



TRAFFIC + TRANSPORTATION

THE DATA COLLECTION SPECIALISTS

63943 – Meadow Croft

Proposed Development Transport Access Note

September 2026

Ian Millership



Table of Contents

Data Quality Assurance: 3
1. **Introduction:** 4
2. **Highway Location and Background:** 5
3. **Highway Authority Consultation Responses:** 7
4. **Speed and Volume Survey Background and LHA Requirements for New Development:** 9
5. **Highway Traffic Information:** 12
6. **Incidents Encountered During Surveys:** 13
7. **Weather Conditions:** 13
8. **Survey Details:** 14
9. **ATC Speed Survey Results:** 15
10. **Visibility Splay Requirements:** 16
11. **Justification for Departure from Desirable LHA required Standard:** 19

Appendix 1 21
Appendix 2 22
Appendix 3 23
Appendix 4 24
Appendix 5 25
Appendix 6 26

CTS Traffic & Transportation Ltd.
Snape's Printworks, 9 - 11 Bolton's Court, Preston, Lancashire, PR1 3TY
Tel: (01772) 251 400
E-mail: enquiries@ctstraffic.co.uk Web-site: www.ctstraffic.co.uk

Data Quality Assurance:

Data Revision: Rev. 1

Analysis and Report by: Ian Millership
Date: 14 September 2026

Checked by: Joe Maclaren
Date: 14 September 2026

Approved by: Joe Maclaren
Date: 14 September 2026

1.Introduction:

1.1 CTS Traffic and Transportation have been appointed by Adam Vahed to assist him with the highway aspects of their proposal to develop glamping pods on their plot of land off Hillcliff Lane, west of Belper in Derbyshire.

1.2 The site is located in the Amber Valley District Council planning authority area, with the highways authority being Derbyshire County Council.

1.3 This Report is provided as a clarification to the comments made in a response from the Highways authority, Derbyshire County Council, to the application to change use of land and erect three glamping pods on their land at Meadow Croft, Hillcliff Lane, Turnditch, Belper.

1.4 It seeks to establish how any concerns remaining by Highways regarding the access might be remediated and better explained.

1.5 It is further amended taking on board the local highway authority specific confirmation of their understanding of the current legislation / guidance in regard to visibility splay determination.

2. Highway Location and Background:

2.1 Hillcliff Lane at this point is a 60mph national speed limit road. It runs between Wirksworth Road to the north and the A517 to the south at Cross o'th'hands. Both Wirksworth Road and the A517 are 50mph roads.

2.2 It is a 7.3m wide single carriageway with several bends and hills along its length, and a marked centre line throughout.

2.3 Approaching the proposed entrance from the north, the road has two left hand bends, with the road then straightening but rising past the proposed entrance, with a bend to the right beyond the entrance and a partial crest of the rising gradient just beyond.

2.4 The proposed entrance lies on the eastern side of the road adjacent to the hedged boundary of the neighbouring Middle Hill Lodge. It is to the south of the entrance to Meadow Croft, the owner of the land being developed.

2.5 The road has a soft verge about 1m wide alongside the neighbouring property and about 0.5m wide on the opposite side of the road. At the proposed entrance, the verge has a local widening but then returns to the about a metre width although there are telegraph poles on the same side of the road as the proposed development.

2.6 A measured survey of Hillcliff Lane either side of the development was undertaken including measurement both horizontally and vertically. The gradient profile along the nearside kerb has been produced.

2.7 Further discussion of the implication of this profile on visibility is provided below.

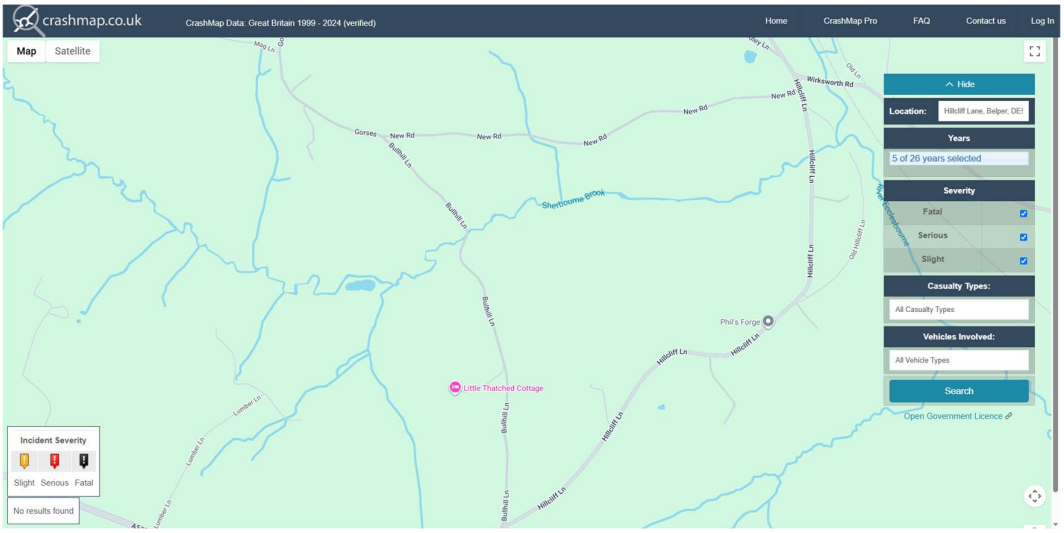
2.8 A site visit was undertaken to identify various parameters required.

