

# Calderbank Traffic Study

## North Lanarkshire Council

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3	15.02.21	For Issue	LM	NH	NH

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## **Executive Summary**

Sweco was commissioned by North Lanarkshire Council to conduct a detailed study of traffic conditions within the village of Calderbank and identify any appropriate improvement measures. The study was commissioned in response to a range of road safety concerns that were raised by the local community.

To fully assess these concerns, a series of traffic and pedestrian surveys were undertaken at all major road junctions along the B802 in Calderbank, including vehicle origin and destination survey points at both ends of the village. This information was used to establish not only the volume and classification of all vehicles using the B802, but also the number of through traffic movements i.e. vehicle movements that had no origin or destination within Calderbank.

To establish the number of road injury accidents within Calderbank, accident records for the 5 year period from October 2015 to October 2020 have been assessed. In total there have been 6 recorded injury accidents, including 4 slight and 2 serious, over the 5 year period. The casualties associated with these accidents included 3 drivers, 1 passenger and 3 pedestrians. Both serious accidents resulted in pedestrian casualties.

To assess speeds within the village, the 85th percentile traffic speeds have been measured and reviewed across various locations on the B802 Main Street through Calderbank. The 85th percentile speed is a standard metric used to measure traffic behaviour and inform speed limits on roads. This is defined as the speed at or below which 85 percent of all vehicles are observed to travel under free-flowing conditions past a monitored point.

The survey confirmed that 85th percentile speeds throughout Calderbank, while higher than posted speed limits, are not higher than would normally be expected on roads of this type within a village or town. The only location where 85th percentile speeds are significantly higher than the posted speed limit is on the B802 at the Calderbank village entry sign where the 85th percentile is 38mph. However, this survey location is at the point where the speed limit changes from 40mph to 30mph. Considering the speed data collected, it is recommended that additional signage and road markings are introduced to reinforce the transition from 40mph to 30mph at the village entry sign.

Total traffic volumes within the village have seen a decrease in flows of 9% from 2019 to 2020 and flows south of the village have seen a 13% decrease. With regards to HGV traffic, there has been a marginal increase of 45 vehicles between 2019 and 2020 over the same weekday 12-hour period 7am to 7pm, which is a 3% increase since 2019. Over the 12-hour period, this equates to approximately 4 HGVs an hour between 7am and 7pm. The reductions in total traffic volumes since 2019 are in line with those measured across the rest of the road network during the current COVID-19 restrictions. Considering the speed and traffic volume data collected, it is recommended that two new mini roundabouts are introduced at the B802 Main Street junctions with Crowwood Road and Calder Street.

An Automatic Number Plate Recognition (ANPR) survey uses vehicle number plates to allow an understanding of vehicle routing and journey times between survey points. For Calderbank the survey points were located to the north and south of the village on Calderbank Road and Woodhall Mill Road respectively. An average of 10,024 vehicles were observed in Calderbank between 7am and 7pm, of which 75% (7,565) are through trips with no purpose in the village. The survey results for HGVs have been split into those below and those above 7.5 tonnes, for the twelve hour period. For HGVs below 7.5 tonnes 74% (155) passed through without stopping and 26% (53) had a purpose within the village. For HGVs above 7.5 tonnes 67% (148) passed through without stopping and 33% (72) had a purpose within the village.



Acknowledging that approximately two in three vehicles are passing through with no purpose within the village, it needs to be recognised that there is currently no obvious and attractive alternative to the B802. There are limited options to influence the number of vehicles passing within the village. However, from the review of the speed and flow data, the recommendation to introduce mini-roundabouts at two locations would provide a level of traffic calming and help to discourage through vehicle movements. In the longer term, the East Airdrie Link Road is likely to provide an attractive alternative route for some through traffic but as this project is in the early stages of development it is not possible at this time to quantify what that reduction could be.

In summary, it is recommended that the following road safety improvements are put in place:

- Introduction of further signage or road markings at the formal entrance to the village where the speed limit changes from 40mph to 30mph to further encourage speed reduction;
- Introduction of two further mini roundabout to assist vehicular access to B802 Main Street at Crowwood Road and Calder Street. This would have the added benefit of providing a traffic calming effect and slowing speeds through the village;
- Introduction of an additional traffic signal controlled crossing facility north of Park Road, at a location with no crossing provision and shown to have pedestrian demand; and
- Review of the current mini-roundabout at English Row to be undertaken to identify potential options to improve its operation.

It is also recommended that the findings of this study be presented to key stakeholders including the local community. This will provide an opportunity to gain feedback on the outputs from this study and recommendations proposed.



