisected by the A21, which is designated as an all-purpose trunk road and therefore managed by National Highways (NH). The A229 and A265 also run through the village. These roads provide a major link from Maidstone in Kent to several conurbations in East Sussex and are both managed by East Sussex County Council. A 2018 traffic count on the A21 conducted between the A265 junction and A229 junction recorded traffic on the A21 at 18,529 with a peak AM flow of 1,744 vehicles.⁴ By 2026, the traffic flow is estimated to be 19,633⁵ and the AM hour peak, 1,800 vehicles.⁶

The A21 provides a major link from London to Hastings while also providing a link to the large towns of Sevenoaks, Tonbridge, and Tunbridge Wells. The A21 comprises high quality dual carriageway through Kent. However, south of the Kipping's Cross junction, the A21 is poor quality S1 carriageway, except for the Lamberhurst Bypass, which was completed in 2005. There have been numerous studies indicating that the poor quality of the A21 south of Kipping's Cross is one of the major limiting factors in the development of Hastings.⁷ Since 1972, Hastings both Labour and Conservative MPs, have consistently raised the A21 as one of the most important factors effecting the regeneration of the town in every one of their maiden speeches. Indeed, Hastings is one of the most deprived towns in

¹ Letter from Jessie Norman MP to Huw Merriman

<https://www.huwmerriman.org.uk/sites/www.huwmerriman.org.uk/files/2018-06/Rudd%20Merriman%20reply%20from%20Roads%20Minister%203%20May%202018.pdf> (Accessed 28/11/2021)

² Reply to Huw Merriman by Highways England 'A21 SEVENOAKS TO HASTINGS ALL PURPOSE TRUNK ROAD'
https://www.huwmerriman.org.uk/sites/www.huwmerriman.org.uk/files/2019-10/A21_briefing_190719.pdf

³ UK Office for National Statistics

⁴ DfT manual count point 56244

⁵ TEMpro growth factor of 1.0596 used

⁶ TEMpro growth factor of 1.0544 used

⁷ Multi Modal Access to Hastings Study 2000

https://www.academia.edu/19081564/The_Access_to_Hastings_Multi_Modal_Transport_Study (Accessed 28/11/2021)

the Southeast; the indices of deprivation 2019 ranked Hastings as the 13th most deprived local council area out of 317 areas in England. These figures also show that Hastings is the most deprived local council area in the Southeast of England.⁸ In 2021, Hastings was highlighted by England's Chief Medical Officer, Chris Whitty, who in his annual report noted that *'Life expectancies in the most deprived parts of Hastings are 11 years lower than Crowborough, 25 miles away in East Sussex.'*⁹

In East Sussex, the A21 serves several villages and settlements in addition to forming part of the Strategic Road Network (SRN). The route has a large amount of direct frontage access and there are agricultural accesses throughout. There is conflict between strategic through-traffic and local trips, which, combined with the below standard highway alignment, results in collision rates exceeding the national average for severity ratio. As the route is single carriageway, recovery time from incidents is slow and this impacts on journey time reliability. Furthermore, pedestrian facilities are generally only provided in and on the approach to the more built-up village settlements and very little designated provision is available for Non-Motorised Users (NMUs) to cross the A21.¹⁰ Hurst Green is the last major village bisected by the A21, since Pembury, Robertsbridge and Lamberhurst all received a bypass.

There has been a long campaign by the MPs along the A21 to push for further dualling of the road to Hastings. This was first recorded on Hansard when the then MP for Hastings, Kenneth Warran, asked the then Secretary for Transport, John Horan, about further dualling of the A21. The response was that there would soon be *'improvements to the newly-trunked A21'* and that there was *'also a sizeable bypass of Robertsbridge and Hurst Green to come'*. He was also asked to consider that, *'bearing in mind that in 1974 the Government doubled the minimum qualification for trunk roads to give dual carriageways 17,000 vehicles a day, will the Minister himself bear in mind that there has been an enormous growth in the South-East of England, especially on the A21, of long-vehicle and juggernaut traffic, which has made the 17,000 vehicles qualification irrelevant and far greater than warranted by the roads?'* The Minister replied that *'it is true that the figure was increased to 17,000 in 1974, but it still does not mean that this road meets the requirements. I am sure that the hon. Gentleman wants this road improved as fast as possible. If we can do it in small pieces by means of bypassing these attractive villages, we can probably do something quicker than by going for a whole new route.'*¹¹

⁸ Hastings in Focus *'Only 12 other council areas in England are more deprived than Hastings, government figures reveal'* <https://www.hastingsinfocus.co.uk/2019/10/14/only-12-other-council-areas-in-england-are-more-deprived-than-hastings-government-figures-reveal/> (Accessed 28/11/2021)

⁹ WHITTY, C *'Chief Medical Officer annual report 2021'* <https://www.gov.uk/government/news/chief-medical-officer-annual-report-2021>

¹⁰ Mouchel Consulting P.4 *'A21 ROUTE TREATMENT PROJECT FEASIBILITY STUDY REPORT'* https://www.whatdotheyknow.com/request/451295/response/1093203/attach/5/HE553662%20MOU%20GEN%20A21%20DO%20D%20100%20P1%20S2%20Redacted.pdf?cookie_passthrough=1 (Accessed 28/11/2021)

¹¹ Debate between MP Kenneth Warren and the Transport secretary <https://www.theyworkforyou.com/debates/?id=1977-11-16a.549.5&s=hurst+green+bypass#g550.0> (Accessed 28/11/2021)

Studies for improvement of the A21 at Hurst Green were undertaken in the late 1980s and were concluded in 1993 without any proposals being formally published. The area of the studies extended from just north of Coopers Corner to a point midway between Hurst Green and Silver Hill, which limited the opportunities for a line significantly away from the village. At the same time, a scheme for a climbing lane at Silver Hill was being investigated and a public consultation was held in the early 1990s. This scheme was cancelled in 1993 due to funding constraints.

In 1996–97, a Design-Build-Finance-Operate (DBFO) package was put forward for the Weald and Downland area, which included the A21. There were no major improvements of the A21 proposed south of the Lamberhurst Bypass, only minor improvements. This DBFO project was cancelled in 1997 as part of the Government's review of the road programme.

The Labour Government's new road programme took a strategic view on the A21 and commissioned the Flimwell to Robertsbridge bypass scheme as well as the Kippings Cross to Lamberhurst scheme and Castle Hill scheme. The Flimwell to Robertsbridge scheme would have bypassed Hurst Green, alleviating traffic problems for the village. However, after years of delay, this was finally cancelled in the 2010 Autumn spending review by the conservative government, with the spending review stating that the scheme was '*not considered realistically likely to receive funding in the current SR period, or the next one, and therefore has been cancelled*'.¹² The properties that had been bought on the proposed route were then sold back at a fraction of the original cost.¹³ The Kippings Cross to Lamberhurst scheme was also cancelled in the same spending review.

Since 2010, there have been several schemes to improve the safety along the A21 and through Hurst Green. The A21 has featured largely in the Road Safety Foundation European Road Assessment Programme (EuroRAP) assessments in the last 5 years, and in 2014 was deemed by the Road Safety Foundation as the most dangerous road in the UK. In 2021, the A21 between the A2100 in East Sussex and the East Sussex-Kent border was the only strategic road in England classed as a 'persistently higher risk route'.¹⁴ National Highways have previously committed to upgrade the A21 through Hurst Green to a minimum of 3* EuroRAP. From all available evidence, this commitment has not currently been met.

The route also featured centrally in the Road Investment Strategy 1 (RIS1) (2015-2020) South Coast Central Route Strategy. With the document stating that the A21 '*Provides poor travel and severance issues for vulnerable user groups in particular.... In Hurst Green on the A21*'.¹⁵ It also said that the '*A21 [is] not fit for purpose as [a] strategic link between Hastings/south coast and M25.*', and that the

¹²Department for Transport 'Transport spending review 2010'
<https://www.gov.uk/government/news/transport-spending-review-2010> (Accessed 28/11/2021)

¹³ FOI request by Brown, A
https://www.whatdotheyknow.com/cy/request/a21_trunk_road_bypass_for_flimwe (accessed 28/11/2021)

¹⁴ Euro Safety Foundation 'British Roads Report 2021' <file:///C:/Users/44756/Downloads/RSF-Report-GB-EuroRAP-Crash-Risk-Mapping-2021.pdf>

¹⁵Highways England '*South Coast Central Route Strategy 2017*'
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/365287/South_Coast_Central.pdf (accessed 28/11/2021)

'A21 between A229 and Hastings = one of the highest risk roads in the UK'. The document also went on to say that *'we will also deliver improvements on the A21 section of this route, by removing infrastructure barriers and delivering a higher quality journey experience, improving the operation of this section to an Expressway standard. Throughout Road Period 1 we will continue to develop the standards for the Expressways concept with the aim of proposing and constructing a number of further schemes in Road Period 2.'* During RIS1, a scheme to dual the 'missing link' between Tonbridge and Pembury was completed, no further works were undertaken to the A21 in RIS1.

