

# Wem HGV Survey 2016

## Local Traffic Issues

31 October 2016

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Shropshire Council

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# Document Control Sheet

Project Title            Wem HGV Survey 2016

Report Title            Wem HGV Survey 2016

Project No              1073229

Version                 Final

Control Date            31 October 2016

## Record of Issue

Version	Author	Date	Check	Date	Authorised	Date
Final Draft	M Withington	19/10/16	R Hammerton	19/10/16	M Withington	19/10/16
Final	M Withington	31/10/16	R Hammerton	31/10/16	M Withington	31/10/16

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None



# 1 Introduction

## **Background**

The use of Mill Street in Wem by HGVs has been a long-standing issue locally. There is evidence of localised damage caused by HGVs and concerns about the number of heavy vehicles using this route. Shropshire Council is under pressure to address these concerns, however the scale and type of intervention, if any, cannot be reasonably determined until there is a robust understanding of the nature of the HGV movements in Wem.

## **Objectives**

- To understand the nature of HGV movements through Wem, in particular on Mill Street, differentiating local access and through trips.
- To enable Shropshire Council to determine appropriate interventions, if any, based upon robust background data.

## **Scope of study**

In order to address the objectives the study needed to address the following questions:

- How many HGVs were recorded over the survey period at each site and what proportion of all traffic did HGVs account for?
- What was their classification?
- How many of the HGVs are travelling through Wem, which routes are they using and in what direction are they travelling?
- How many of the HGVs were carrying out local access trips (i.e. trips terminated between cordons or stopping as part of a through trip)?
- Can the local access trips be attributed to any local trip generators i.e. industrial estate, egg factory etc.
- How many HGVs were undertaking through trips?
- Between which cordon sites were the through trips taking place?
- Are there any patterns in the times of day at which HGVs are travelling?

The outcomes of the study will then be used to inform further consideration of the appropriateness of interventions such as HGV weight restrictions and routing strategies.

## **Survey Description**

To address the above the following survey was undertaken.

Two-way traffic movements were recorded by video camera at the following locations over a 12 hour period between 0700 and 1900 hours on Wednesday 29<sup>th</sup> and Thursday 30<sup>th</sup> June and Friday 1<sup>st</sup> July 2016.