#### 1 Introduction

#### 1.1 Purpose of Study

Sweco was commissioned by North Lanarkshire Council (the Council) to conduct a detailed study of traffic conditions within the village of Calderbank and identify any appropriate improvement measures. The study was commissioned in response to a range of road safety concerns that were raised by the local community.

To fully assess these concerns, a series of traffic and pedestrian surveys were undertaken at all major road junctions along the B802 in Calderbank, including vehicle origin and destination survey points at both ends of the village. This information was used to establish not only the volume and classification of all vehicles using the B802, but also the number of through traffic movements i.e. vehicle movements that had no origin or destination within Calderbank.

The study area is shown in Figure 1.1.

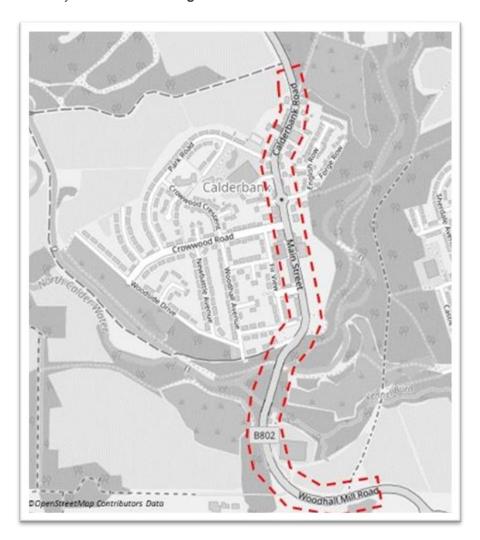


Figure 1.1: Study Area



#### 1.2 Context

#### 1.2.1 <u>Historic Traffic Data</u>

Several traffic surveys have been carried out previously in Calderbank, as shown on Figure 1.2

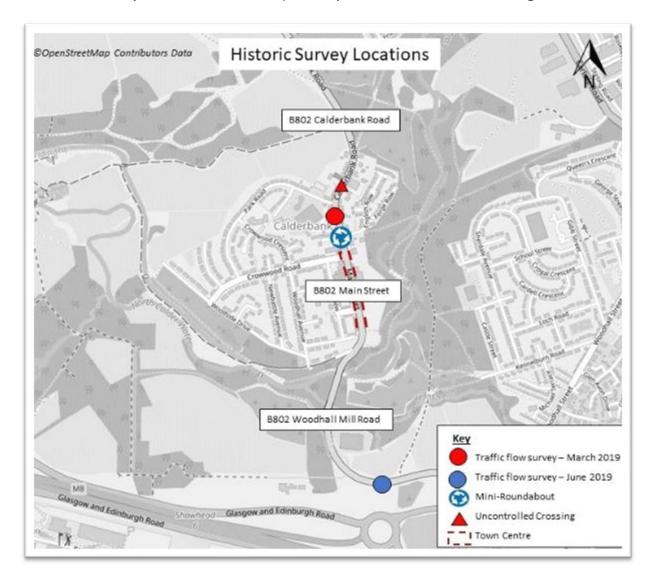


Figure 1.2: Historic Traffic Data



#### 1.2.2 <u>Accident Records</u>

To establish the number of road injury accidents within Calderbank, accident records for the 5 year period from October 2015 to October 2020 have been assessed.

In total there have been 6 recorded injury accidents, including 4 slight and 2 serious, over the 5-year period. The casualties associated with these accidents included 3 drivers, 1 passenger, and 3 pedestrians. Both serious accidents resulted in pedestrian casualties. The locations of the accidents are spread along B802 Main Street and can be seen in **Figure 1.3**.



Figure 1.3: Accident Locations, October 2015 – October 2020



#### 1.2.3 New Pedestrian Crossing

A previously planned signalised crossing will be implemented on Main Street between New Lane and English Row. This type of crossing includes smart technology which adjusts the 'Green Man' time to provide pedestrians with more time to cross if needed. It does this by detecting the walking speeds of pedestrians using the crossing. The location of the new crossing is shown in **Figure 1.4.** This is due to be installed in February 2021 as part of early works within the village.



Figure 1.4: Proposed Signalised Crossing Design

#### 1.2.4 East Airdrie Link Road

The aim of the East Airdrie Link Road (EALR) is to provide enhanced North/South infrastructure through North Lanarkshire to the north of the M8 by 2026, contributing to a co-ordinated and strategic approach to upgrade transport infrastructure and promote economic regeneration through the Pan-Lanarkshire Orbital Transport Corridor project.