Of note for Hurst Green, there was a scheme commissioned in 2015 by Highways England looking to provide Average Speed Cameras (ASC) from Lamberhurst to Hastings. This scheme was however cancelled as it was asserted by Roads Minister, Jessie Norman, that the data does *'not support the widely held belief that there is a demonstrable issue with speed'*¹⁶. It was also said that *'The ASC scheme feasibility studies were completed at the end of 2016 where it was found that the proposed ASC route did not meet the overall criteria for ASC laid down by DfT. As this was the case, the scheme could not proceed as Sussex Police would not enforce it and a reduced scheme did not offer suitable benefits.'*¹⁷ It is not stated what criteria that the ASC route did not meet.

Alongside the Average Speed Camera Study, Highways England also asked Mouchal Consulting to produce a feasibility study report. With regards to Hurst Green, the report stated that *'Proposed junction improvements at Coopers Corner include the provision of a new roundabout. The BBMMjv report states that this would help to balance the flow of cross-country traffic at peak times, to improve NMU facilities and aid calming the speed of traffic flow south towards Hurst Green and north towards Swiftsden. Options that have been considered by BBMMjv include single lane dualling, traffic signals and a roundabout. These options were presented to the residents of Hurst Green who provided feedback in favor [sic] of a roundabout. Additional benefits anticipated by the residents were improved access to the A21 allowing safer maneuvers [sic] in and out of their properties.'* The report continues stating that, *'BBMMjv proposes to improve the junction of the A21 with the A265 in the centre of Hurst Green. The aim of this scheme is to alleviate congestion at peak times, and to improve the interaction between the East Sussex County Council and Highways England networks. BBMMjv state that the proposals are welcomed by residents in Hurst Green, and an additional benefit for the village is that a mini roundabout would act as a throttle to the traffic flow, assisting the turning movements of larger vehicles and slowing the traffic within the village.'* It was further stated to the current MP for Bexhill and Battle, Huw Merriman, that the A229 and A265 junctions *'were identified as potential sites for roundabouts. Feasibility has started this year in conjunction with the A21 Signing and Lining study to develop packages of work. Completion of works will be in RIS2 subject to funding.'*

¹⁶ Letter from Jessie Norman MP to Huw Merriman *'safety and capacity concerns'*
<https://www.huwmerriman.org.uk/sites/www.huwmerriman.org.uk/files/2018-06/Rudd%20%20Merriman%20reply%20from%20Roads%20Minister%203%20May%202018.pdf> (accessed 28/11/2021)

¹⁷ Reply to Huw Merriman by Highways England *'A21 SEVENOAKS TO HASTINGS ALL PURPOSE TRUNK ROAD'*
https://www.huwmerriman.org.uk/sites/www.huwmerriman.org.uk/files/2019-10/A21_briefing_190719.pdf

For the Road Investment strategy 2 (RIS2) (2020-2025), Hurst Green was put forward by Transport for the Southeast (TFSE) as in need of a bypass.¹⁸ Highways England's South Coast Central Route Strategy for RIS2 was also published (March 2017), which stated that '*capacity is restricted by single carriageway sections with at-grade junctions between Kippings Cross and Lamberhurst and around Hurst Green*'. It also stated that there was '*Journey time unreliability Kippings Cross to Lamberhurst and around Hurst Green*' and that the '*strategic road function of the A21 is poor*'.¹⁹ Despite the route featuring in the Route Strategy, no upgrades to the A21 were announced as part of RIS 2. However, a minor £20 million safety package was earmarked as part of the RIS 3 pipeline to look at signing and lining, speed limits and junction improvements. Due to political lobbying by the A21 reference group, this was subsequently bought forward to RIS 2. For Hurst Green the roundabouts at the A229 and A265 were not taken forward, the 30mph speed limit may however be extended from the current village gateway to the other side of the A229 junction.

A FOI request to Sussex Police showed that no speeding enforcement had been undertaken in Hurst Green by Sussex Police in 2017 and 2018.²⁰

Speed analysis

National Highways (NH) use speed data to monitor journey time on the Strategic Road Network (SRN) and the average speed of cars along a stretch of the SRN to assess journey time reliability at peak hours.

Andrew Brown of Hurst Green Parish Council has previously completed the same data analysis for October 2018 data and has said that '*The [speed] sensor exists in various types, including induction loops embedded in the road, sensors on the roadside and number plate recognition cameras. These sensors communicate back activity periodically, usually every 15 minutes and send all recorded data from the previous period in a burst transmission to a regional control centre run by the National Traffic Information Service (NTIS) on behalf of Highways England.*

'Each data block contains a series of information, including information about which sensor the data has come from, its location, the location of the proceeding sensor etc. Also included is information about how many vehicles have used the section of road in the block, journey times, as well as a field called 'fused average speed' which uses data from the proceeding sensor to calculate this. This

¹⁸ Transport for the South East '*South East Strategic Radial Corridors*'
<file:///C:/Users/44756/Downloads/Transport-strategy-Strategic-corridor-evidence-base-South-East-radial.pdf>
(Accessed 28/11/2021)

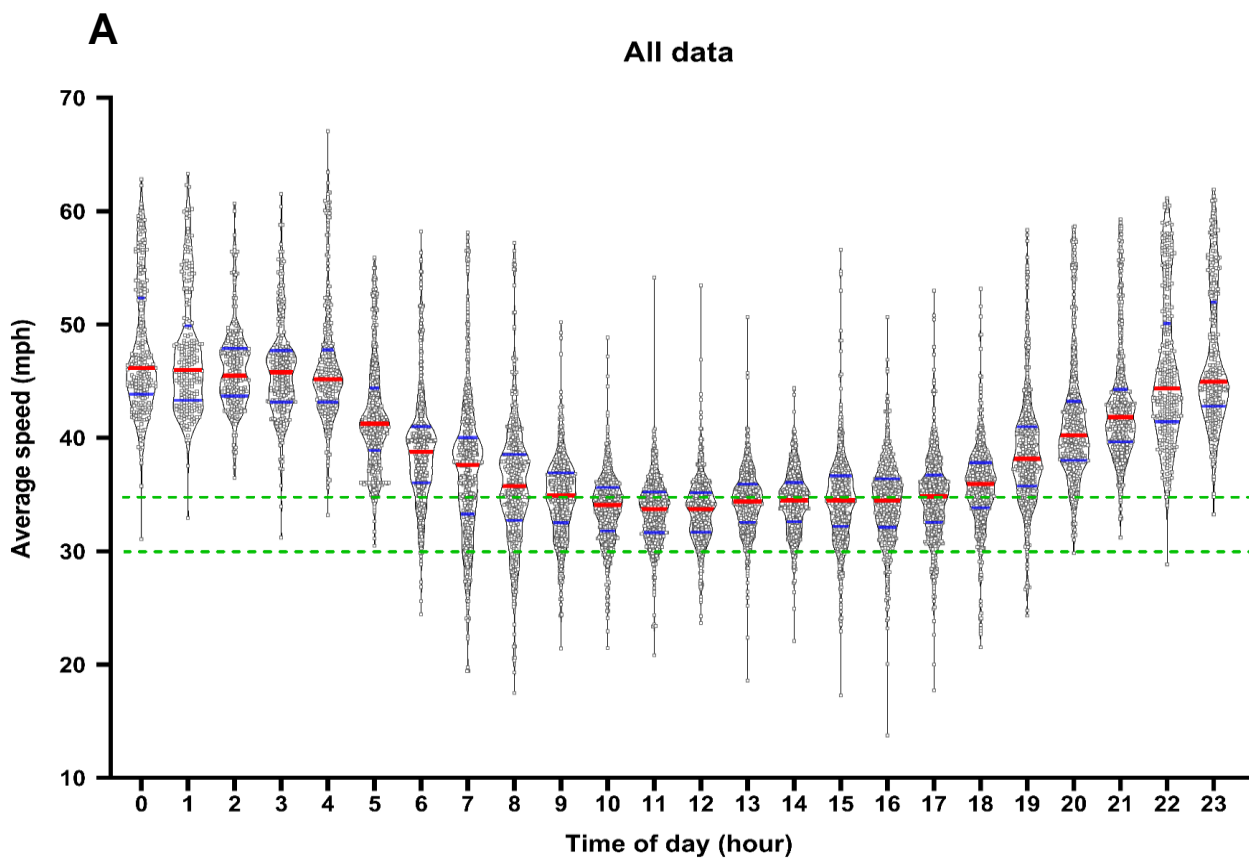
¹⁹ Highways England '*South Coast Central Route Strategy review 2017*'
https://www.arundelbypass.co.uk/app/resources/documents/www.arundelbypass.co.uk/South_Coast_Central_Final%20mar%2016.pdf (Accessed 28/11/2021)

²⁰ FOI by Cllr Andrew Brown to Sussex Police '*Speeding enforcement in the parish of Hurst Green, East Sussex*'
'https://www.whatdotheyknow.com/cy/request/speeding_enforcement_in_the_pari (Accessed 28/11/2021)

average speed is made up of an average of all the speeds of all the vehicles using the road since the last reporting period (block).²¹