2.9 The boundary between the two properties was found to be marked by a post located in the verge.

2.10 The appropriate location of the visibility line start point was identified by measuring 2.05m away from the boundary post and 2.4m in from the highway kerb edge.

2.11 The photograph below shows that this point is just in front of the hedge line of the neighbouring property and completely within highway land.

2.12 A review was undertaken using CRASHMAP of the accidents around the location for the last five available years (2021 to 2025). No incidents were identified as shown below:





3. Highway Authority Consultation Responses:

3.1 Derbyshire County Council highway authority undertook a full assessment of the application. A response was received from Robert Smith of Transport Development Management on 23 June 2026. A further response was received on 13th August 2026.

3.2 With reference to traffic impact, the highway authority made the following comments:

3.3 "it is unlikely that the traffic generated by the proposed development would result in an unacceptable impact on highway safety or a severe residual impact on the road network beyond the immediate site access".

3.4 The highway authority acknowledges the results of the October 2025 traffic speed survey showing 85th percentile traffic speeds at the site access from the south (northbound) of 44.4mph and from the north (southbound) of 45.5mph. It notes these values were one survey, located at the site access rather than two on the approaches.

3.5 The highway authority stated "It is not clear from the submitted information whether the applicant's speed surveys were undertaken in dry weather conditions. DMRB Advice Note CA185 requires that all speed measurements are undertaken in dry weather. For robustness, in accordance with paragraph 3.1.1 of CA185, a correction of +4kph should therefore be added to the applicants surveyed speeds."

3.6 "Based on DMRB methodology and the corrected 85th percentile dry weather speeds, the desirable minimum major road visibility splay requirements from the site access are 160m along Hillcliff Lane in both directions from the site access, taken to the nearside carriageway edge, in line with DMBR Design Standard CD109 Table 2.10. These splays should be projected from a 2.4m minor road visibility setback distance on the centre line of the site access."

3.7 "The applicant has not demonstrated achievable visibility splay lengths from the site access. However, from an initial desk top study, the LHA is concerned that achievable splay lengths along Hillcliff Lane may not satisfy the design standard. To the north of the access, visibility may be constrained by the horizontal alignment of, and third-party land adjacent to, Hillcliff Lane. To the south of the access, visibility is likely to be constrained by the vertical alignment of Hillcliff Lane."

3.8 "The applicant should therefore demonstrate achievable visibility splays along Hillcliff Lane on both sides of the access on a suitability scaled plan. The visibility envelope, the area between the major road visibility splay line and the nearside carriageway edge must be owned or controlled by the applicant or fall within the limits of the public highway. The plan should show the full lengths of the splays and should detail any boundary treatment works required to achieve such splays."

3.9 "The applicant should also demonstrate that forward visibility distances of 160m are available along Hillcliff Lane towards and from vehicles positioned waiting to turn right into the site access."

3.10 "Given the vertical alignment of Hillcliff Lane to the south of the site, it will be necessary for the applicant to demonstrate that the necessary visibility splays can be achieved in both the horizontal and vertical planes. The driver's line of vision in the vertical plane should be taken from an eye height of between 1.05m and 2.0m. A clear view of an obstacle must be available between heights of 0.26m to 2.0m. Visibility splays should therefore be shown on a topographical survey base, with a long section provided to demonstrate that the splays can satisfy the above requirements in the vertical plane."

3.11 "The submitted Road and Access Plan shows an access having a width of 3.3m. In line with the LHA's Planning, Streets, and Places (PSP) guidance, a shared driveway should allow two vehicles to enter and leave simultaneously. Accordingly, the access should provide a minimum width of 4.1m over a length of 15m in accordance with PSP paragraph 5.8.3."

3.12 "As the site access would serve a private site, it should take the form of a hard surfaced dropped kerb verge crossing rather than, as shown, a junction with bell mouth radii, constructed in accordance with the highway authority's specification.

3.13 The Design and Access Statement (DAS) states that the first 8m length of the access from the nearside carriageway edge on Hillcliff Lane will be hard surfaced to ensure that no loose material is deposited onto the adopted highway.

3.14 “Measures to prevent the unregulated discharge of surface water to the public highway should be provided.”

3.15 “”A revised Road and Access Plan should therefore be submitted”

3.16 ““The proposed provision of once car parking space per glamping pod is acceptable”.

3.17 “Sufficient space would be available within the site to enable vehicles to enter, turn within, and leave the site in forward gear.”

3.18 ““The proposed cycle storage and bin collection point are considered acceptable.”