- Traffic Improve journey times, reliability and resilience between Cumbernauld and M8.
- Connectivity Facilitate improved connectivity between residential areas and centres of economic activity, improving access to employment, education and training opportunities.
- Public Transport Facilitate improvements to public transport infrastructure and reliability, encouraging modal shift.
- **Active Travel** Provide active travel infrastructure linking to existing networks, encouraging modal shift.
- Air Quality Reduce levels of traffic-related air pollution within the Chapelhall AQMA.
- Development Support development opportunities for existing businesses and assist in unlocking stalled development sites.

Once complete, it is expected that the EALR will reduce traffic levels within Calderbank. However, this cannot be quantified at present as the EALR is in the early stages of development.



#### 2 New Traffic Data

A range of traffic surveys were carried out over the week of Sunday 6<sup>th</sup> to Saturday 12<sup>th</sup> September 2020 to provide an up to date understanding of traffic within Calderbank. It should be noted that the traffic survey at the northern end of the village had to be repeated over the period 17<sup>th</sup> to 23<sup>rd</sup> of September, as the survey equipment at this location was vandalised during the original survey period.

Figure 2.1 shows the locations of all data collected in September 2020.

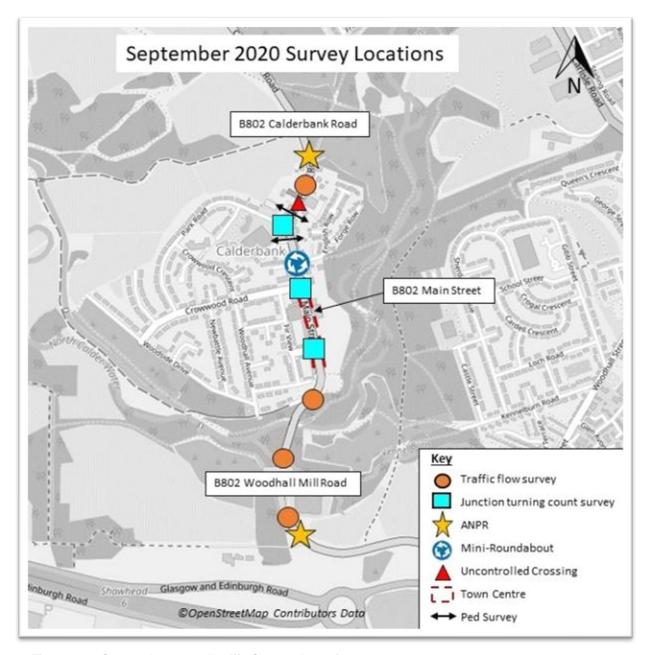


Figure 2.1: September 2020 Traffic Survey Locations



#### The data collected included:

- Traffic flow surveys at the locations indicated in **Figure 2.1**, providing traffic volume, vehicle type and speed data.
- Junction surveys at the junctions of:
  - B802 Main Street / Calder Street;
  - o B802 Main Street / Crowwood Road; and
  - B802 Main Street / Park Road.
- Automatic Number Plate Recognition (ANPR) Routing survey to establish the number of through vehicle trips in Calderbank i.e. vehicle movements that had no origin or destination within Calderbank.
- Pedestrian surveys to the immediate north and south of the Park Road Junction.

The traffic data collected is presented in the following sections for an average weekday and where historic data is available a comparison is made. Data for each individual day is available within the Calderbank Traffic Study Technical Appendix: Survey Data Report February 2021.



## 3 Data Review & Comparison

#### 3.1 Traffic Types

The traffic data is presented by vehicle type, showing a breakdown of total vehicles, heavy goods vehicle (HGV) and all other vehicles. For the purpose of this study, vehicle types observed during the traffic volume surveys have been aggregated into two classes: 'other' and HGV. It has been assumed that any vehicle over 3.5 tonnes is an HGV. **Figure 3.1** provides a breakdown of vehicles included in each class.