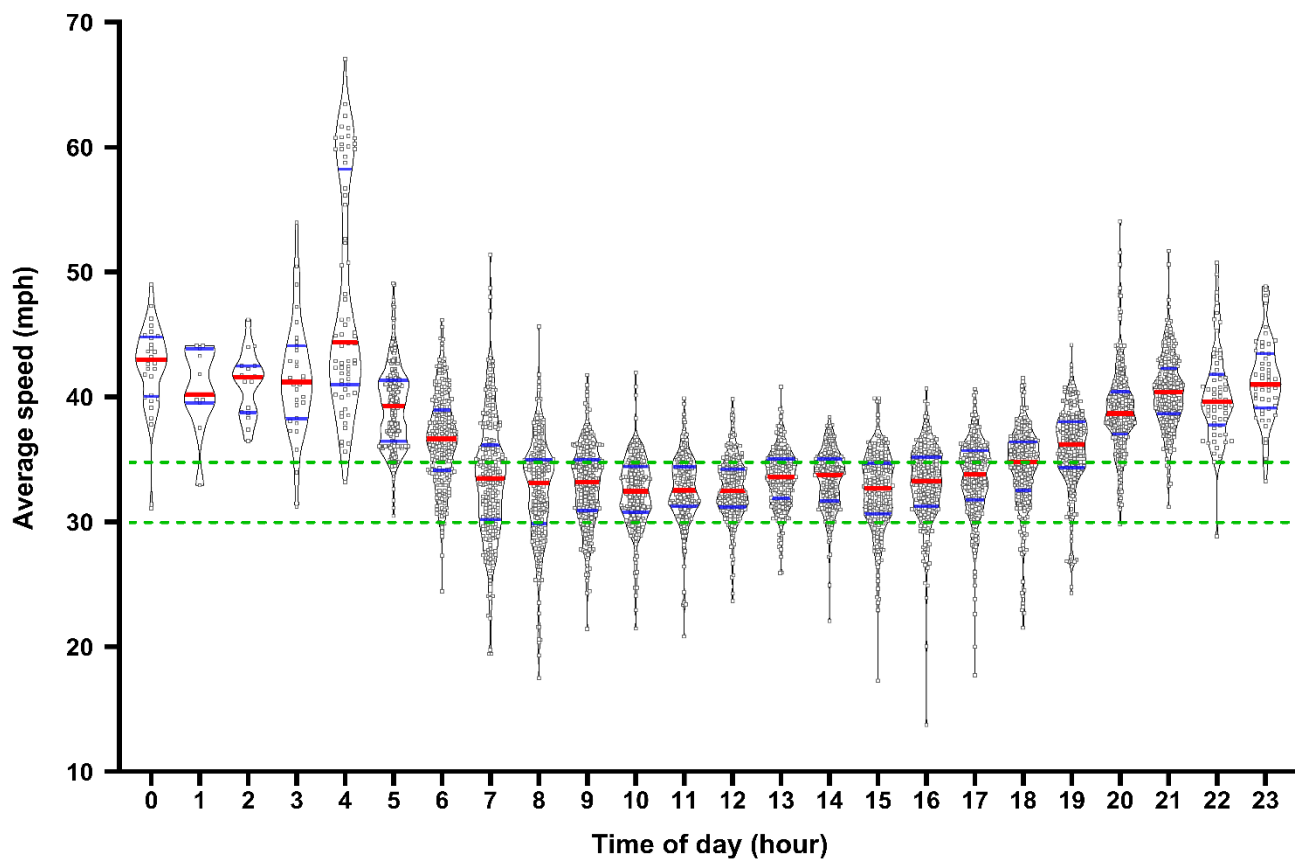
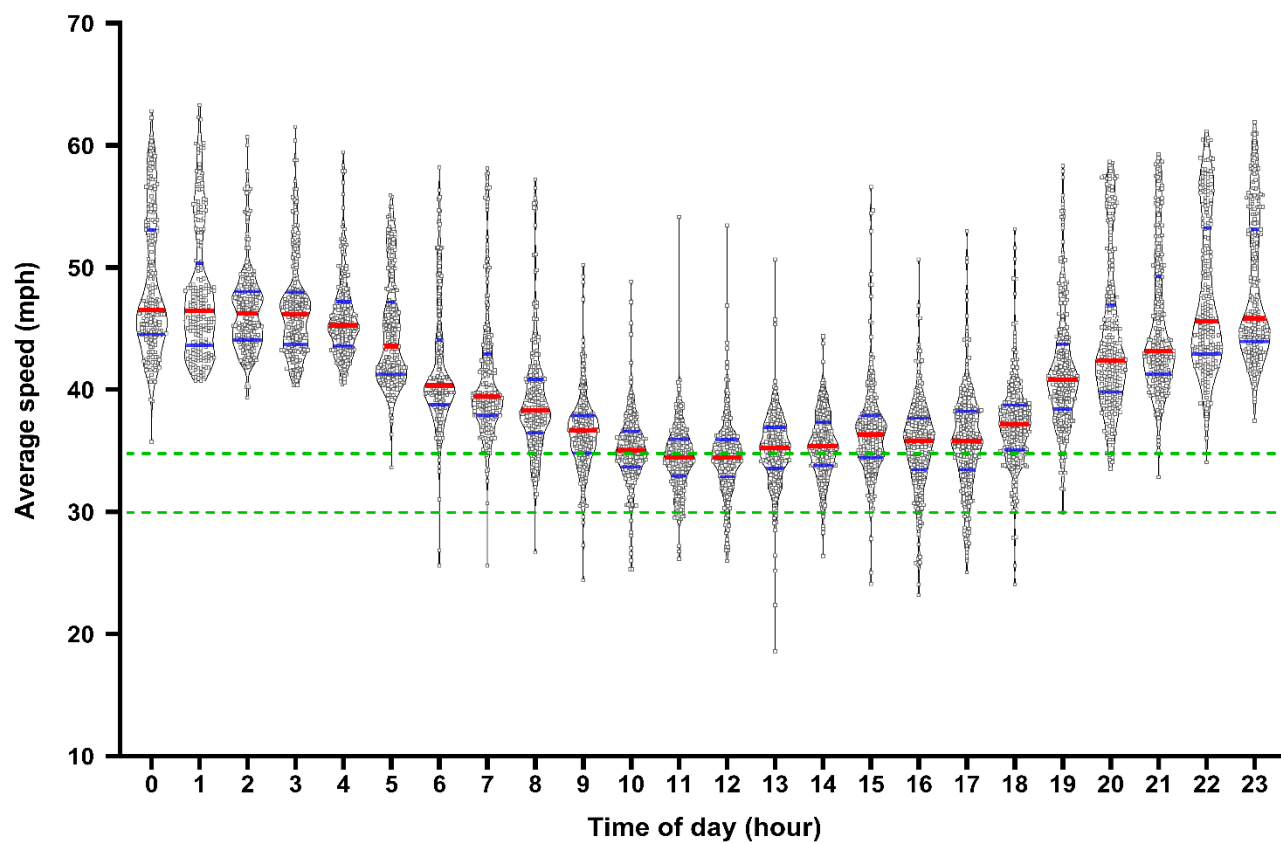
These data were downloaded from the Highways England website²² and consist of northbound and southbound average speed data through Hurst Green in September 2021. This period was selected as the most recent representative sample, minimally confounded by school holidays and COVID-19 restrictions. Raw average speed data was converted to kilometres per hour to miles per hour using a conversion rate of 1.609344 Km per mile. Descriptive statistics (median, upper and lower quartile ranges, 85% percentile values) and plots were generated using GraphPad PRISM 9 software. The breakdown of node locations can be seen in appendices 1-4. All data is taken from the 30mph zones inside of the village limits.

