

WILTSHIRE COUNCIL

AGENDA ITEM NO.13

CHIPPENHAM AREA BOARD

1<sup>st</sup> March 2010

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**A4 ROWDEN HILL / LOWDEN JUNCTION**  
**CHIPPENHAM**

**1. Purpose of the Report**

- 1.1 To provide information on a community concern issue raised by Councillor Mrs Judy Rooke relating to traffic delay and safety issues for vehicles and pedestrians at the junction of A4 Rowden Hill / Lowden, Chippenham.

**2. Background**

- 2.1 Local residents have expressed concern regarding difficulties experienced by drivers whilst attempting to manoeuvre both into and out of junctions on the A4 Rowden Hill. The junction with Lowden is highlighted as a particular problem. It is suggested that heavy traffic volumes and peak hour congestion on the A4 is limiting the number of suitable gaps for vehicles to exit the side road, resulting in excessive delay and queues.
- 2.2 Concern has also been expressed regarding the lack of facilities for pedestrians at the junction. In an attempt to overcome these difficulties the provision of a mini roundabout at the A4 Rowden Hill / Lowden junction with accompanying pedestrian facilities has been put forward as a potential solution.
- 2.3 Lowden is a two-way 'C' class road approximately 0.7km in length which links the A420 and B4525 and surrounding estates to the A4 Rowden Hill. At the northern end of Lowden is a railway over bridge with a height restriction of 10ft.
- 2.4 A correctly located mini-roundabout can improve the operation of a junction by reducing the dominance of one traffic flow, facilitate access by reducing delay at side roads and improve capacity at overloaded junctions. In contrast incorrectly sited mini roundabouts can increase delays for main road traffic, encourage rat running on unsuitable routes and increase the likelihood of collisions.
- 2.5 When examining the suitability of converting an existing junction to a mini roundabout there are number of factors which must first be examined before deciding to proceed. It is important to identify any factors which may suggest that a mini roundabout is an unsuitable choice early on in the assessment process. Reason for rejection includes, dual carriageways, junctions with five or more arms or where recorded 85<sup>th</sup> percentile speeds exceed 35mph.

- 2.6 The procedure for assessing site suitability for mini roundabouts is typically undertaken in two separate stages. The first stage involves a site assessment to determine whether there is enough space to accommodate the construction of a mini roundabout. In the case of the Rowden Hill / Lowden junction an initial examination confirms that the width of the carriageway and extent of the public highway is sufficient to allow the provision of a mini roundabout although some footway realignment on the northeast side of the junction would be necessary.
- 2.7 The second stage of the assessment process involves the collection and evaluation of data which allows engineering judgment to be made as to whether a mini roundabout is the most appropriate junction improvement. The data typically includes:
- Speed
  - Queue Length
  - Road character & Layout
  - Traffic Volume/ Turning count
  - Visibility
  - Collision history

### 3.0 **Data Collection**

An assessment has been undertaken with the findings outlined below:

#### 3.1 Speed

Data acquired from Wiltshire Police over a 7 day period on Rowden Hill (close to the Rowden junction) indicates a recorded 2-way 85<sup>th</sup> percentile speed of 35.6mph.

#### 3.2 Queue Lengths

An assessment of the queue lengths along Lowden was undertaken on 23<sup>rd</sup> February 2010. During this time queue lengths were recorded at two minute intervals for both the morning peak (0800 – 0900) and the afternoon peak (1500 – 1700). The results indicated an average queue length of '1' vehicle during the morning peak, with a maximum of '4' vehicles recorded at any one time (0844-0846 & 0858). During the afternoon peak the average queue length was '1.3' vehicles, with maximum of '5' vehicles at any one time (1532). See **Appendix 1**.

#### 3.4 Traffic Volume / Turning Count

Data acquired from Wiltshire Police taken over a 7 day period indicate an average annual daily flow of 21,000 vehicles on the A4 Rowden Hill / Bath Road.

3.5 On the 23<sup>rd</sup> February a morning and afternoon peak hour count was undertaken at the A4 Rowden Hill / Lowden junction. During both periods a total of 261 vehicles were recorded exiting Lowden. Of that figure 137 vehicles (52%) turned left towards the town centre and 124 vehicles (48%) turned right towards Melksham, see **Appendix 2**.

3.6 During the same period a total 417 vehicles were recorded turning into Lowden from the A4. Of that figure 159 (38%) turned right from the direction of the town

centre and 258 vehicles (62%) turned left from the Melksham direction. See **Appendix 3**.

### 3.7 Visibility

Forward visibility to the proposed give way markings at the roundabout for vehicles travelling northeast along Rowden Hill (towards the town centre) is approximately 82m. For vehicles travelling in a south westerly direction (towards Melksham) the figure is approximately 80m. The forward visibility on the Lowden approach is approximately 30m, with side road visibility at the junction for vehicles waiting to turn right approximately 90m.

### 3.8 Collision History

An analysis of the collision history at the Rowden Hill / Lowden junction indicates no recorded 'Personal Injury Collisions' (PICs) over the preceding 3 year period.

## 4.0. Data Analysis

4.1 The 85<sup>th</sup> percentile recorded speed for two way traffic on Rowden Hill is marginally above the recommended threshold figure of 35mph. Unfortunately it has not been possible to extract the individual data for the downhill (northeast) approach to the junction, however on-site observations would estimate average vehicle speed to be in excess of 35mph. Whilst mini roundabouts are often intended to act as speed control measures they are not suitable where vehicles approach the junction at higher speed. Vehicles must have slowed sufficiently to be able to stop and give way to circulatory traffic. In this particular instance there is concern that despite the provision of nearside entry deflection on the northeast (downhill) approach to the junction, vehicles, especially HGV's may fail to stop in time for traffic turning right out of Lowden with the potential for overshoot and side-on collisions, if a mini roundabout was to be constructed.