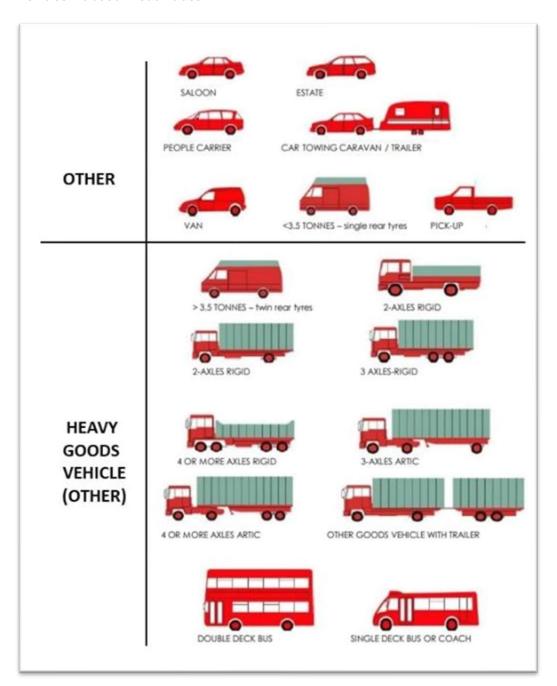


Figure 3.1: Vehicle Classes



#### 3.2 Traffic Speeds

The 85th percentile speed is a standard metric used to measure traffic behaviour and inform speed limits on roads. This is defined as the speed at or below which 85 percent of all vehicles are observed to travel under free-flowing conditions past a monitored point. The 85th percentile traffic speeds have been measured and reviewed across various locations on the B802 Main Street through Calderbank. **Figure 3.2** provides the speed data at the survey locations within Calderbank.

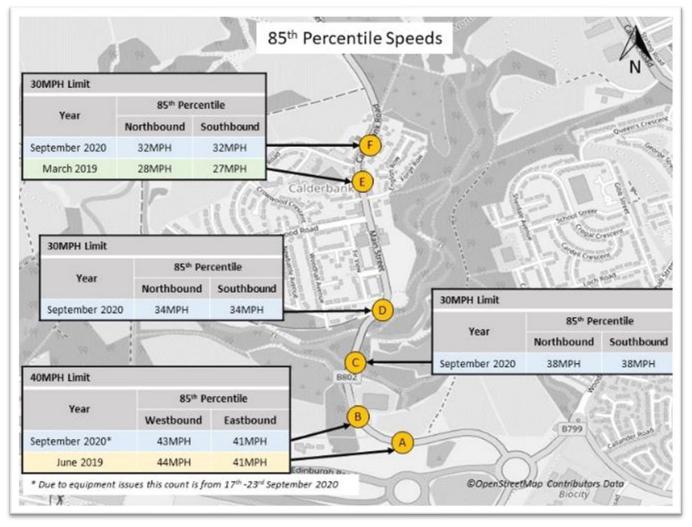


Figure 3.2: Traffic Speed Patterns 2019-2020



**Figure 3.2** indicates that speeds within the southern end of the village (locations A and B) have remained unchanged, with speeds at the northern end (location F and E) having increased between March 2019 and September 2020. It should be noted that the speed limit at locations A and B has recently been reduced from the national speed limit to 40mph, but the 85<sup>th</sup> percentile speed has not changed significantly when compared against the 2019 results.

While data has been collected at points C and D, there is no historic data available to compare at these locations. Data was collected at these locations to assess speeds on entry and exit from the village.

Reviewing the September 2020 speed data shown in **Figure 3.2** shows that while 85<sup>th</sup> percentile speeds are higher than posted speed limits, with the exception of location C, they are not higher than would normally be expected on roads of this type within a village or a town. At location C, the 85<sup>th</sup> percentile is 38mph. However, this survey location at the Calderbank village entry sign, is at the point where the speed limit changes from 40mph to 30mph. The surveys show that speeds then lower to 34mph where the main village settlement starts at location D and further lowers to 32mph within the village itself at location F.

Considering the speed data collected, it is recommended that additional signage and road markings are introduced to reinforce the transition from 40mph to 30mph at location C.

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#### 3.3 Traffic Volumes

**Figure 3.3** shows the traffic flow data within Calderbank at the survey locations. The traffic volumes are shown for a daily 7am to 7pm flow and show volumes in 2020 and volumes in 2019 prior to COVID-19 restrictions being in place.

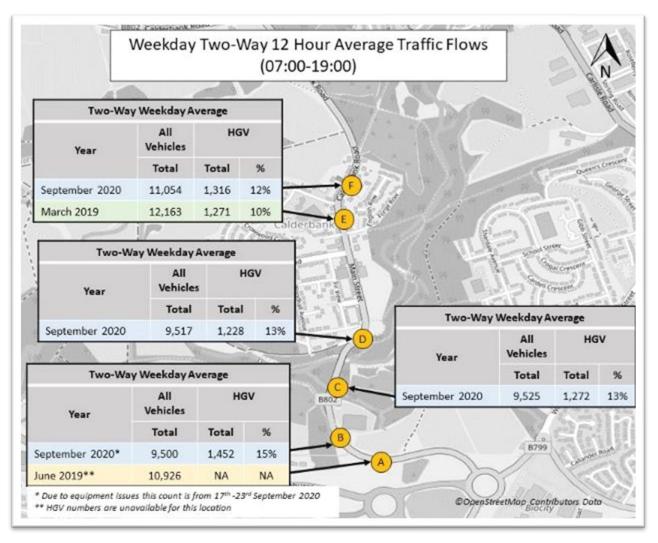


Figure 3.3: Traffic Volume Patterns 2019-2020

A review of **Figure 3.3** indicates that traffic volumes within the village (count locations E and F) have seen a decrease in flows of 9% from 2019 to 2020 and flows south of the village (locations A and B) have seen a 13% decrease.