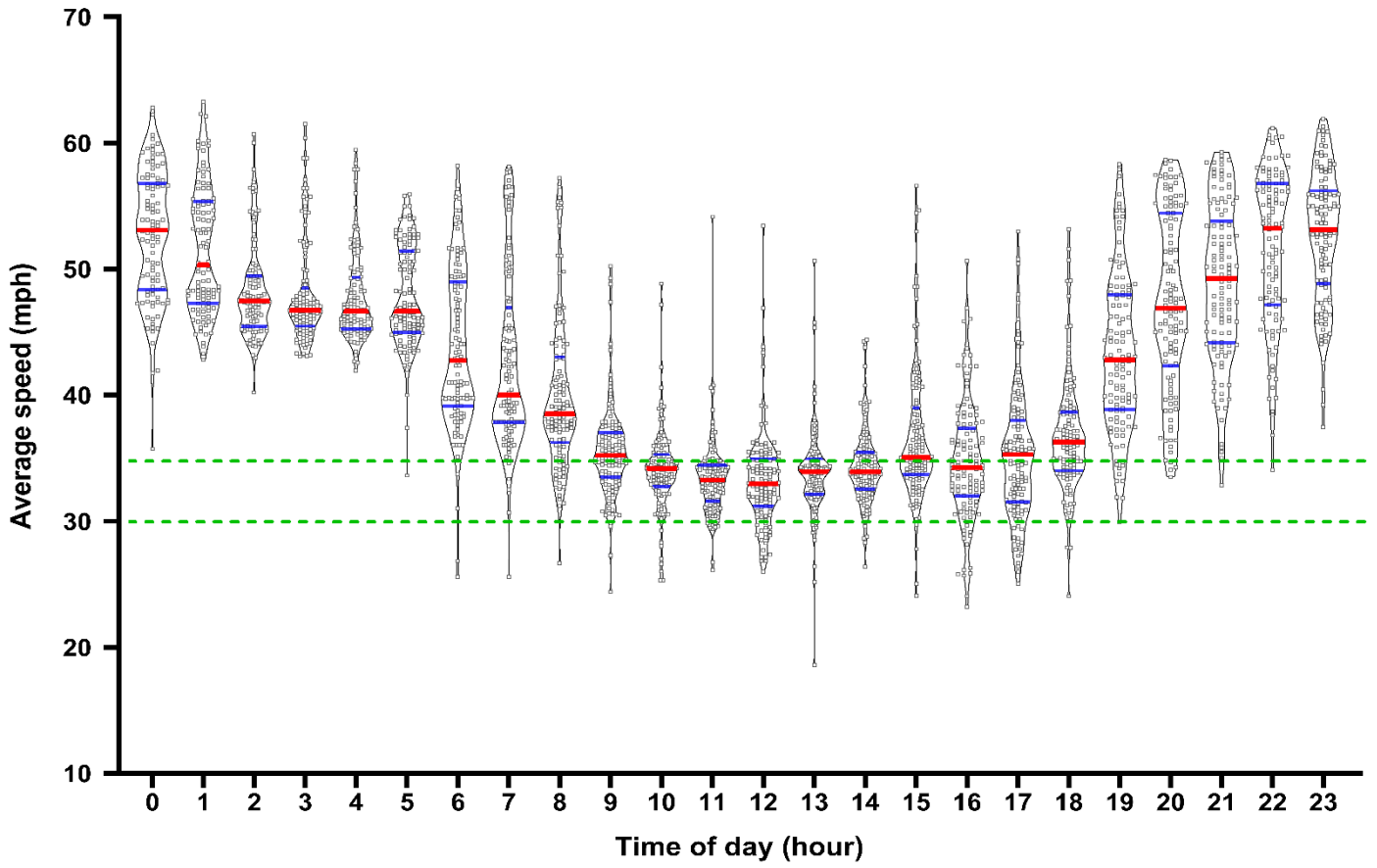
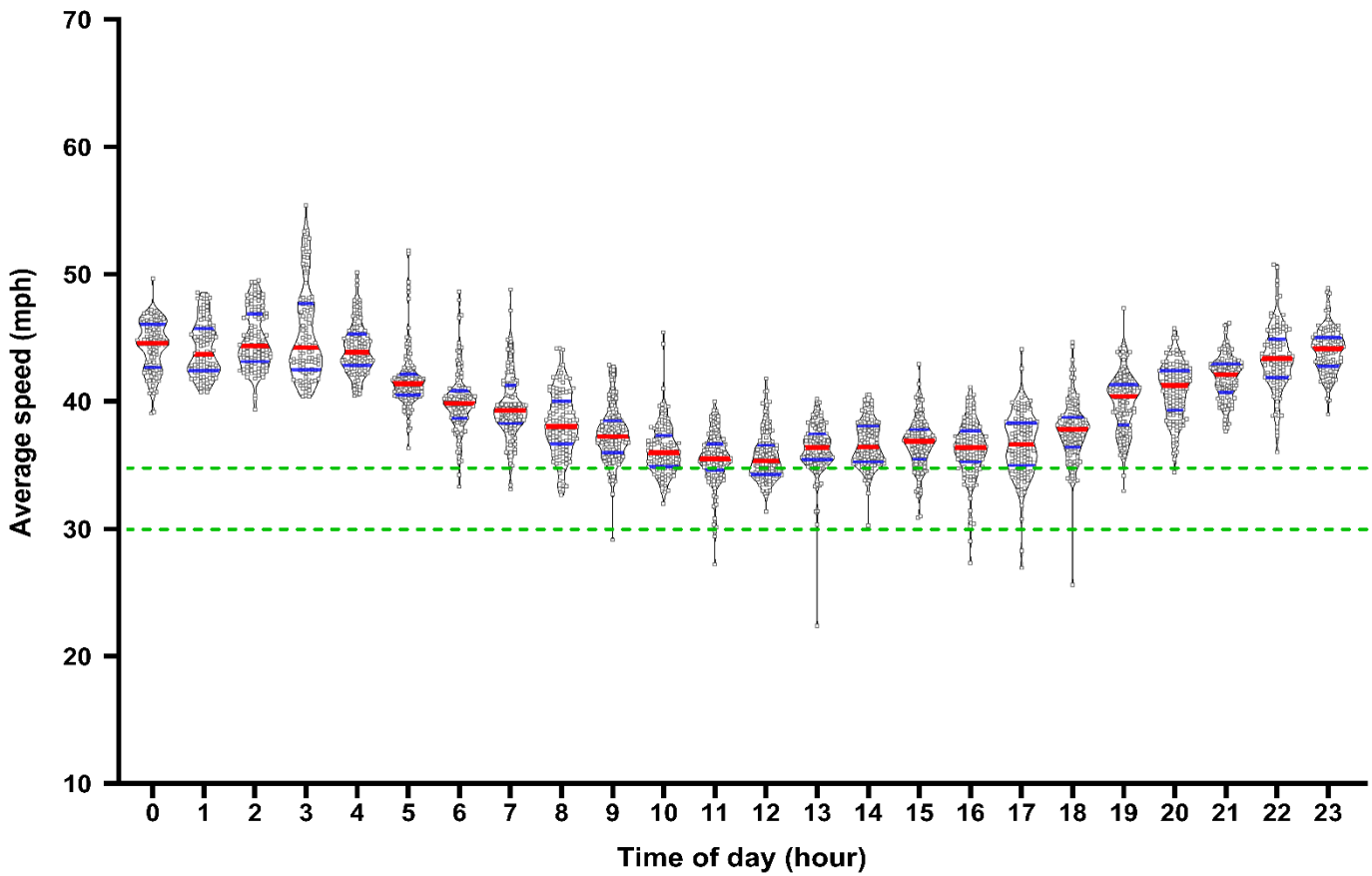
Figure 1: all northbound and southbound average speed data between north and south Hurst Green village entrances per hour of the day for September 2021. A=all data collected; B = northbound data only; C = southbound data only; D = southbound from north entrance to A265 junction data only; E = southbound from A265 junction to south entrance data only; F = northbound from south entrance to A265 junction data only; G= northbound from A265 junction to north entrance data only. A violin is plotted per hour displaying all speed data point within that hour where “0-11” = 12AM-11AM and “12-23” =12PM-11PM. Individual data points represented by grey circles within each violin, each representing an average speed within a 15-minute reporting period. The width of each violin represents the frequency of observations. Median and interquartile ranges are represented by red and blue lines, respectively. 30mph and 35mph speed limits are represented by green dotted lines



²¹ Brown, A 2018 P.2 'Analysis of Highways England Average Speed Data collected from sensors located in Hurst Green, East Sussex' available at: <https://hurstgreen2030.uk/wp-content/uploads/2020/12/HGNP-Analysis-of-Highways-England-Average-Speed-Data-v06.pdf> (accessed 29/11/2021)

²²National Highways <https://tris.highwaysengland.co.uk/detail/journeymtimedata>. (Accessed 28/11/2021)

B**All northbound data****C****All southbound data**

D**Southbound from north entrance to A265****E****Southbound from A265 to south entrance**