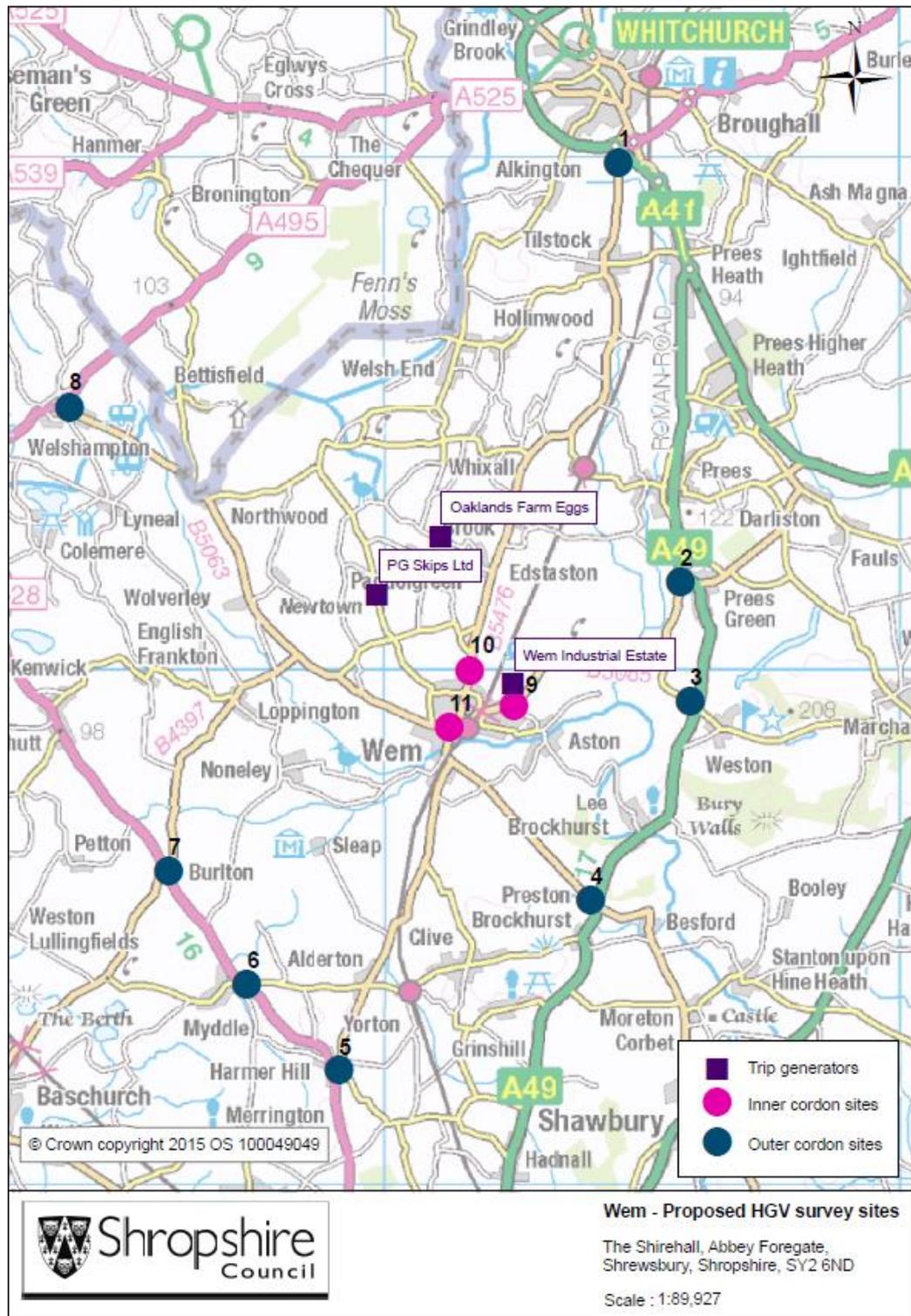
Table 1.1 - Locations for HGV cordons

<b><i>Outer cordon</i></b>		
Site	Road No.	Description
1	B5476	Tilstock Road, at A41
2	B5065	At A49, Prees Green
3	C2091	At A49
4	B5063	At A49, Preston Brockhurst
5	B5476	At A528, Harmer Hill
6	C2075	At A528, Myddle
7	B4397	At A528, Burlton
8	B5063	At A495, Welshampton
<b><i>Inner cordon</i></b>		
Site	Road No.	Description
9	B5065	Between Church Lane and entrance to Wem Industrial Estate
10	B5476	Between edge of Wem and C2067 Creamore Bank
11	Mill Street / High Street	All movements between Mill Street and High Street

Automatic Number Plate Recognition (ANPR) software was used to capture the registration plate details of every vehicle recorded at each of the sites along with the direction of travel and time.

This information was then copied into a specialist software database which matches unique vehicle registration details recorded at more than one site building up a picture of the routes and journey times of every vehicle that passes through the survey area. This information is then used to create specific sets of information about different types of vehicle and how they travel into, out of and through the area.

**Figure 1.1: Wem HGV Survey – site locations**



## 2 Survey Results & Conclusions

The results presented in this report are based on the data collected between 0700 and 1900 over the 3 survey days of Wed 29<sup>th</sup> June, Thursday 30<sup>th</sup> June and Friday 1<sup>st</sup> July 2016. Video camera footage was also recorded over 3 days to provide backup data in the event of equipment failure or damage for which there was a strong possibility given the number of cameras involved the extensive and remote nature of the study area. On this particular occasion all the cameras at all the survey sites across all three days were fully functioning. The results in the report have therefore been adjusted to represent a 3 (survey) day 12 hour average.

It is not possible for the ANPR software to read (pick-up rate) every number plate for a number of reasons, including vehicles being too close to each other, number plates being obscured by an overhanging part of a vehicle and the number plate being illegible due to dirt. Consequently it is necessary to use correction factors to ensure the results are robust. Across all survey sites the pick-up rates were the highest for Thursday 30<sup>th</sup> June 2016 so data from this day was used to establish the number of through trip. The average pick-up rate being 86%. The recorded trips were then multiplied by pick-up rate factors (for each relevant site) to adjust for the fact that not all vehicle registration plates were read at every site.