3.19 “Sustainable Travel
Hillcliff Lane has no formal pedestrian margins or street lighting in the vicinity of the site. Limited facilities are available within walking and cycling distance of the site. As such, future users are likely to be entirely reliant on the private car.”

3.20 “Conclusion
The application as submitted does not fully assess the highway impact of the proposed development. Further information is required as set out in this response.”

3.21 “The LHA therefore recommends that this application should not be determined until the applicant has submitted further information which satisfactorily addresses the above issues.”

3.22 “The LHA will comment again following receipt of further information.”

3.23 These further comments are those received on 13th August 2026, Derbyshire reference AVBC/2026/017645/R1

3.24 The LHA considers that DMRB should be the starting point for determining visibility splay distances on classified roads where speeds are higher than 40mph.

3.25 Any period of wet weather during the survey means a correction of +4kph must be applied to the survey results.

3.26 These imply surveyed speeds of 75 to 77 kph which the LHA confirm imply a design speed of 85kph and therefore minimum splay requirements of 160m.

3.27 The minor road splay setback can be 2.0m based on DMRB CD123 3.8.1.b

3.28 The LHA are minded to agree with TAN 10.8 that the visibility can be taken between a driver’s eye height of 1.05m and an object height of 1.05m.

3.29 DMRB CD123 para 3.4.3 states major road visibility splays should be projected to the nearside edge of the major road carriageway.

3.30 The LHA confirms that DMRB does permit departures from standards where the overseeing organisation, in this case the LHA, considers that to be acceptable following consideration of relevant issues.

3.31 The LHA confirm the hgv proportion is not relevant for speeds of more than 60kph and that a reaction time of 2s and deceleration rate of 0.25g should be applied.

3.32 Both gradient and bonnet length corrections should be applied.

3.33 This provides desirable minimum SSD of 200m to the south (absolute minimum 128m) and 115m to the north (absolute minimum 96m).

3.34 The LHA requires the applicant to demonstrate what visibility splays are achievable in both the horizontal and vertical planes, to allow the LHA to determine to what extent they depart from the appropriate requirements and therefore whether the proposed site access will be acceptable.

3.35 A minimum 4.1m width access remains required. (The access shown on the drawing in the TAN shows this width with the visibility splays from the centreline of the wider access. Other drawings will be updated when the access is agreed as acceptable)

4. Speed and Volume Survey Background and LHA Requirements for New Development:

Traffic Speed and Volume Surveys Background Advice

4.1 This section outlines the current advice relating to road speed measurements in particular to the design of accesses.

4.2 It is accepted that some of the views presented below arise from the joint experience around the country of the two experienced writers of this Report, whilst other views come from written explanations from local authorities. As always, the 'advice' provided is just that, it is not legislation and there is much differing interpretation within the industry from the advice.

4.3 November 2019 saw CA 185 Revision 0 – Vehicle Speed Measurement introduced to the Design Manual for Roads and Bridges (DMRB), as confirmed in the Highways England DMRB Briefing Note 29/7/2020. This superseded DMRB Volume 5, Section 1, TA 22/81.

4.4 TA 22/81 was very clear that for speed limit setting the 85 percentile dry weather spot speed of cars should be used. For improvement of alignments and major/minor junctions or accesses, and for new major/minor junctions or accesses on existing roads, the normal design methods are based on the 85 percentile wet weather journey speed of vehicles.

4.5 CA 185 replaced TA 22/81 but the only reason being stated as:

"CA 185 replaces TA 22/81. This full document has been re-written to make it compliant with the new Highways England drafting rules."

Nothing in TA 22/81 is stated as no longer being considered appropriate.

4.6 TA 22/81 advised that:

"To get from the dry weather spot speed of vehicles measured to the wet weather journey speed used in design one of the following correction factors should be used -
For AP Dual carriageways ... deduct 8kph
For AP Single carriageways ... deduct 4kph"

4.7 CA 185 simply states;

"When design parameters for anything other than speed limits and traffic signal installations are to be determined based on speed measurement, journey speeds of all motor vehicle types shall be used".

4.8 and:

"Speed measurements should be taken on the approaches to the scheme extents".

4.9 CA 185 makes no statement regarding whether Wet or Dry Weather speeds should be used, this being left to the designer. Should Dry weather speeds be required and the survey was undertaken in the wet, then the same adjustment factor as quoted in TA 22/81 should be used but this time with greater clarity (but the wet / dry scenario's reversed):

"3.1.1 Where speed measurements have been taken either partially or entirely in wet weather conditions, the following values should be added to each individual speed recorded in wet weather:
1) 8kph for dual carriageways;
2) 4kph for single carriageways."

4.10 Both standards give the same advice that the surveys should also be undertaken in free flow conditions unless they are taken in connection with changes to an existing feature that naturally impacts the free flow of traffic. They should not be used for alignment revisions. Where there is persistent parking this can be taken as a feature that naturally impacts the free flow of traffic.