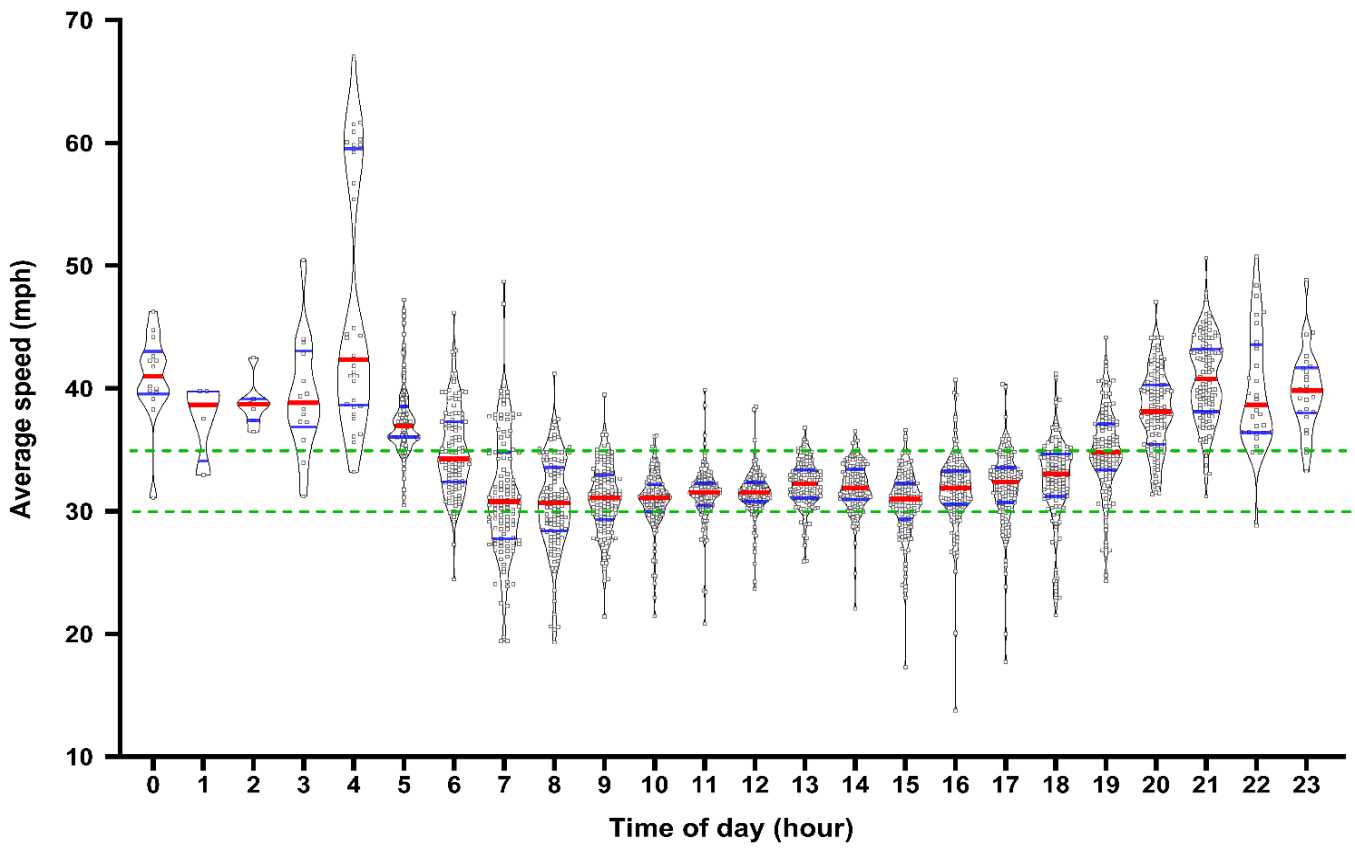
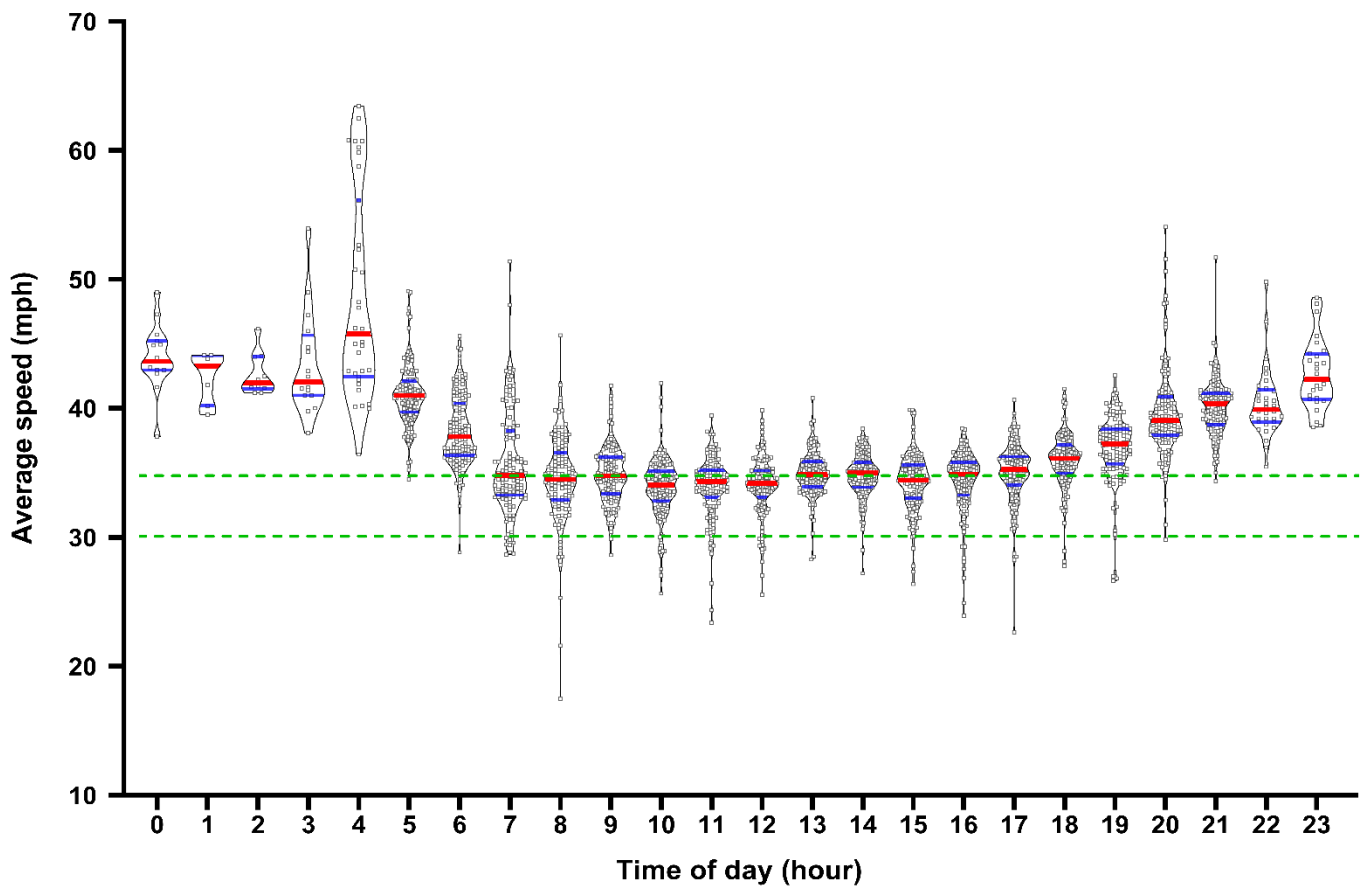
F**Northbound from south entrance to A265****G****Northbound from A265 to north entrance**

Figure 1 displays all vehicular average speed data collected between Hurst Green village gateways in September 2021. Each data point comprises the average speed of all vehicles in the last 15-minute reporting block.

In figure 1A summarising all data, average speeds peak during nighttime hours and regularly reach 60mph between 20:00 and 04:00. Median and lower quartiles, respectively frequently exceed 40mph and upper quartile values exceed 50mph between 22:00 and 02:00. Speeds reduce from 05:00, likely due to increased traffic volume indicated by a higher number of observations during daytime hours. Median average speeds between 08:00 and 17:00 are consistently below 40mph and remain below 35mph between 10:00 and 17:00. Lower quartile limits (75% of observations lay above this) exceed 30mph through the collection period. Average speeds do not decrease at 08:00 or 15:00 in response to the reduction of the speed limit from 30mph to 20 mph from the southern village entrance to past the village school.

The 85th percentile for all traffic through Hurst Green is assessed to be 44mph and the 15th percentile as 35.3mph, the speed at which you would get a Notice of Intended Prosecution if you were caught speeding through Hurst Green. 35mph also was given by Highways England as there being '*very few speeding incidents*' above in Hurst Green.

Figures 1B-G provide a more detailed average speed breakdown. Southbound observations generally contain higher speeds that do not vary significantly at school pickup and drop off times at 08:00 and 15:00. Indeed, all hourly medians from the A265 junction to the south entrance remain above 35mph as does the lower interquartile limits at 08:00 and 15:00. Slowest speeds are displayed in the northbound traffic, plausibly explained by strategic traffic flow being affected by local trips with vehicles pulling in and out of the many accesses through the village and onto the A21. This is likely compounded by vehicles stopping to complete deliveries to residences. Northbound traffic is also likely slowed by people stopping outside of the fish and chip shop in the centre of the village on the northern carriageway, a regular occurrence from 17:00-19:00. However, a steady increase in median average speeds between 15:00 and 21:00 suggest this is more an effect of traffic volume or behaviour.

Speeding in relation to noise pollution

Traffic noise is created by a combination of rolling noise (arising from the tyres interacting with the road) and propulsion noise (comprising engine noise, exhaust systems, transmissions, and brakes). As a rule of thumb, tyre-road interaction is the main cause of noise above 35 kph for most cars, and above about 43 kph for lorries with engine noise predominating at lower speeds

Engine noise varies with engine size, power and load, as Figure 2 shows. Rolling noise increases linearly with speed but the relationship varies with tyre width and road surface.

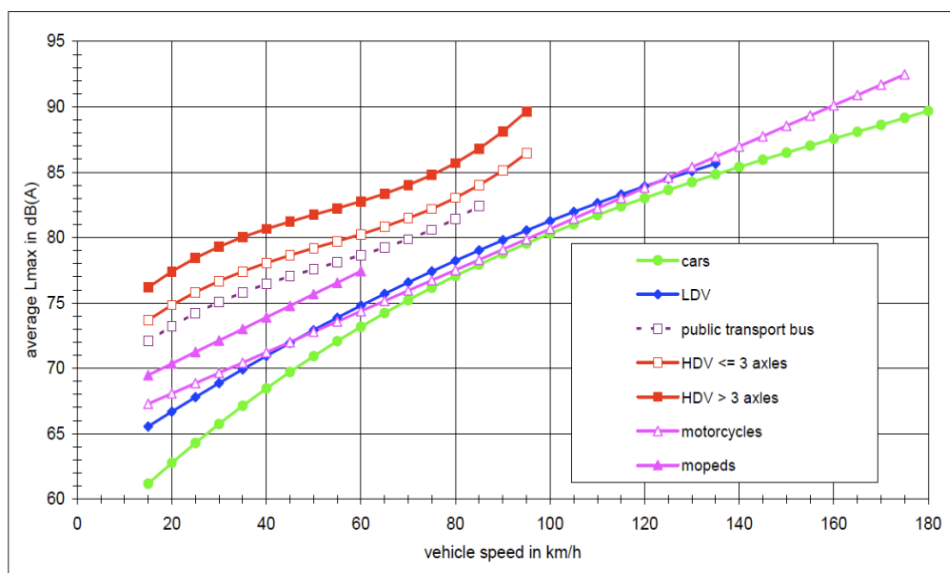
Traffic volumes affect noise. 200 vehicles passing in one hour sound half as loud as 2000 vehicles. So, volumes need to fall significantly to have a noticeable effect. Cut traffic even by a small amount

could improve noise levels by reducing the overall number of noise events. However, even here speed reduction is crucial. Traffic noise will not fall automatically with a drop in vehicles numbers if it simply allows the remaining traffic to speed up.²³

In addition to loudness, the health impacts of noise depend on duration, predictability, pitch and context. Sudden or sharp noise peaks can be as or more annoying than overall noise levels, especially at night when they disturb sleep. Therefore, traffic noise impacts should be measured not just in terms of overall levels (dB(A)Leq), but also peaks (dB(A)Lmax). The frequency, or pitch, should also be measured.