The results are based on a continuous 12 hour survey (0700 to 1900) survey. The focus of the study is to determine the number of HGV trips through the study area during this period. A consequence of the size of the study area is that through trips are likely to take up to 30 minutes to complete. Consequently through trips exiting the area in the first half hour of the survey may have entered the study area before the survey began. Similarly through trips entering the study area in the last half hour of the survey period may not exit until after the survey period has finished. The through trips recorded during the survey are effectively those occurring over an eleven and a half hour period. In order to present the results as 12 hour total the through trips will be multiplied a factor of 1.043 (11.5 / 12.0)

### **Traffic Volumes and HGV percentages**

Table 2.1 provides overview of traffic levels on the main routes around and through Wem and makes comparisons with an Automatic Traffic Counter (ATC) survey undertaken 2014. The 2014 ATC survey locations are not exactly the same as those in the 2016 survey, so that in many cases direct comparisons cannot be made. In particular two sites are on the same radial road as the 2016 survey sites but much closer to Wem and therefore show higher flow levels. The B5476 north of Tilstock was not included in the 2014 ATC survey but a site south of Tilstock was surveyed in 2013. Sites 2 and 3 in the 2016 survey were not part of the 2014 ATC survey but it is

appropriate to compare their combined flow with the 2014 ATC site east of Wem Industrial Estate on the B5065. However, the general levels of traffic are consistent.

The ANPR system identifies HGV's as being all goods vehicles above 7.5 tonne, including buses and agricultural vehicles. The high percentage of HGV's at sites 2 (B5065) and 3 east of Wem (11% and 8% respectively) are consistent with access trips to Wem Industrial Estate from the A49. The HGV percentage at site 7 (B4397) at Burlton (9%) may be linked to the low percentage at site 5 (B5476) (3%) as HGV traffic accessing the western side of Wem from the south chooses to approach via Loppington rather than via Mill Street. Mill Street and High Street have the lowest proportion of HGV's (4% and 3%) across the study area.

**Table 2.1 - Traffic Volumes and HGV percentages**

No.	Site description	2016 3 day average 12 hr all vehicle traffic flow	2016 3 day average 12 hour HGV traffic flow (%)	2014 ATC 5 day average <b>two-way</b> 12 hr all veh. traffic flow
1	B5476 at A41 north of Tilstock	IN 1,545 OUT 1,580	IN 76 (5%) OUT 77 (5%)	(2013) 2,352 (s. of Tilstock)
2	B5065 at A49 Prees Green	IN 910 OUT 857	IN 104 (11%) OUT 88 (10%)	2,175 (B5065 east of Industrial Estate)
3	C2091 at A49 Weston	IN 310 OUT 294	IN 21 (7%) OUT 25 (8%)	
4	B5063 at A49 Preston B'hurst	IN 1,664 OUT 1,601	IN 79 (5%) OUT 79 (5%)	4,232 (closer to Wem)
5	B5476 at A528 Harmer Hill	IN 1,782 OUT 1,937	IN 49 (3%) OUT 54 (3%)	4,270 (closer to Wem)
6	C2075 at A528 Myddle	IN 542 OUT 543	IN 38 (7%) OUT 36 (7%)	No comparable data
7	B4397 at A528 Burlton	IN 371 OUT 365	IN 33 (9%) OUT 34 (9%)	531
8	B5063 at A495 Welshampton	IN 664 OUT 709	IN 41 (6%) OUT 34 (5%)	No comparable data
9	B5065 town side of Industrial Est.	EB 1,306 WB 1,367	EB 99 (8%) WB 75 (6%)	2,577
10	B5476 town side of Creamore Bk	NB 1,460 SB 1,466	NB 72 (5%) SB 66 (5%)	3,554
11	Mill Street	NB 3,412 SB 3,803	NB 152 (4%) SB 126 (3%)	7,178
11	High Street	EB 3,572 WB 3,835	EB 118 (3%) WB 108 (3%)	6,797

Notes:

1. IN & OUT = into and out of the study area (external cordon sites)
2. NB, SB, WB & EB = north, south, west and east bound directions

## **HGV Peak Period**

The below chart shows the total number of two way HGV movements on Mill Street (average over the 3 day survey period). The peak times include mid-morning, with a notable drop in numbers after 1700 hours.



## **HGV Type**

Observations of the video footage at Mill Street were undertaken to determine the typical mix of HGV type. Across the 12 hour survey period buses and coaches represented about 25%, agricultural vehicles 8%, rigid lorries 56% and articulated lorries 11%.

## **HGV Traffic travelling through Wem**

Table 2.3 shows the number of HGV vehicles travelling through Wem that originated from each of the 8 outer cordon sites and then leave the survey area via one of the other 7 outer cordon sites.