With regards to HGV traffic, there has been an increase of 45 vehicles between 2019 and 2020 over the 12-hour period, which is a 3% increase since 2019. Over the 12-hour period, this equates to approximately 4 HGVs an hour between 7am and 7pm.

The reductions in total traffic volumes since 2019 is in line with those measured across the rest of the road network during the current COVID restrictions. It is currently not possible to predict if traffic levels will return to 2019 levels, however, there is an assumption that when all restrictions are lifted, and travel patterns return to normal, that they may return to 2019 levels.



To provide further detail on traffic movements **Figures 3.4** and **3.5** show the AM and PM peak hour turning flows at the three junctions on the B802 Main Street within the village where surveys were undertaken.

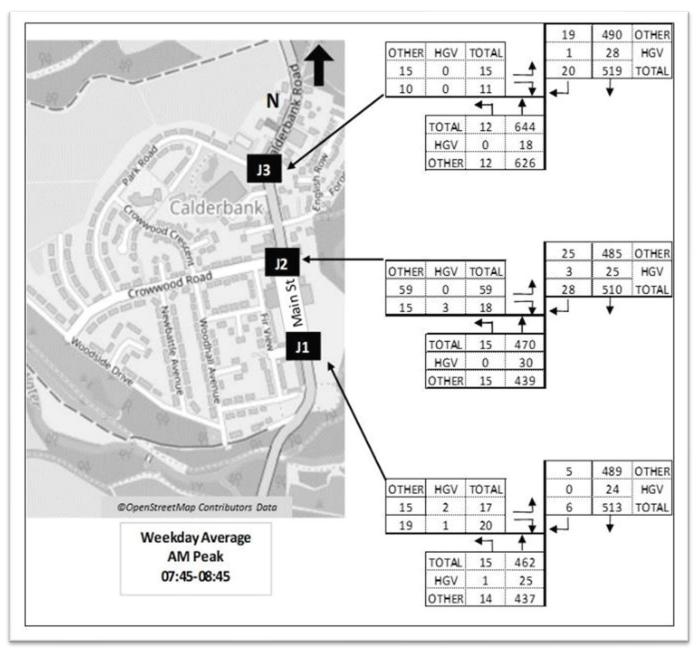


Figure 3.4: Junction Turning Counts by Volume and Classification – AM Peak Hour

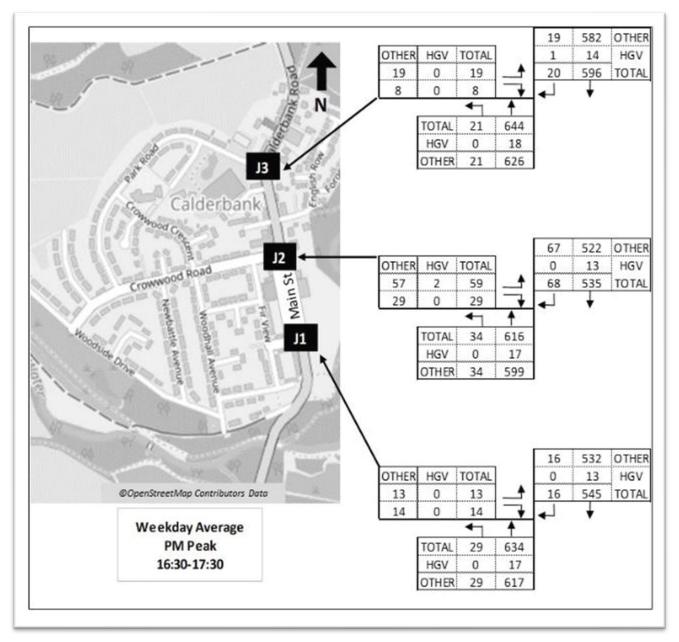


Figure 3.5: Junction Turning Counts by Volume and Classification - PM Peak Hour

A review of **Figures 3.4** and **3.5** shows that there is demand both turning in and out of all three junctions, with the greatest demand seen at junctions 1 and 2. For this reason, it is recommended that consideration is given to the introduction of mini-roundabouts at these locations. This would both provide a benefit for entry/exit to the side streets and would also provide a traffic calming effect to slow speeds within the village. The operation and layout of the current mini-roundabout at English Row should also be reviewed to ensure a consistent approach to traffic management.