4.11 The Manual for Streets (MfS) was published in 2007. It applies formally in England and Wales. Upon publication the Department for Transport (DfT) issued a directive that DMRB was for use on the Strategic Trunk Road (STR) network and that the MfS should be used for all other roads. Hillcliff Lane is not part of the STR and therefore MfS sets the appropriate standards.

4.12 An initial assumption (by some but not all parties) was that MfS was principally for use in the design of residential housing layouts, even though the above DfT directive made it clear this was not the case. To clarify this, MfS2 : Wider applications of the Principles was published in 2010 which set out how the principles of the MfS applied to all road types other than Trunk Roads.

4.13 Figure 7.18 in MfS provides the classic diagram defining visibility splay identification and marking. The point in the minor road from which both left and right splays begin is the centre line of the minor approach.

4.14 The point of start for visibility is 2.4m back from the edge of main carriageway, or formally the 'give-way' line (or an imaginary one if there are no road markings, or the main road channel line (MFS2 10.5.1)). Where there is a splitter island, the start position might better be the actual spot at which the drivers' eye would be.

4.15 In some cases 2m can be considered but only if the resulting protrusion of some vehicles into the running carriageway is not a problem to drivers and cyclists on that main carriageway having to manoeuvre around this. Derbyshire LHA confirms that for this development, 2.0m is acceptable.

4.16 Both left and right visibility distance (y) is traditionally measured along the nearside kerb in both directions. However, if there is a feature that prevents any traffic from the left crossing the centre line, the left splay can be taken to the centre line of the main carriageway. If the minor arm joins on the outside of a bend it is necessary to check an approaching vehicle is visible over the whole of the y distance, done by an additional sight line meeting the kerb line at a tangent. MfS2 advises, however, that a "more accurate" method of measurement is to measure to the nearside track of a typical vehicle path (10.5.3). Visibility splays are therefore now commonly measured to a point offset into the carriageway, but Derbyshire LHA requires use of the kerb line.

4.17 In preparing the MfS, the Transport Research Laboratory (TRL) used modern vehicles to determine appropriate stopping distances for various approach speeds. The tests were undertaken using vehicles travelling at up to 60kph (37mph). There is no reason to assume that the reaction time of drivers and braking capabilities of the vehicles would not be appropriate for speeds greater than 60kph but for unknown reasons the tests stopped at 60kph.

4.18 Prior to publication of the MfS, the DMRB (and prior to that various Technical Directives and Advice Notes) were the only standards for any type of highway and was used for non-Trunk roads. These stopping distances have not changed since originally quoted in the 1966 document "Roads in Urban Areas" and are therefore based on typical vehicles on UK roads in the early sixties- being typically Morris Minors and Ford Anglias.

4.19 Given the MfS tests stopped at 60kph, MfS suggests that for higher approach speeds the DMRB distances may need to be considered. Whilst at very high speeds it might be considered that the TRL tests could not be cited, it is illogical to assume that a modern vehicles' braking characteristics reduce once its speed exceeds 60kph (and certainly not to the level of a 1960's vehicle standard).

4.20 Table 7.1 of MfS provides calculated SSD in metres for speeds up to and including 60kph (37mph). The suggestion is made that 2.4m be added to SSD to allow for bonnet length.

4.21 MfS2 was introduced in September 2010 to 'expand on the design advice in MfS1 to include how to plan and improve busy urban and rural streets'.

4.22 MfS2 Chapter 10 sets out the Stopping Site Distance (SSD) formula:

$$Vt + v2/2 (d+0.1a)$$

Where
V= speed m/s
t= driver perception reaction time (seconds)
d=deceleration m/s2
a=longitudinal gradient (+ for upgrades and – for downgrades)

MFS values are t=1.5 and d=0.45g (4.41 m/ s2) (0.375g for hgv and bus)

4.23 In comparison, the DMRB 1960's based parameters are t = 2.0 and d 0.25g (2.45 m/s2), with a further value representing absolute minimum distances using d of 0.375g (3.68 m/ s2). Road gradients and the MfS additional bonnet length do not feature in any of the DMRB or Technical Directives or Advice Notes documents. The gradient component of the equation was only added in MfS2.

4.24 Para 10.1.8 guides that bus / hgv SSD should not need to be assessed when the combined proportion of bus and hgv is less than 5% of traffic flow but subject to consideration of local circumstances. HGV composition is also not mentioned in the DMRB but the LHA have confirmed that this is not relevant to the current application.

4.25 MFS2 para 10.5.9 states that 'based on the research above (High risk collision site and y distance visibility), unless there is local evidence to the contrary, a reduction in visibility below recommended levels will not necessarily lead to a significant problem.

4.26 Whilst not being necessary as TA 22/81 makes it clear that for access design the appropriate speed is the 85th %ile Wet Weather Speed (CA 185 says nothing to the contrary). MfS2 thought it necessary to state at 10.1.4 that stopping distances are based on the 85th%ile Wet Weather speed.