The first result column shows all HGV through movements regardless of how long the journey took. Clearly HGV are often involved in delivery activity and consequently will take longer to travel through the Wem area and these vehicles should not be considered as through traffic. However, some HGV do travel slowly and this needs to be taken into account. In order to remove these stopping / delivery HGV's a time filter was applied to the results in the first column removing all HGV's that took longer than half an hour to travel through the study area. The second result column shows the total for this scenario.

In order to ensure that the through trip totals are as realistic as possible a third filters has been applied. This recognises that HGV entering via the outer cordon then exiting via an adjacent outer cordon site are unlikely to be

a through trip but more likely to be a brief stopping trips (i.e. took less than 30 minutes)

A careful assessment of each outer cordon site and the adjacent sites was undertaken and the sites in Table 2.2 were filtered out of the second results column leaving the third results column. Note that HGV's entering and exiting via the same outer cordon sites and are not included in any of the results columns as these are clearly not through trips.

**Table 2.2 Adjacent Sites Filter**

Entry site on outer cordon	Exit sites on outer cordon that are not consider to represent a through trip
1	2, 3, 4 & 8
2	1, 3 & 4
3	1, 2 & 4
4	1, 2 & 3
5	6 & 7
6	5, & 7
7	5 & 6
8	1

**Table 2.3 – Through Trips in Wem 0700 to 1900**

Entering via external cordon Site No.	Site description	Number of HGV exiting via one of the other 7 external cordon sites		
		No time constraint applied to the journey	30 minute or less journey time	30 minute or less journey time and adjacent external cordon sites excluded
1	B5476 at A41 north of Tilstock	8	3	3
2	B5065 at A49 Prees Green	17	10	7 (60% to site 6)
3	C2091 at A49 Weston	2	1	2
4	B5063 at A49 Preston Brockhurst	17	11	3 (100% to site 5)
5	B5476 at A528 Harmer Hill	19	11	11 (60% to site 4)
6	C2075 at A528 Myddle	5	1	1
7	B4397 at A528 Burlton	5	5	6
8	B5063 at A495 Welshampton	13	7	9 (50% to site 4)
<b>All</b>		<b>86</b>	<b>49</b>	<b>42</b>

The above totals represent through trips across the study area (between outer cordon sites) and these will include trips going through Mill Street and High Street but also other routes across Wem town and the wider hinterland. The total number of HGV entering the survey area over an average 3 (survey) day 12 hour period is 434. The results in Table 2.3 show that just under 10% (42) of these are (whole area) through trips.

Through trips that included a stop (delivery vehicles for examples) were around 10% (44 out of 434) of the total HGV's entering the study area.

The most popular through routes are between:

- Site 2 to Site 6 (north east to south west)
- Site 4 and 5 (east to south movement) and the reverse
- Site 8 to Site 4 (north west to south east).

### **Origins and destinations of HGV through trips on Mill St & High St**

The survey technique allows a more detailed assessment of study area through trips that specifically route via Mill Street and/or High Street which are of particular interest to this study.

The following tables show the outer cordon origin and destination of all through trips on Mill Street and High Street in each flow direction. The data includes the 30 minute journey time filter and the adjacent site filter.

**Table 2.4 - Northbound (Southbound) HGV's on Mill Street**

	To	1	2	3	7	8
From		B5476 at A41 north of Tilstock	B5065 at A49 Prees Green	C2091 at A49 Weston	B4397 at A528 Burlton	B5063 at A495 Welshampton
4	B5063 at A49 Preston Brockhurst	N/A	N/A	N/A	0 (2)	3 (4)
5	B5476 at A528 Harmer Hill	4 (2)	2 (0)	0 (0)	N/A	2 (0)
6	C2075 at A528 Myddle	0 (2)	0 (4)	0 (0)	N/A	0 (0)

Note:

1. Figures in brackets are the reverse movement (southbound).
2. N/A means result are not applicable due to being an adjacent site.

The total number of HGV through trips on Mill Street northbound is 11 over a 12 hour period of these 6 turn right (grey shaded cells) into High Street and 5 turn left.

The total number of HGV through trips on Mill Street southbound is 14 over a 12 hour period of these 8 turned left (grey shaded cells) from High Street and 6 turn right from High Street.