- A 10 decibel (dB) decrease is perceived as a halving of noise. A 10 dB increase corresponds to a doubling of noise.
- For a single vehicle, a 1dB change in loudness is normally only perceptible under laboratory conditions.
- But on a busy road, with a mix of traffic, a reduction of 1dB can be noticeable because it signals a reduction in the number of disturbing noise events.
- A 3 dB change in loudness is very noticeable.

Figure 2- Relationship between road noise and different vehicle speeds.²⁴



The increased speed shown in the data through the village will therefore have a large impact on noise pollution. A developer for a site adjacent to the A21 recently conducted a noise survey in Hurst Green. The results are displayed in figures 3 and 4.

²³ Mitchell, P 'Speed and Road Traffic Noise A report commissioned by the UK Noise Association.' http://www.ukna.org.uk/uploads/4/1/4/5/41458009/speed_and_road_traffic_noise.pdf (accessed 28/11/2021)

²⁴ Ibid.

Figure 3 – Noise data from Hurst Green, London Road in graph form

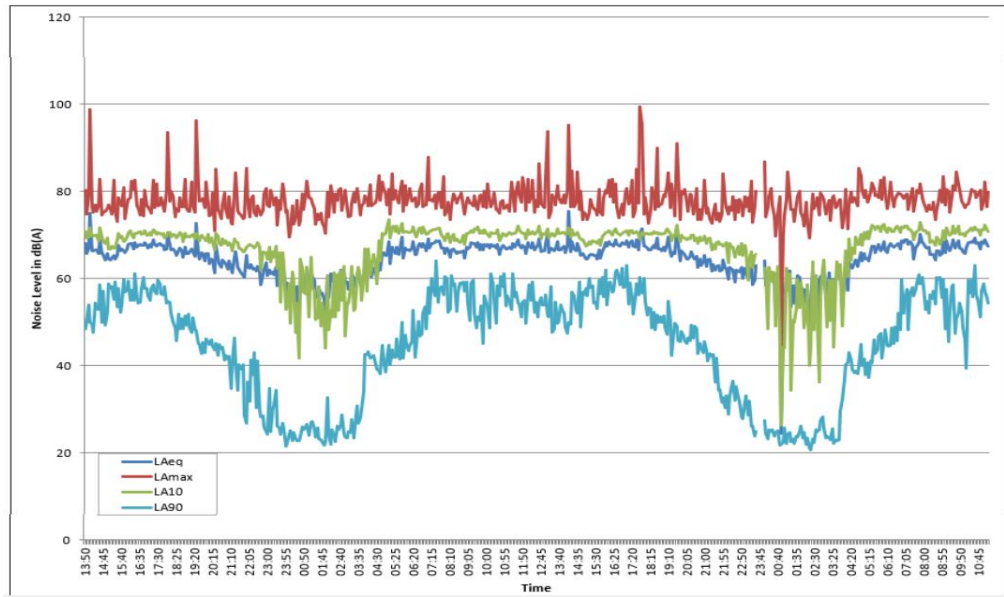
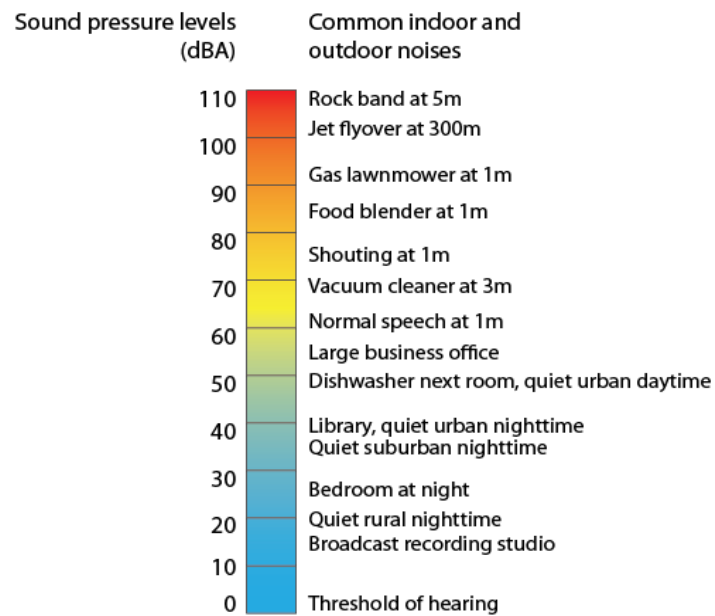


Figure 4 – Noise analysis conducted on the A21 London Road in Hurst Green

| Time | L _{Aeq} | L _{Amax} | L _{A10} | L _{A50} | L _{A90} |
|--------------|------------------|-------------------|------------------|------------------|------------------|
| 07:00 | 67.8 | 87.9 | 70.6 | 66.0 | 57.0 |
| 08:00 | 66.2 | 79.6 | 69.1 | 64.6 | 57.3 |
| 09:00 | 67.5 | 80.0 | 70.9 | 66.0 | 53.4 |
| 10:00 | 67.3 | 81.7 | 70.2 | 66.1 | 56.3 |
| 11:00 | 67.5 | 83.3 | 70.5 | 66.0 | 55.1 |
| 12:00 | 67.3 | 86.3 | 70.4 | 65.6 | 54.5 |
| 13:00 | 67.5 | 93.8 | 70.4 | 65.5 | 52.2 |
| 14:00 | 68.6 | 95.3 | 70.0 | 64.7 | 52.9 |
| 15:00 | 65.5 | 80.6 | 68.5 | 64.1 | 57.0 |
| 16:00 | 68.0 | 82.8 | 70.6 | 67.0 | 59.3 |
| 17:00 | 68.6 | 99.5 | 70.5 | 66.7 | 57.5 |
| 18:00 | 67.3 | 90.0 | 70.4 | 65.6 | 51.4 |
| 19:00 | 67.4 | 91.0 | 70.2 | 62.7 | 48.0 |
| 20:00 | 64.7 | 80.8 | 69.2 | 57.2 | 46.0 |
| 21:00 | 63.3 | 84.1 | 68.2 | 52.5 | 39.1 |
| 22:00 | 61.7 | 78.9 | 66.7 | 47.0 | 32.1 |
| 23:00 | 61.0 | 82.3 | 62.9 | 40.3 | 27.1 |
| 00:00 | 59.1 | 86.8 | 53.9 | 32.2 | 24.2 |
| 01:00 | 59.0 | 84.5 | 53.4 | 30.5 | 23.9 |
| 02:00 | 58.5 | 79.6 | 51.8 | 29.8 | 24.1 |
| 03:00 | 59.6 | 79.0 | 56.4 | 32.8 | 24.9 |
| 04:00 | 63.2 | 85.4 | 66.5 | 47.6 | 40.2 |
| 05:00 | 66.4 | 82.7 | 71.1 | 54.6 | 42.3 |
| 06:00 | 67.6 | 83.2 | 71.4 | 64.5 | 48.0 |
| Day | 67.0 | 99.5 | 69.8 | 62.9 | 51.8 |
| Night | 63.2 | 86.8 | 60.9 | 41.5 | 31.8 |

These noise levels can be compared directly to other common noises using figure 5 below. 85db is the point at which you would need to be wearing hearing protection if you are working to industry standards.

Figure 5- dBA compared to common indoor and outdoor noises



Noise pollution can have a large effect on those living near to it. The Noise Policy Statement for England classifies noise pollution into 3 different categories.