#### 3.4 Traffic Routes

An Automatic Number Plate Recognition (ANPR) survey uses vehicle number plates to allow an understanding of vehicle routing and journey times between survey points. For Calderbank, the survey points were located to the north (Point A) and south (Point B) of the village on Calderbank Road and Woodhall Mill Road respectively – see **Figure 3.6**.

It is possible to establish the number and proportion of through trips in Calderbank by using the average journey time between points A and B. Journey time survey data was collected by surveyors driving between points A and B at 15 minute intervals between 8am and 5pm in both directions. This allowed the average length of time needed to drive between these points to be established and, therefore, a benchmark against which the number of through trips could be quantified.

Using the method described above, data from this survey and the junction turning flow surveys has been interpreted to establish the level of through trips in the village. **Figure 3.6** provides the breakdown of average weekday through trips for the survey period of 7am to 7pm, the morning peak hour, and evening peak hour split by vehicle type.



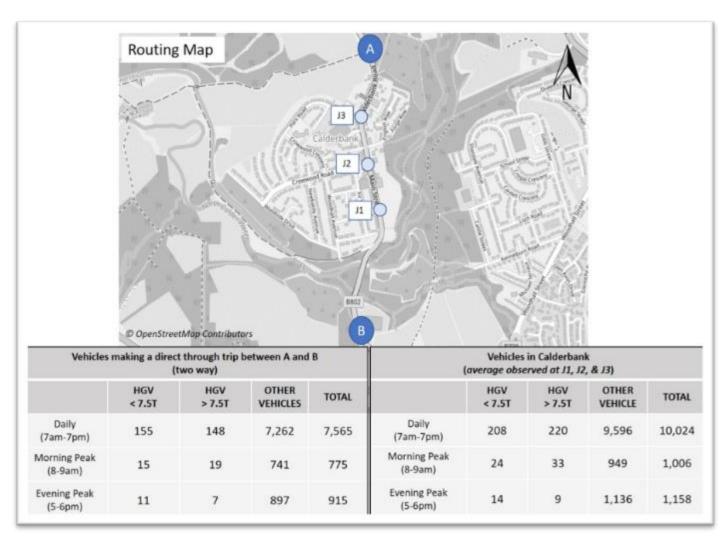


Figure 3.6: Through Trips in Calderbank

A review of **Figure 3.6** shows an average of 10,024 vehicles were observed in Calderbank between 7am and 7pm, of which 75% (7,565) are through trips with no purpose in the village. The survey results for HGVs have been split into those below and those above 7.5 tonne, for the twelve hour period. For HGVs below 7.5 tonnes 74% (155) passed through without stopping and 26% (53) had a purpose within the village. For HGVs above 7.5 tonnes 67% (148) passed through without stopping and 33% (72) have a purpose within the village.

Acknowledging that approximately two in three vehicles are passing through with no purpose within the village, it needs to be recognised that there is currently no obvious and attractive alternative to the B802. There are limited options to influence the numbers of vehicles passing within the village. However, from the review of the speed and flow data, the recommendation to introduce mini-roundabouts at two locations would provide a level of traffic calming and help to discourage through vehicle movements.

In the longer term, the East Airdrie Link Road is likely to provide an attractive alternative route for some through traffic but as this project is in the early stages of development it is not possible at this time to quantify what that reduction could be.



#### 3.5 Pedestrian Survey

To understand pedestrian movements across the B802, pedestrian surveys were undertaken four locations between 8am and 4pm on Tuesday 8<sup>th</sup>, Thursday 10<sup>th</sup> and Saturday 12<sup>th</sup> September 2020. Crossing points 1A and 1B are to the immediate south of the Park Road junction, while points 1C and 1D are to the immediate north of Park Road junction.

**Figure 3.7** shows the location of these crossing points and combines eastbound and westbound movements over the 8-hour period. Note that 'Primary School Children' crossing includes both accompanied and unaccompanied children.