The total number of two-way HGV through trips on Mill Street is 25 over a 12 hour period and represents 8.9% of the total HGV flow of 278 (ref Table 2.1)

**Table 2.4 – Eastbound (Westbound) HGV's on High Street**

	To	1	2	3
From		B5476 at A41 north of Tilstock	B5065 at A49 Prees Green	C2091 at A49 Weston
4	B5063 at A49 Preston Brockhurst	N/A	N/A	N/A
5	B5476 at A528 Harmer Hill	4 (2)	2 (0)	0 (0)
6	C2075 at A528 Myddle	0 (2)	0 (4)	0 (0)
7	B4397 at A528 Burlton	0 (0)	3 (4)	2 (0)
8	B5063 at A495 Welshampton	N/A	3 (2)	1 (4)

Note:

1. Figures in brackets are the reverse movement (southbound).
2. N/A means result are not applicable due to being an adjacent site.

The total number of HGV through trips on High Street eastbound is 15 over a 12 hour period of these 6 turned right (grey shaded cells) from Mill Street.

The total number of HGV through trips on High Street westbound is 18 over a 12 hour period of these 8 turned left (grey shaded cells) into Mill Street.

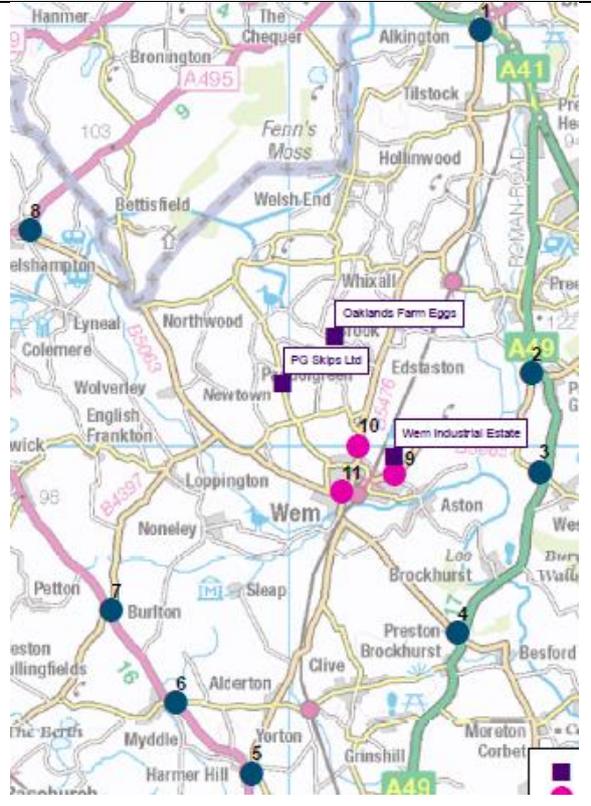
The total number of two-way HGV through trips on High Street is 33 over a 12 hour period and represents 14.6% of the total HGV flow of 226 (ref Table 2.1)

## Local access trips

The following sections consider what can be deduced about local access trips from the data collected during the study.

### Wem Industrial Estate

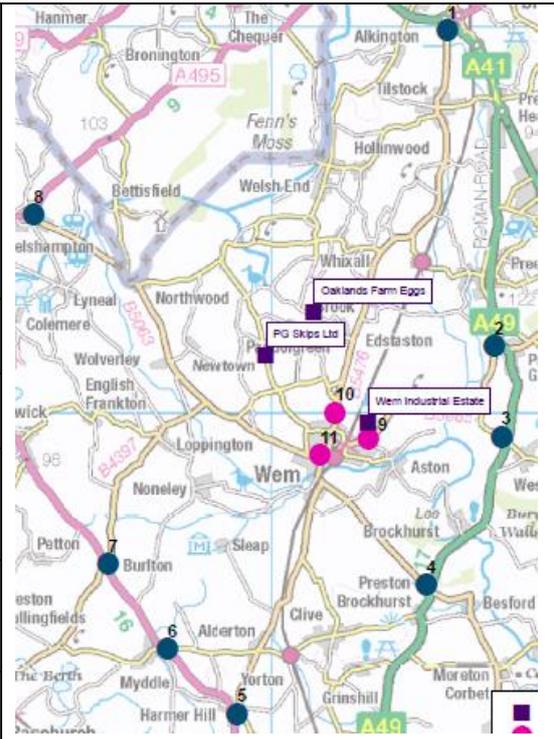
Wem Industrial Estate lies between site 9 and sites 2 & 3 and given the close proximity of site 9 to sites 2 & 3 it is likely that HGV's accessing Wem Industrial Estate via the town centre will be represented by the total number of HGV's exiting Wem via site 9 but not subsequently picked up at sites 2 or 3. The data includes the 30 minute journey time filter but not adjacent site filter.