- NOEL – No Observed Effect Level - This is the level of noise below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL – Lowest Observed Adverse Effect Level - This is the level of noise above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur

This data puts Hurst Green in the SOAEL range at night and between LOAEL and SOAEL in the day. The noise levels in Hurst Green caused by the A21 are in excess of the WHO noise guidelines.²⁵

Furthermore, most of the buildings along the A21 in Hurst Green were built before 1950, with many being listed. This means that the level of soundproofing in these buildings is below current regulations. Therefore, many dwellings in Hurst Green are severely affected by the noise of the A21, which is exacerbated by the increased speed of traffic as shown by the data.²⁶

²⁵ Hawkins Environmental ' Noise Assessment: Land off London Road, Hurst Green Millwood Designer Homes Limited 14th July 2021'
https://planweb01.rother.gov.uk/OcellaWeb/viewDocument?file=dv_pl_files%5CRR_2021_1816_P%5CLand+off+London+Rd+Hurst+Green+-+Noise+Assessment.pdf&module=pl (accessed 28/11/2021)

²⁶ Listed buildings in Hurst Green <https://britishlistedbuildings.co.uk/england/hurst-green-rother-east-sussex#.YaY92ND7SUK> (accessed 28/11/2021)

Traffic speeds and community severance

Roads cause less severance when traffic moves slower. Speeding traffic means that road crossing is harder and causes the community to be less connected. This has a measurable impact on a community. The UK has historically struggled to quantify community severance, however, the calculation used by the Swedish to define community severance (figure 6) uses speed as a factor to measure community severance. Indeed, speed plays a large part in this equation due to it being raised to a power of 4.²⁷

Figure 6- Swedish calculations for quantifying community severance

Disturbance effect = Disturbance x Crossing need

$$\text{Disturbance} = T * (0.667 + 3.33H) * (0.02 S)^4$$

T: Traffic (vehicles/day)

H: Proportion of heavy vehicles

S: Speed (km/h)

Delay effect = Delay x Need

$$\text{Delay} = 1.26 + 4.54 * 10^{-6}T^2$$

T: Traffic (vehicles/hour)

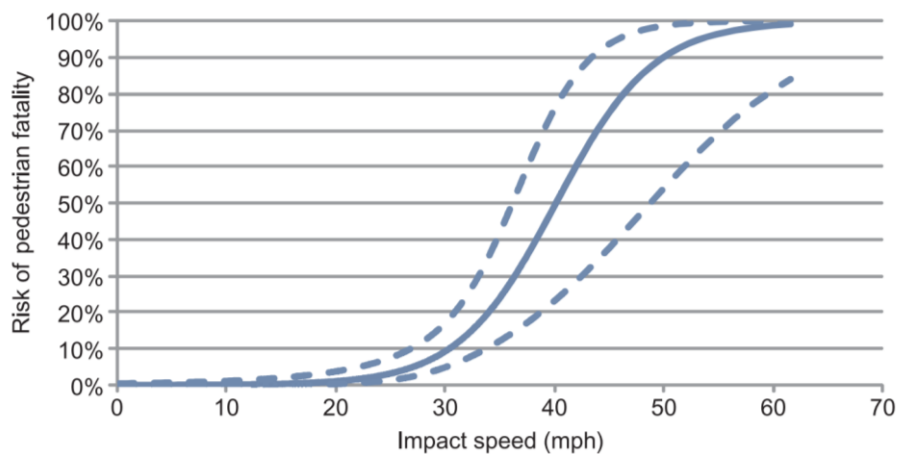
Due to the higher road speeds, Hurst Green experiences a higher degree of community severance than if speeds were slower and traffic volumes were lower.

Speed and accident severity

Increased speeding has a clear impact on the severity of any pedestrian impact with a motor vehicle as figure 7 shows. Using the Ashton and Mackay formula of calculating severity ratio in relation to speed we can see that this shows the risk of pedestrian fatality increases dramatically from 30mph to 40mph.

²⁷ Anciaes P, Jones P, Mindell J, 'Quantifying community severance A literature review'<https://discovery.ucl.ac.uk/id/eprint/1461385/10/Anciaes%20et%20al%202014%20Quantifying%20community%20severance%20-%20A%20literature%20review.pdf> (accessed 28/11/2021)

Figure 7²⁸ Traffic speeds compared against injury risk using the Ashton and Mackay formula



There have been several accidents involving pedestrians and motor vehicles in Hurst Green. 2 accidents have been as a result of pedestrians crossing the road and one pedestrian was hit by a passing vehicle's wing mirror while the pedestrian was using the pavement. (See appendix 5). The injuries were classed as slight and major.

It is clearly shown that there is a marked difference between the severity of an accident when a vehicle is traveling at 30mph as opposed to 40mph. It is further shown that there is a history of pedestrians being involved in accidents with vehicles on the A21 within Hurst Green.

Limitations

There is a possibility that the hardware that collects the data or the software that interprets the speed data are not calibrated correctly leading to potentially inaccurate readings. If this is the case, then National Highways would need to undertake a survey of all their recording equipment on the SRN to check for reliability as this would impact on their national journey time picture. It is understood that this data is not meant to evidentially prove any speeding offences and therefore will not be as accurate as a speed camera that utilise radar.

²⁸ Department for transport 'Road Safety Web Publication No. 16 Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants'
https://nacto.org/docs/usdg/relationship_between_speed_risk_fatal_injury_pedestrians_and_car_occupants_richards.pdf (accessed 28/11/2021)

Discussion

The analysed data clearly show that speeds through Hurst Green are regularly more than 35mph. Excessive speeding exacerbates community severance and noise pollution. It also increases the severity of any road traffic collision (RTC) that may occur, especially in relation to vulnerable user groups that use the A21 in Hurst Green, including young school children. There have been at least 3 accidents relating to pedestrians in Hurst Green being hit by traffic in since 2016.

These data indicate that speed mitigation measures currently in place through Hurst Green are not effective, causing risk to other road users. At school times, users of Hurst Green Primary School regularly park on the road, unloading and loading their children in the live traffic lane. The data highlight traffic speeds between 35 and 40mph on this stretch of road at school drop off and pick up times. If a Highways Officer or police were to have to stop anywhere on the SRN, it would be expected that they were wearing high-vis PPE in line with BS EN 471, and they would also likely deploy cones and arrow signs to properly direct traffic around their vehicle and any obstruction.

The data also show that the 85th percentile speed on the A21 through Hurst Green is more than 14mph over the registered speed limit. When the 85th percentile speed exceeds the speed limit, this can lead to RTCs as cars may attempt to overtake vehicles that are traveling at the speed limit. Anecdotally from residents, there is an issue with vehicles using the opposing carriageway through the village to overtake slower moving cars. Due to the large amount of direct frontage and residential vehicular access through Hurst Green, this raises the risk of head on collisions occurring between vehicles pulling out of accesses or junctions.

The related history of the A21 clearly shows that there was a lack of strategic thinking with regards to the A21 south of Kipping's Cross since at least 1977. The earlier approach of bypassing the 'attractive villages' along the A21 has produced a road of highly varying quality. The strategic approach to the A21 taken in the 1990s and 2000s was stated not to achieve the desired Benefit Cost Ratio (BCR) and therefore the plans were repeatedly scrapped throughout this period. Since 2010, the A21 south of Kipping's Cross has seemingly been put into the category of "too hard to solve" and therefore little to no interventions or upgrades have been completed or planned. For Hurst Green, having missed the "bypassing attractive villages" stage of development unlike all its more fortunate neighbours, residents have had to settle for a large degree of severance, noise and air pollution, all of which is exacerbated by the demonstrable speeding through the village.