4.27 Finally, some authorities have produced their own guides to visibility splays which may need to be considered if in place (see below).

4.28 Derbyshire County Council produced its "Highway Authority Standing Advice" in September 2024 but this has since been superceded and our previous references to this have been removed and the stated Derbyshire LHA stance used. No generally available formal written guidance regarding visibility splays and SSD exists for Derbyshire County Council as far as we have been able to research. Some requirements, are however provided, and reported below:

Requirements of LHA for New Development

4.29 Where the driveway serves two or more dwellings, the access width should be widened to 4.1m for the first 15m. Space to allow two cars to pass side by side should be provided every 25m. (para 7.2).

4.30 The first 5m of the driveway from back of footway/highway must be in a consolidated material, i.e. not loose stone. (para 7.3).

4.31 Provision for refuse bin storage / collection, commensurate with the size and number of bins per property, shall be provided clear of any public highway and not conflicting with bicycle or vehicle parking areas. These must be no further away than 25m from the public highway.

4.32 Car parking is one per 1-2 bedroom units. (para 9.1 Table 1).

4.33 Parking spaces shall be 2.4m by 4.8m. (para 9.6).

4.34 Bicycle parking should be one per bedroom. (para 10.1).

4.35 Gates shall be set back a sufficient distance to allow the longest commonly expected vehicle to stand clear of the highway and open inwards in all circumstances. (para 11.1).

4.36 Any projecting signage shall not extend closer than 0.5m back from the nearside carriageway edge (para 12.1) and have at least 2.4m overhead clearance to any footway (para 12.2).

4.37 An illustrative layout provided shows that all visibility splays must be within the planning application line or on highway land. Nothing must exceed 0.6m in height in visibility splays.

4.38 The LHA requirements in terms of details of the visibility splay are provided above in their written comments and below in context of the calculations undertaken.

5. Highway Traffic Information:

5.1 Classified volume and speed data was collected via two ATC units positioned adjacent to the proposed access point for the development. The two counts were labelled as north eastbound and south westbound. Appendix 1 provides the exact site.

5.2 This location was considered to be the most appropriate and secure place for undertaking the speed survey. Data was collected from Saturday 18th October 2025 to the end of Friday 24th October 2025. Data is shown in hourly intervals and by direction.

5.3 The Vehicle Classifications used in this survey numbered in the data are as follows (and see Appendix 2):

1. Pedal Cycles
2. Motorcycles
3. Passenger cars with or without trailers
4. LGVs with or without trailers
5. 2 axles rigid HGV
6. 3 axles rigid HGV
7. 4 axles rigid HGV
8. 3 axles articulated HGV
9. 4 axles articulated HGV
10. 5 or more axles articulated HGV
11. Buses and coaches

5.4 Vehicle speeds were gathered in 5mph bins for each hour, with a mean average, a standard deviation and the 85th percentile speeds calculated for each hour and for various agglomerations of hours.

5.5 We are not aware of any major changes to traffic or traffic conditions which will have rendered this speed survey no longer valid.

5.6 It is noted that the total 24-hour traffic southwest bound during the ATC week was 538 vehicles, with the northeast bound volume 586. The OGV percentages were 4.8 and 4.2 respectively by direction fo the average weekday value. These are not high flows (see further detail below).

6. Incidents Encountered During Surveys:

6.1 There were no significant events or unforeseen circumstances to affect the results of the surveys.

7. Weather Conditions:

7.1 Weather conditions were good for the duration of the survey.

7.2 Review of local meteorological data from the DEFRA station at Denby Pottery (ID 109973) close to Belper, confirmed there was some rain on the 19th October (less than 0.5mm during 28 15-min periods, which would normally be considered to produce a "wet" surface, and more than 0.5mm with a maximum of 1.6mm for 10 15-min periods, with 58 15-min periods totally dry) and 23rd October (less than 0.6mm during 27 15-min periods, and more than 0.6mm with a maximum of 1.6mm for 2 15-min periods, with 67 15 min periods totally dry). There were smaller amounts that would normally be ignored on the 20th, (8 15-min periods with 0.4mm or less, with 88 15-min periods totally dry); 21st (3 15-min periods with 0.2mm or less, 93 15-min periods totally dry) and 24th (4 15-min periods with 0.2mm or less, with 92 15-min periods totally dry). The 18th and 21st October were totally dry.

7.3 In total there were 590 15-minute periods out of a total 672 periods that were totally dry (88% of the total). Many of the periods being considered as wet had so little rainfall that the surface would not be wet to any material effect.

7.4 This would therefore be considered to be a Dry Weather survey. Had there been more periods when there had been some rainfall, then as CA 185 advises, readings taken during the wet periods would be adjusted to convert to dry weather periods, and then if these readings are to be used to determine stopping distances, all would then be converted back to Wet weather speeds.

7.5 This was not considered necessary for the previous Transport Access Note. As it has been suggested that because there were some readings recorded in Wet conditions, all readings, including the vast majority of dry readings, must be treated as Wet readings (in our understanding contrary to CA 185) we have made an assessment which accounts for the readings recorded in the wet.