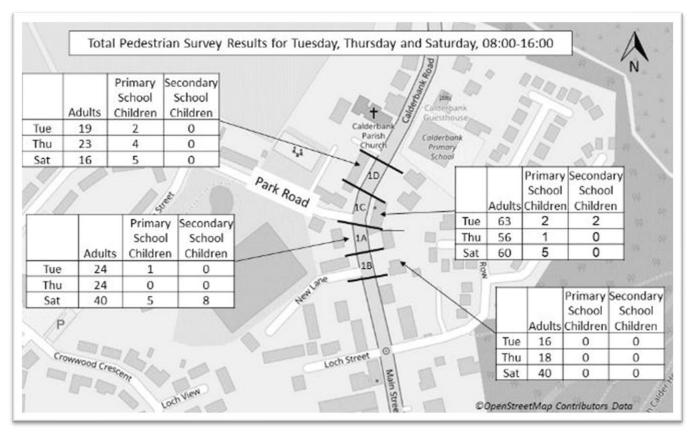


Figure 3.7: Pedestrian Crossing Survey Results Combined

The results of a pedestrian survey shown in **Figure 3.7** indicate that crossing point 1C is the most used. There were very few children (primary or secondary) seen crossing within the survey area. This is likely due to a school crossing patrol being available further north adjacent to the school entrance.

Crossing points 1A and 1B, north of the proposed traffic signal controlled crossing (due for installation February 2021 and shown in **Figure 1.4**) had an average of 40 adults crossing on the weekday and 80 on a Saturday between 10am and 4pm, indicating that the new crossing will be attractive to pedestrians at this location on B802 Main Street. The new crossing is being installed February 2021 as part of an early works package.

Having looked at the results of the pedestrian survey at location 1C and 1D and the traffic flows and speeds within the village, it is also recommended that an additional controlled pedestrian crossing is provided to the north of Park Road.



#### 4 Conclusions

The study has reviewed several sources of traffic data and the main conclusions which can be drawn are:

- The 85<sup>th</sup> percentile speeds seen within the village are in line with those typically seen in other towns and villages, except for one area to the south of the village at the transition from a 40mph to 30mph speed limit.
- There has been an overall decrease in total traffic within the village with a marginal increase in HGV traffic observed. This overall reduction is likely related to COVID-19 restrictions. It is unclear what the increase in HGVs could be attributed to. However, this could be increased home deliveries due to increased homeworking, home-schooling etc.
- For an average week, 75% of total traffic movements between the hours of 7am and 7pm are through trips with no purpose within Calderbank. Given that there is currently no attractive alternative route this is to be expected until an alternative such at the East Airdrie Link Road is put in place.
- The location of the signalised crossing on Main Street, which will be installed in February 2021 as part of an early works package, south of New Lane has been shown to serve an existing pedestrian crossing demand.
- The pedestrian survey also highlighted further demand to the north of Park Road where no crossing facilities are currently provided.

### 5 Recommendations and Next Steps

It is recommended that the following road safety improvements are put in place:

- Introduction of two further mini-roundabout to assist vehicular access to B802 Main Street from Crowwood Road and Calder Street. This would have the added benefit of having a traffic calming effect and slowing speeds through the village (see *Appendix A Drawing 6501952-02-2-101-CAL & 6501952-02-2-102-CAL*).
- Review of the current mini-roundabout at English Row to be undertaken to identify potential options to improve its operation (see *Appendix A – Drawing 6501952-02-2-102-CAL*)
- A new traffic signal controlled crossing facility south of New Lane. Note this crossing will be installed in February 2021 as part of an early works package.
- Introduction of an additional traffic signal controlled crossing facility north of Park Road, at a location with no crossing provision and shown to have pedestrian demand (see Appendix A – Drawing 6501952-02-2-103-CAL).
- Introduction of further signage or road markings at the formal entrance to the village, where the speed limit changes from 40mph to 30mph, to further encourage speed reduction (see *Appendix A Drawing 6501952-02-2-104-CAL*).