From		Number of HGV's to Site 9 (but not picked up at sites 2 or 3) in 12 hour period	
1	B5476 at A41 north of Tilstock	0 (0)	 <p>The figures in brackets represent the reverse direction</p>
4	B5063 at A49 Preston Brockhurst	6 (0)	
5	B5476 at A528 Harmer Hill	7 (3)	
6	C2075 at A528 Myddle	0 (2)	
7	B4397 at A528 Burlton	0 (0)	
8	B5063 at A495 Welshampton	6 (5)	

The above shows that there are 6 HGV's that are potentially accessing the Wem Industrial Estate via the town centre from Preston Brockhurst. 10 from or to Harmer Hill, 2 to Myddle and 11 from or to Welshampton. Making an overall total of 29 one way HGV trips through the town centre.

## HGV destinations north of Wem (including PG Skips and Oaklands Farm Eggs)

Consider HGV's exiting Wem via site 10 but not picked up at site 1. These vehicles are likely to be accessing attractors in the northern hinterland of Wem including the key attractors of PG Skips and Oaklands Farm Eggs. The data includes the 30 minute journey time filter but not adjacent site filter

From		Number of HV's to Site 10 (but not picked up at site 1) in 12 hour period	
2	B5065 at A49 Prees Green	3 (0)	 <p>The figures in brackets represent the reverse direction.</p>
3	C2091 at A49 Weston	0 (0)	
4	B5063 at A49 Preston Brockhurst	9 (8)	
5	B5476 at A528 Harmer Hill	2 (5)	
6	C2075 at A528 Myddle	1 (0)	
7	B4397 at A528 Burlton	0 (0)	
8	B5063 at A49 Welshampton	5 (2)	

The above shows that there are 3 HGV's that are potentially accessing local attractions north of Wem via the town centre from the A49 at Prees Green, 7 from or to Harmer Hill, 1 from Myddle and 7 from or to Welshampton. Making an overall total of 35 one way HGV trips through the town centre.

### Summary conclusions

The main findings of the study are:

- Approximately 10% of HGVs' entering the study area are through trips but not all of these travel through Mill Street and/or High Street.
- Approximately 10% of HGV's entering the study area are through "stopping" trips and again not all of these travel through Mill Street and/or High Street.

- On an average 12 hour weekday day (0700 to 1900 hrs) 8.7% or 24 out of 277 HGV's on Mill Street are travelling through the area.
- On an average 12 hour weekday day (0700 to 1900 hours) 13.7% or 31 out of 226 HGV's on High Street (east) are travelling through the area.
- The vast majority of HGV's on Mill Street and High Street are local access trips to Wem or its hinterland.
- On an average 12 hour weekday day (0700 to 1900 hrs) there are potentially 29 one-way HGV trips from outside the study area that travel through the town centre to or from Wem Industrial Estate.

### **Next steps**

The presence of HGV traffic on Mill Street in particular is causing concerns for a number of local residents. The results of this study help to understand the nature of the HGV traffic on Mill Street and help to inform the appropriateness of interventions that might reduce the number of HGV's.

Introducing an Environmental Weight Limit (7.5t or 18t) based on maximum gross weight can be an effective way of removing through trips. But a number of factors need to be taken into account:

- The restriction will only apply to goods vehicles (not buses, cranes, agricultural machinery or emergency vehicles).
- The restriction will not apply to goods vehicles that have a legitimate business in the area.
- The restriction is unlikely to be effective if the majority of the goods vehicle traffic has business in the area because it make enforcement difficult when the majority of HGV's are legitimately travelling along the section of road.
- The availability of suitable alternative routes where the diverted HGV's are likely to transfer. It is important to ensure the problem isn't simply transferred elsewhere and perhaps to a more or equally environmentally sensitive location.
- The restriction does not introduce a major increase in distance for lorry operators.

Advisory route signing can also be an effective way of encouraging HGV's to take more appropriate routes. Advisory signing to Wem Industrial Estate already exists at outer cordon site 4 at Lee Brockhurst. Survey results indicate potentially very low number (5) vehicles using this cordon entry point to access the Industrial Estate.