7.6 As visibility from the site access to the north is good at around 155 to 158m depending how it is measured, and this is well in excess of the visibility splays the Highway Authority have said are required (although not necessarily agreed), we have concentrated on the visibility to the south, i.e. of oncoming northbound traffic. This detailed assessment for the northbound traffic is presented in Appendix 4.

7.7 The rainfall data for Belper (which gives the results summarised above) are presented in Appendix 5 in raw data form from DEFRA. This is then translated to the hours of the day during the survey and the readings recorded in these periods highlighted. As can be seen many of the wet periods (and as above, there were few to begin with – at most 12% of 15-minute periods) were at times of the day when there was little traffic using Hillcliffe Lane.

7.8 The speeds recorded in these periods are then increased by 2.5mph in accordance with CA 185 (corrected Data sheets). The 85th %ile Dry Weather speed is then re-calculated and the Wet Weather Speed determined (Data Summary Sheet).

8.Survey Details:

8.1 Appendix 1 provides a record of the location of the ATC tube.

8.2 Appendix 2 provides a record of the vehicle types counted in pictogram format.

8.3 Appendix 3 provides the detailed traffic and speed results by day and hour.

8.4 Appendix 4 provides the detailed northbound assessment

8.5 Appendix 5 shows the rainfall data

9.ATC Speed Survey Results:

9.1 The table below provides a summary of the recorded 85th percentile speed survey results prior to any weather condition adjustments as detailed in para 7.5, providing the range of speeds identified through each day, the all-day average and an average for the full week.

9.2 The table below presents a summary of the data received and the results of the analysis undertaken using the industry standard software evaluation package provided with the equipment. The count quotes 85th percentile values given that most hours have sufficient levels of traffic to enable this value to be calculated by hour. These are the actual measurement from the traffic counter.

Access Point Survey	South West bound			North East bound		
Day	Min	Max	24 hr av 85th %ile	Min	Max	24 hr av 85th %ile
Monday	42.7	51.1	45.2	41.6	50.3	44.3
Tuesday	42.1	54.5	45.4	41.5	48.9	44.6
Wednesday	41.0	54.2	45.4	41.7	51.4	44.2
Thursday	40.3	54.0	45.3	40.6	51.5	44.5
Friday	43.2	55.3	46.0	42	46.5	44.3
Saturday	43.1	51.9	45.3	40.5	48.3	44.2
Sunday	42.0	50.0	45.5	40.4	47.9	42.1
Average, 5-day			**45.5**			**44.4**
Average, 7-day			**45.4**			**44.0**

9.3 An important determinant is then if these measured values are ‘dry’ or ‘wet’ and what value should then be used in the safe stopping distance calculations.

9.4 If speeds were collected in ‘wet’ weather, 4kph or 2.5 mph is added to obtain dry weather speeds; conversely if collected in ‘dry’ weather, the same value is subtracted to provide ‘wet’ values.

9.5 This is discussed further in Chapter 10.

9.6 All parties agree that the above table is the correct measured values from the survey and valid for use.

9.7 A further review was undertaken to identify the level of traffic actually exceeding the posted speed limit (60mph). Just 0.2-0.3% of all traffic south west bound and 0 to 0.1% north east bound during the week of survey was found exceeding 60mph.

9.8 Total traffic flows were an average of 538 for 24-hours south west bound and 568 north east bound, with the seven day values lower at 475 and 526 respectively.

9.9 OGV and bus flows are 4.8% (5-day) and 4.6% (7 day) south west bound and 4.2 / 3.9 north east bound respectively.

9.10 AM Peak hour flows south west bound range from 55 to 86, all in the 08:00 hour on weekdays, with north east bound flows between 37 and 55, mainly also in the 08:00 hour weekdays.

9.11 PM peak hour flows are 46-54 and 62-75 respectively although the peak hours vary between 15:00 16:00 and 17:00.

9.12 Weekend peak flows are much lower with peak levels mainly mid-morning to early afternoon.

10. Visibility Splay Requirements:

10.1 The recorded 85th percentile speeds are greater than the maximum 37 mph used in the driving tests in preparation of MfS. MfS therefore advises that designers may wish to use the values from the DMRB (which as seen in Section 4, are based on early 1960's vehicles and driving conditions). It is unfortunate that the MfS tests were not extended further given the DMRB values were based on long superseded vehicle performance characteristics, particularly braking, but both have been considered in this assessment. Derbyshire LHA confirmed that DMRB values should be used.

10.2 At the time both MfS and DMRB parameters were established, it was assumed that the 85th percentile wet weather speed would be 4 kph or 2.5 mph, lower than the dry weather recorded speed (for single carriageway roads).

10.3 Our initial assumption was that our survey was a dry weather survey with MfS para 10.1.4 stating 'for existing streets the 85th percentile wet weather speed is used', giving south west bound speed of 43 mph and north east bound of 43.9 (both 5-day averages).