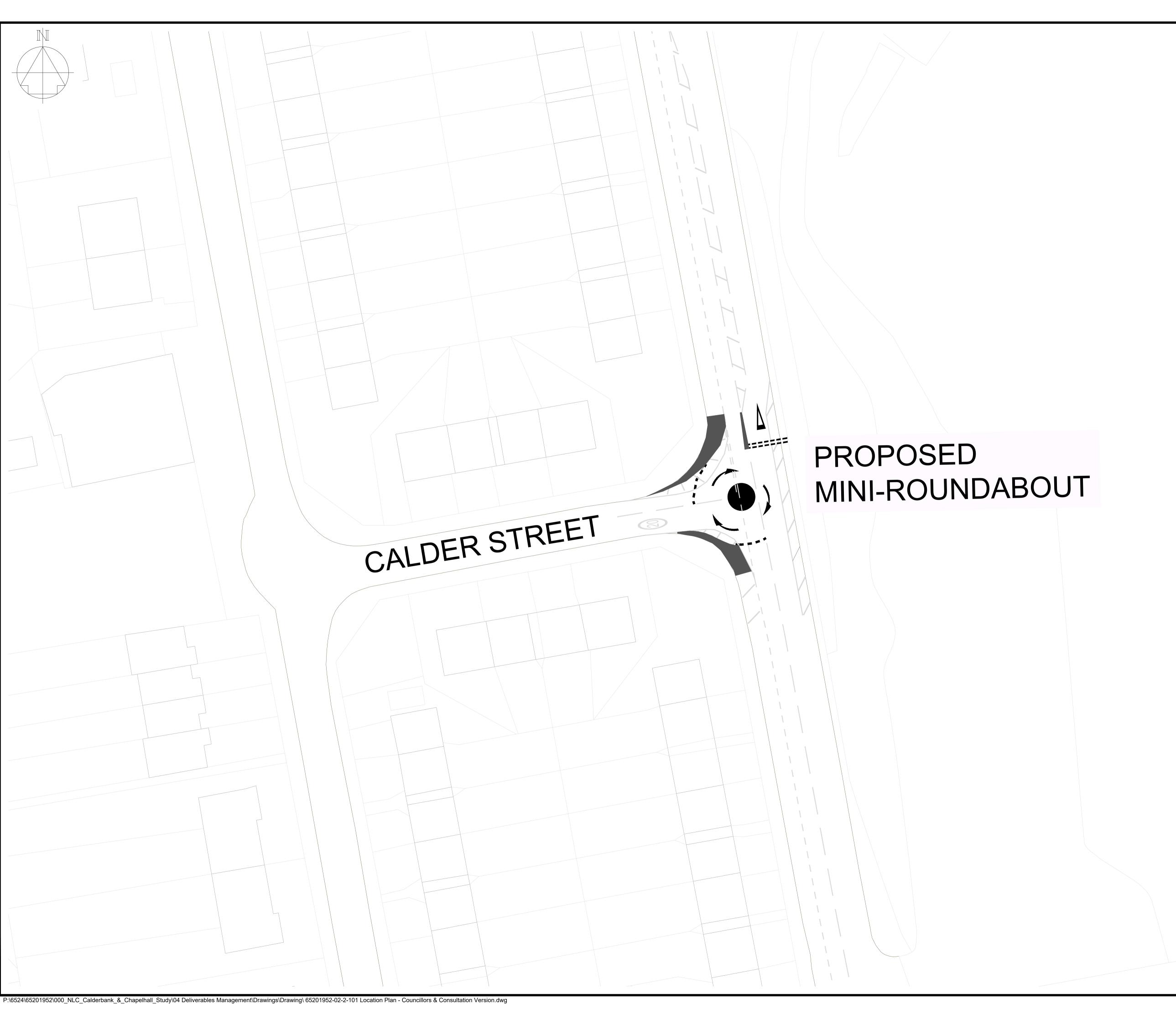
All initial concept layouts can be seen in Appendix A.

It is also recommended that the findings of this study be presented to key stakeholders, including the local community. This will provide an opportunity to gain feedback on the outputs from this study and recommendations proposed.

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# **Appendix A – Concept Layouts**



Notes

## LAYOUT NOTES

- 1. DO NOT SCALE FROM THIS DRAWING.
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- VEHICLE SWEPT PATH CARRIED OUT USING DB32 REFUSE VEHICLE - 2.4M WIDTH BY 7.9M LENGTH & RIGID PUBLIC NUS
- 4. WHERE DEFLECTION IS NOT POSSIBLE GIVEWAY MARKINGS HAVE BEEN PROVIDED IN ACCORDANCE WITH ITEM 6.3.7 OF CHAPTER 5 OF THE TRAFFIC SIGNS MANUAL.
- 5. MINI-ROUNDABOUTS STUDY FOR INDICATIVE LAYOUT AND FURTHER STUDY & DETAILED DESIGN REQUIRED.
- 6. FURTHER CONSIDERATION REQUIRED FOR CROSSING



PROPOSED ROUNDABOUT INSCRIBED CIRCLE DIAMETER (ICD) & CENTRAL ISLAND FROM DEPARTMENT FOR TRANSPORT - MINI ROUNDABOUTS GOOD PRACTICE GUIDANCE.

EXISTING ROAD MARKINGS

PROPOSED GIVEWAY MARKING

Rev. Date Amendment Details Orig Chk'd

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Drawing Stat

CONCEPT

Project Title

CALDERBANK TRAFFIC STUDY

Drawing Tit

PROPOSED MINI-ROUNDABOUT CALDER STREET

1:250m	GAW	GAW	AB	LM
Original Size A1	Date 11-20	11-20	Date 11-20	Date 11-20
Drawing Number 6501	Revision 0			