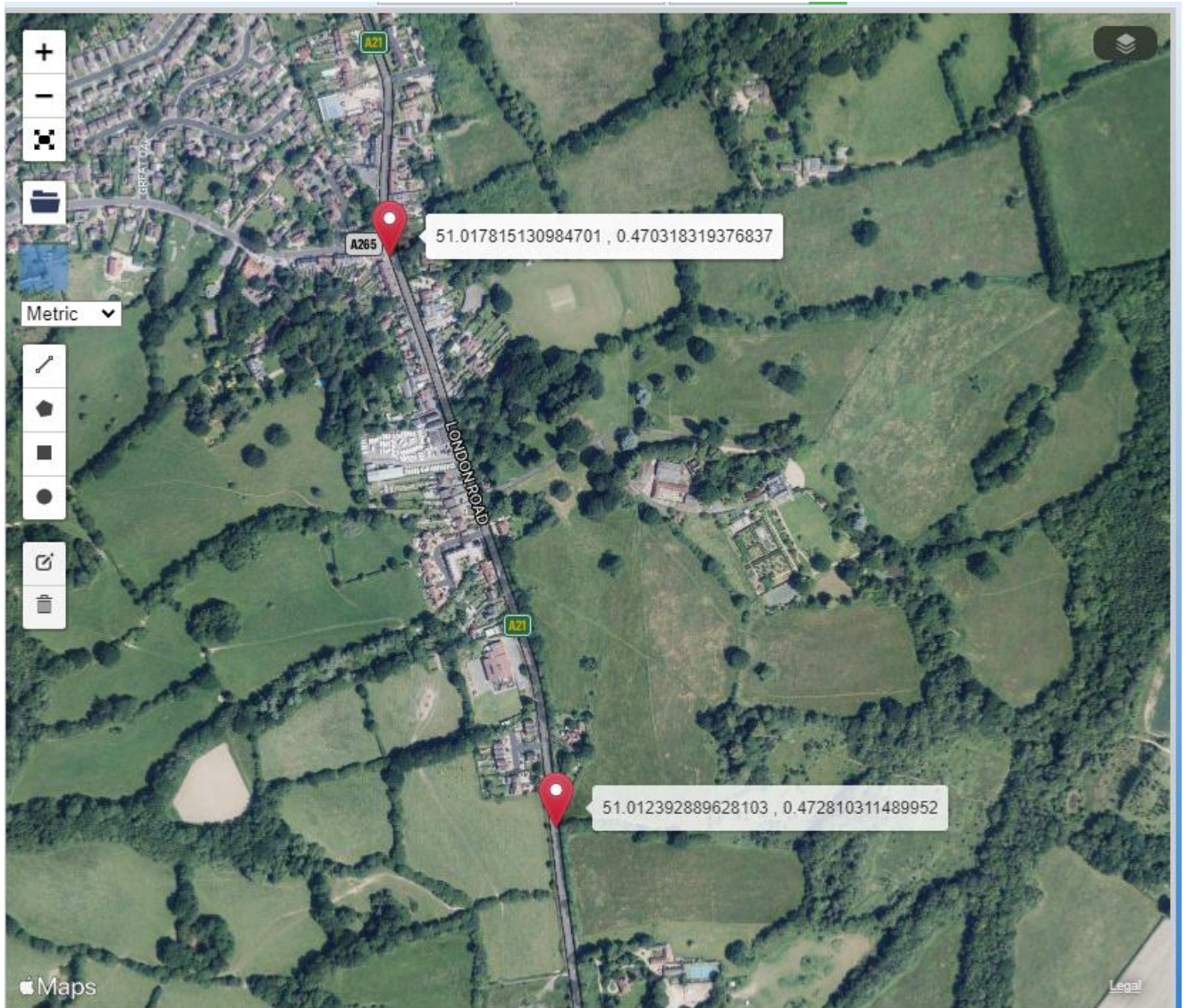
Appendix 1

NTIS Ref 200048774

File name A21mainCarriageway A21 northbound between A265 and A229

Start Node: 51.017815130984701 ; 0.470318319376837

End Node: 51.023714535312997 ; 0.469077571142430



Appendix 2

Data taken from NITS link 200048773

A21 northbound between A2100 near Battle (north) and A265

Southern Village entrance 51.012392889628103 , 0.472810311489952

A265 junction 51.017815130984701 , 0.470318319376837



Appendix 3

NTIS link 200048776 Location A21 Main Carriageway File name - A21 southbound between A265 and A2100 near Battle (north)

Start Node: 51.017813323231003 ; 0.470403778935513

End Node: 51.012400365786803 ; 0.472881997413974



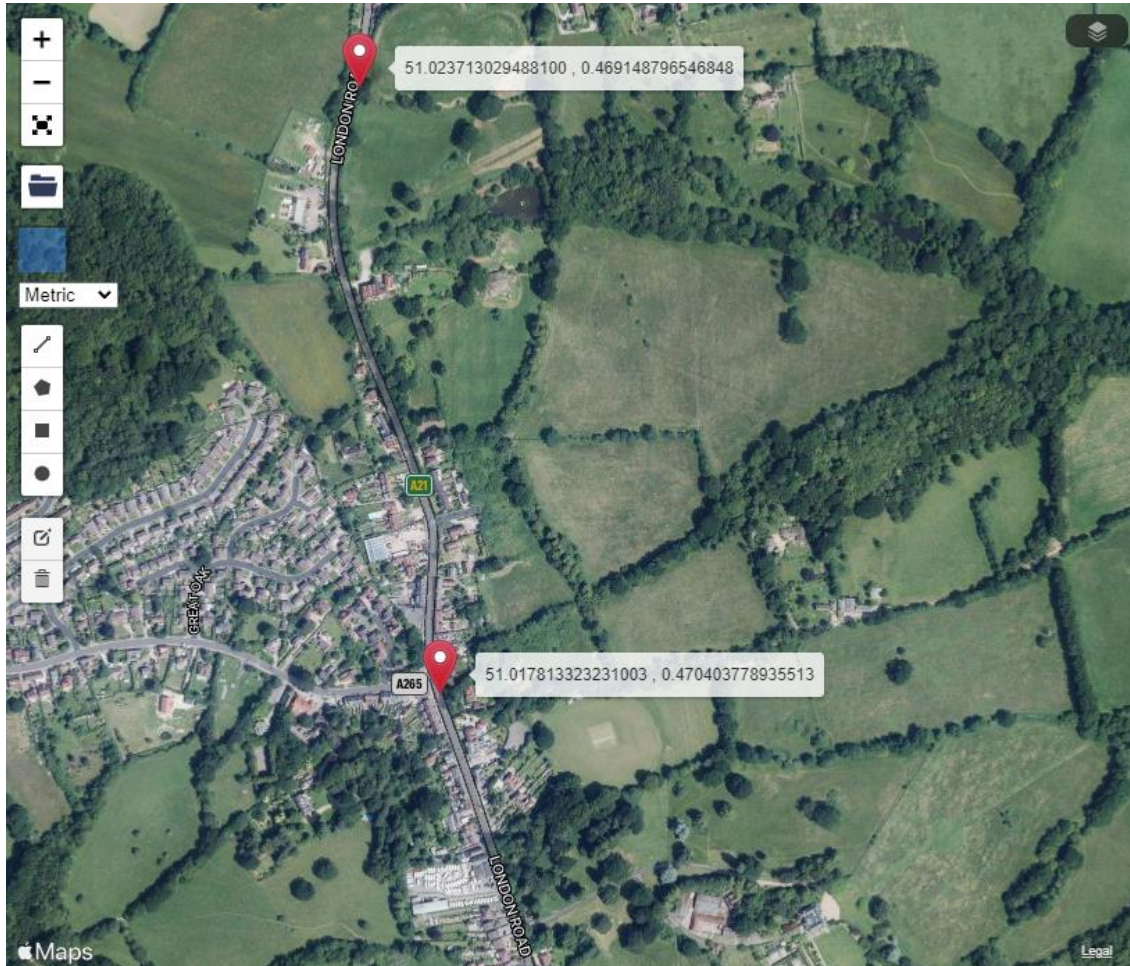
Appendix 4

NTIS Ref: 200048775

File name: A21 mainCarriagewayA21 southbound between A229 and A265

Start Node: 51.023713029488100 ; 0.469148796546848

End Node: 51.017813323231003 ; 0.470403778935513



Appendix 5 – Accidents in Hurst Green involving pedestrians

1707180 Saturday A21 HURST GREEN HURST GREEN Veh 1 Going ahead N to S Ped F 47 Serious
 16/12/2017 AT JUNCTION OF U COLEMANS WAY
 R1: A 21 1256hrs
 R2: U Daylight:street lights present
 E 573,469 Dry
 N 126,905 Fine without high winds
 30 mph

Causation Factor:

Participant:

Confidence:

1st: Dangerous action in carriageway

Casualty 1

Possible

2nd: Failed to look properly

Casualty 1

Possible

INITIAL UPDATE: PEDESTRIAN HAS BEEN ON VERGE LOOKING FOR LOST MOBILE PHONE. SHE HAS STUMBLED BACK SUSTAINING A MINOR INJURY AFTER IMPACTING WITH THE WING MIRROR OF A MOVING VEHICLE. 18/12/17 - 13:15 - SPOKEN WITH INJURED PEDESTRIAN. SHE HAS FIVE FRACTURED RIBS. HAS BEEN DISCHARGED HOME WITHOUT HOSPITAL STAY. WILL UPDATE TO SERIOUS.

1901345 Sunday A21 LONDON ROAD HURST GREEN Veh 1 Goods < 3.5t Going ahead S to N Ped M 20 Serious
 10/03/2019 28M NORTH OF A265 STATION ROAD Veh 2 Car Going ahead N to S
 R1: A 21 2102hrs OUTSIDE OPPOSITE 42
 Darkness: no street lighting
 E 573,357 Wet/Damp
 N 127,237 Fine without high winds
 30 mph

Causation Factor:

Participant:

Confidence:

1st: Failed to look properly

Vehicle 1

Very Likely

VEH 1 TRAVELLING NORTH BOUND ON A21, PASSES JUNCTION WITH A265 ON NEAR SIDE. PEDESTRIAN HAS CROSSED FROM WESTERN SIDE OF ROAD TOWARDS EASTERN SIDE, AND IS OVER CENTRE WHITE LINE IN CARRIAGEWAY. VEH 1 DRIVER FAILS TO SEE PEDESTRIAN AND HITS SAME ON FRONT OFFSIDE WING. PEDESTRIAN TRAVELS ALONG WING, INTO A PILLAR AND THEN AWAY FROM VAN. LANDS IN SOUTH BOUND CARRIAGEWAY IN FRONT OF VEH 2 WHICH IS TRAVELLING SOUTHBOUND. VEH 2 STOPS BUT HAS POSSIBLY BRUSHED PEDESTRIAN WITH BUMPER LEAVING CLEANING MARK

1806356 Saturday A21 LONDON ROAD HURST GREEN Veh 1 Car Going ahead N to S Ped F 16 Slight
 17/11/2018 AT JUNCTION OF A265 STATION ROAD OUTSIDE ON CROSSING
 R1: A 21 1837hrs
 R2: A 265 Darkness: street lights present a
 E 573,375 Dry
 N 127,169 Fine without high winds
 30 mph

Causation Factor:

Participant:

Confidence:

1st: Disobeyed automatic traffic signal

Vehicle 1

Possible

VEH 1 HEADING SOUTH ON MAIN ROAD WHEN CROSSING LIGHTS CHANGE TO RED AND PEDESTRIAN STARTS TO CROSS THE ROAD. VEH ONE HITS PEDESTRIAN CAUSING INJURY.