10.4 However, the LHA used section 7 above to confirm their view was the survey was actually a 'wet' survey and therefore converted this to dry by adding to the values (see 10.6 below).

10.5 For this site, we undertook a detailed assessment as per CA185 (in Appendix 1), the wet weather northbound speed would be 42.14 mph. The dry weather speed (not relevant when stopping distances are being considered) would be 44.64 mph.

Gradient

10.6 The highway authority response states that the speed to be used for the visibility splay calculation should be 46.9mph (dry weather) (and in the southbound direction 48 mph – which whilst not agreed, results in distances that can be accommodated and are not considered further in this assessment).

10.7 In the immediate vicinity of the proposed access, the road has a north east bound 1 in 9.6 (10.4%) downward gradient (approach to access from south defining visibility splay to the left (south)). There is a south west bound 1 in 12 (8.3%) upwards gradient. The LHA agrees these values.

10.8 For the MfS calculated distances the gradient of an approach is taken into account. The distances quoted in the DMRB are unchanged since first being issued in 1966 (which were in feet and inches at the time).

10.9 The gradient of the road was never considered relevant and even today, there is no mention of the DMRB distances needing to be increased on downhill gradients, or reduced on uphill gradients.

10.10 The braking standards typical early 1960's vehicles could achieve, long before power assisted braking, anti-lock braking etc., was standard have such a factor of safety compared to modern vehicle standards as set out in the Manual for Streets, that this is not necessary. Put another way, there have been thousands of junctions and accessed approved based on DMRB standards that are on roads with gradients where the calculated stopping distance was not affected by the gradient which must still be considered safe.

10.11 Derbyshire LHA have nevertheless assumed gradient effects in their calculations based on the above dry weather speeds.

Bonnet Length

10.12 For the MfS bonnet length is also added, again never considered in any calculations using the DMRB values which have not changed since 1966. Derbyshire LHA have added this to their calculations.

10.13 Where the HGV composition is less than 5% this has no effect on MfS distances. For the DMRB it is not taken into consideration regardless of the percentage. Derbyshire LHA have agreed that this is not relevant in this instance.

10.14 The available visibility from the site access in both the horizontal and vertical plane are shown on Drawing No: 63943 / 02 which accompanies this Note.

10.15 As outlined above, there is clear visibility of 155-158m to the north. The LHA calculated distances were 96m minimum to 115m desirable. Whilst these distances use parameters which are not accepted, as these distances are well within the available visibility there would be no objection to the LHA "desirable" 115m splay being covered by a planning condition.

10.16 To the south there is around 139m visibility. Based on the accurately calculated 85th%ile Wet Weather speed of approaching northbound traffic of 42.13 mph, the visibility required based on the modern vehicle braking characteristics of the Manual for Streets (including gradient effects and bonnet length is 83m, well within the 139m available distance.

10.17 Using the DMRB 1960's braking performance (and allowing for gradient effects and bonnet length which should not be necessary), the minimum distance would be 107m and the desirable distance would be 166m.

10.18 Ignoring gradient effects and bonnet length (which should be the case when using the DMRB braking characteristics) the minimum and desirable distances would be 86m and 110m respectively, both within the 139m available.

10.19 As can be seen, the gradient effect (which has never featured in the DMRB or preceding standards) results in the desirable distance increasing by more than 50m. Finally, the LHA calculated distances based on increasing all recorded speeds (including those recorded in dry conditions) and using the resultant dry weather speed (not the wet weather speed) the distances would be 128m and 200m respectively. It is noted that the available 139m is still greater than the absolute minimum 128m, and furthermore 200m is actually beyond the DMRB design-based (as opposed to speed based) distance of 160m (which would be used in the absence of a detailed assessment).

10.20 The purpose of a stopping distance is, as the name implies, to enable a vehicle to stop before colliding with an object. Thus for travelling vehicles it is the distance needed in front of the vehicle. In the case of a visibility splay, the driver for which the splay is required is stationery and only needs to see an approaching vehicle, not a stationery object in the carriageway. MfS makes this clear stating that a visibility splay provides "intervisibility" between vehicles.

10.21 Derbyshire LHA have agreed with this stance and confirm that the driver eye height and object height should both be 1.05m.

10.22 The above visibility splays have been plotted onto a topographic survey based longitudinal section of Hillcliff Lane (Drawing 60401 / 02) a copy of which is reproduced in Appendix 5. The plan view on the same drawing shows the splays in the horizontal plane taken with no offset into the carriageway which the Manual for Streets describe as a "more accurate method of measurement", as per the LHA request.

10.23 The diagram demonstrates that to the north the 2.0m by 115m LHA calculated desirable visibility splay is achievable, with a note that any existing landscaping within the site will be replace behind the visibility splay or kept below 600mm in height where necessary.

10.24 To the south, the achievable visibility splay is shown together with the LHA calculated values of 128m (minimum) and 200m (desirable), and what we consider to be the appropriate distance of 83m (allowing for the downhill gradient).