4.2 The recorded queue lengths did not exceed '5' vehicles at any one time during the survey period and were on average less than '2' vehicles during both the morning and afternoon peak.

4.3 The individual character and nature of the road junction at which a mini roundabout is being considered plays a significant role in determining its suitability. Gradients, highway status, pedestrian & cycle facilities and street lighting must all be considered. In this particular instance the gradient of the through road (Rowden Hill) is for the reasons explained in point 4.1 of key importance. Another consideration is the proximity of adjacent vehicular accesses. At this location there are a number of private driveways directly opposite the Lowden junction which would be adversely affected by the introduction of a mini roundabout, in particular number 59 Rowden Hill. See **Appendix 4**.

4.4 When considering the introduction of a mini roundabout the issue of both main and side road flow must be given careful consideration. Low side road volumes can frequently result in dominant streams on the main road which adversely affects the operation of the roundabout. If, due to low side road flows drivers become accustomed to not giving way for right turning traffic, an increased likelihood of side road collisions may result. The Department for Transport recommends that side road traffic flows should not be less than 500 vehicles

per day. Whilst in the case of Lowden junction only peak hour counts were undertaken, the data appears to show that there would almost certainly be insufficient traffic movement from the side road in order to meet the necessary criteria.

- 4.5 Whilst access both into and out of the Lowden junction would almost certainly be improved following the introduction of mini roundabout it should be noted that with any change of junction control there is a risk of increased delay during the peak hours to the vehicles on the through route. In this instance the average two way daily flow along the A4 is 21,000 vehicles. Should a mini roundabout be considered, twin lane approaches on the A4 would be necessary in order to provide suitable capacity and reduce the impact during the peak hours.
- 4.6 For a mini roundabout to operate as intended it is essential that the junction type can be recognised and that drivers have adequate forward visibility to the give way markings. For vehicles travelling at an 85<sup>th</sup> percentile speed of 35mph the minimum forward visibility is 80m. At 40mph this figure increases to 90m. An estimate undertaken at the junction indicates that this figure can be achieved for the main road approaches at an 85<sup>th</sup> percentile speed of 35mph although at higher speeds the amount of available forward visibility falls slightly short of the required figure.
- 4.7 The current collision record for the Rowden Hill / Lowden indicates that no personal injury collisions (PICS) have been recorded during the past three years. It is important to note however than non-injury collisions are not recorded on the Police database.
- 4.8 A recent study of collision rates at all '3' arm mini roundabouts in Wiltshire indicates an average figure of '6' personal injury collisions per 100million vehicle movements through the junction, compared with a standard 'T' junction figure of 21.5. Whilst the figures indicates that mini roundabouts have an inherently better safety record than 'T' junctions it should be noted that the introduction of a mini roundabout at the Rowden Hill / Lowden junction would probably lead to an overall increase in collisions.
- 4.9 Lowden is considered a convenient route for local vehicles in order to access the A4. It could be argued that the introduction of a mini roundabout would further increase its attractiveness as a local route. This may in turn have a detrimental effect on both Lowden and the wider community as increasing numbers of vehicles seek to reduce journey times by using nearby residential roads rather than the main routes.
- 5.0 On-site observations would appear to reinforce the concerns expressed regarding the difficulty of pedestrian movement at the Lowden junction. During peak periods some pedestrians have to negotiate the queue of vehicles waiting at the junction and many are finding their way forward obstructed. Whilst some limited pedestrian improvements on Rowden Hill may indeed be possible as part of a mini roundabout, the provision of a refuge island across the Lowden junction would not be feasible due to the presence of an adjacent vehicular access. See **Appendix 4**. Should Rowden Hill / Lowden remain as a 'T' junction it may be possible to provide a pedestrian refuge closer to junction with Rowden Hill.

5.1 There is currently a proposal to introduce a 'Puffin' Crossing (Pedestrian User Friendly Intelligent) on Rowden Hill just north of its junction with Rowden Lane. As a consequence a signalised crossing would introduce additional gaps in the traffic on the A4 which in turn would provide assistance to traffic exiting the Lowden junction.

5.2 Excluding any necessary service diversions the cost to provide a mini roundabout at the Rowden Hill / Lowden junction is estimated to be £45,000.

## **6.0 Recommendation**

In view of the limited delays observed at the junction, the likelihood of an increase in collisions at the junction and the potential to encourage greater traffic volumes on Lowden, it is not recommended that a mini roundabout be installed. It is suggested that a refuge at the junction be considered to facilitate improved pedestrian crossing movement and that it be added to the reserve scheme list for 2010/11, subject to the necessary budget being available.

## **7.0 Financial Implications**

7.1 There are no financial implications related to this report other than potential cost to provide the pedestrian refuge indicated in the recommendation above.

## **8.0 Legal Implications**

8.1 There are no legal implications related to this report.

## **9.0 HR Implications**

9.1 There are no HR implications related to this report

## **10.0 Equality and Diversity Implications**

10.1 The provision of a refuge at the Rowden junction would facilitate improved facilities for pedestrians, especially those with disabilities.

George Batten  
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### Appendices:

Appendix 1 – Junction queue count  
Appendix 2 – Turning count – Out of Lowden  
Appendix 3 – Turning count – Into Lowden  
Appendix 4 – Outline Plan of mini roundabout

No unpublished documents have been relied upon in the preparation of this report