10.25 The drawing also shows the tree identified as T26 in the tree survey. This is located well back from the visibility splay but the overhanging foliage of T26 may extend into the splay. The longitudinal section shows that the foliage will need to be kept always above 2m above ground level at that point.

10.26 The diagram also shows the 166m intervisibility available between vehicles turning right from the exit and oncoming (southbound) vehicles. It should be noted that the LHA mentioned 160m is the value based on design speeds, which we have modified to be consistent with the other distances being calculated ones from actual observed speed.

10.27 Our professional view is that the available distance is more than appropriate based on modern vehicle characteristics. Even based on the 1960's standards of the DMRB, the available distance is far greater than the minimum distance, however it is calculated. Should the LHA wish to consider the 139m as an acceptable departure from their interpretation of the DMRB, then a condition requiring a 139m splay being kept clear of obstructions to vision over 600mm would be acceptable.

10.28 It is also noted that MfS2 discussion relating to “High risk collision sites and y distance visibility” they state “the assumption made by some designers and road safety auditors is that (the minimum stopping sight distance) provides a minimum road safety requirement, and that collision risk will increase if the SSD is not achieved”. Conclusions of their research were “this study has been unable to demonstrate that road safety concerns regarding reduced y distance are directly associated with increased collision risk (at high risk urban sites). It concludes that an understanding of the factors influencing main road speed is important when assessing visibility requirements.

10.29 Para 10.5.9 states “unless local evidence is to the contrary, a reduction in visibility below the recommended levels will not necessarily lead to a significant problem”.

11. Justification for Departure from Desirable LHA required Standard:

11.1 The northbound visibility calculated by the LHA is achievable both horizontally and vertically and presents no highway safety issue that would prevent the development being agreed. The LHA value has therefore been accepted and is met and is not disputed.

11.2 The southbound achievable splay (139m) meets the modern vehicle characteristics of the Manual for Streets desired distance (83m) and the minimum 1960's standards of the DMRB (107m based on wet weather speed) and the LHA calculated absolute minimum 128m. The achievable distance is also greater than the desirable distance based on the DMRB without gradient effects (110m).

11.3 The available 139m does not, however, meet the desirable DMRB distance if it is thought that the gradient of the road should be allowed for (166m), nor the LHA calculated 200m.

11.4 It is therefore considered that the achievable visibility is more than adequate. Should, however, the LHA consider that acceptance of the achievable distance would represent a relaxation or departure from standards, then that would be an acceptable result.

11.5 To further assist in obtaining this departure, the following additional information is provided.

Accident Record

11.6 Para 2.12 demonstrates that there is no record in the last available five years of any accident on this section of Hillcliff Lane.

Low Traffic Levels

11.7 Paras 9.4 to 9.8 present the local total and peak flow values. OGV proportions are all below 5% and the overall traffic levels on this route are very low, with the maximum hourly flow in any hour being 86 vehicles.

11.8 Weekend and evening flows are all lower, being at the times when the access is most likely to be used.

Summary

11.9 The mix of the low flows and lack of accident record suggests the likelihood of any issue arising from the shortfall of stopping distance for traffic travelling northbound will be very low.

Further considerations

11.10 The hump in the road which restricts the visibility splay would suggest that there is little likelihood of any northbound vehicle being on the wrong side of the road. Vehicles turning left out of the access have already been shown not to conflict with northbound traffic with sufficient SSD, and vehicles turning right would be moving away from the hump.

11.11 A drive-through test was undertaken. This sought to identify the actual point at which a vehicle waiting to leave the proposed exit would first be seen.

11.12 This confirmed that the distance of 139m from the drawing estimates was correct, with Appendix 6 providing the photographic evidence, with the first photo from a northbound vehicle towards a mini leaving the site, and the second showing a view of the oncoming vehicle from a vehicle waiting to leave the proposed exit.

11.13 The test also demonstrated that in reality, at least the roofs of the vehicles became intervisible at 150m.

11.14 It is further noted that on the northbound approach to the exit, the road is curving to the left. This naturally points the driver's eye to the right hand side of the carriageway, or the side of road where the exit is.

11.15 Further, the neighbouring property has a high hedge installed which has already been noted to be further set back from the highway edge than many others along this stretch of road. This means that the bonnet of any car waiting to leave will be totally visible and that there would be no need for any vehicle to protrude into the road at all.

11.16 All these factors suggest valid reasons that should it be considered that the above 166m or 200m visibility are appropriately required then 139m would be an acceptable relaxation or departure that would not lead to an unacceptable increase in road safety risk.

Appendix 1

ATC Locations

Appendix 2

ATC Vehicle Types

Appendix 3

ATC Results

Appendix 4

Rainfall data and Speed Calculations

Appendix 5

Longitudinal Section and Visibility Splays

Appendix 6

Visibility Photographs

View from approaching northbound vehicle towards vehicle waiting to leave site.



View from vehicle at site, towards approaching vehicle from south, incidentally with lorry at same point.

