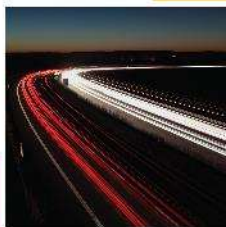


A422/B4525 Farthinghoe Study

Pinch Point Options Report



Document Control

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1.0 Introduction

The alignment and geometry of the A422 through the village of Farthinghoe does not conform to current design standards, particularly at the junction with Baker Street where there is a tight radius bend, with a narrow carriageway and footway. The carriageway is insufficiently wide for two large vehicles to pass in opposing directions, and despite an advisory speed limit and warning signs, incidents involving Heavy Goods Vehicles (HGV) still take place from time to time.

For several years, Parish, WNC Members and the local MP have been campaigning for a bypass for Farthinghoe to remove through traffic and especially HGVs from the village. Work was undertaken by WNC/NCC during this time to examine the options and feasibility of an off-line bypass to the north of the village, however, studies undertaken at that time showed that the cost/benefit ratio was not sufficiently positive to justify taking the proposal further.

This report evaluates possible alternative solutions based around improving conditions at the bend at the Baker Street junction and directing HGV traffic to use the alternative B4525 route to the north of Farthinghoe.

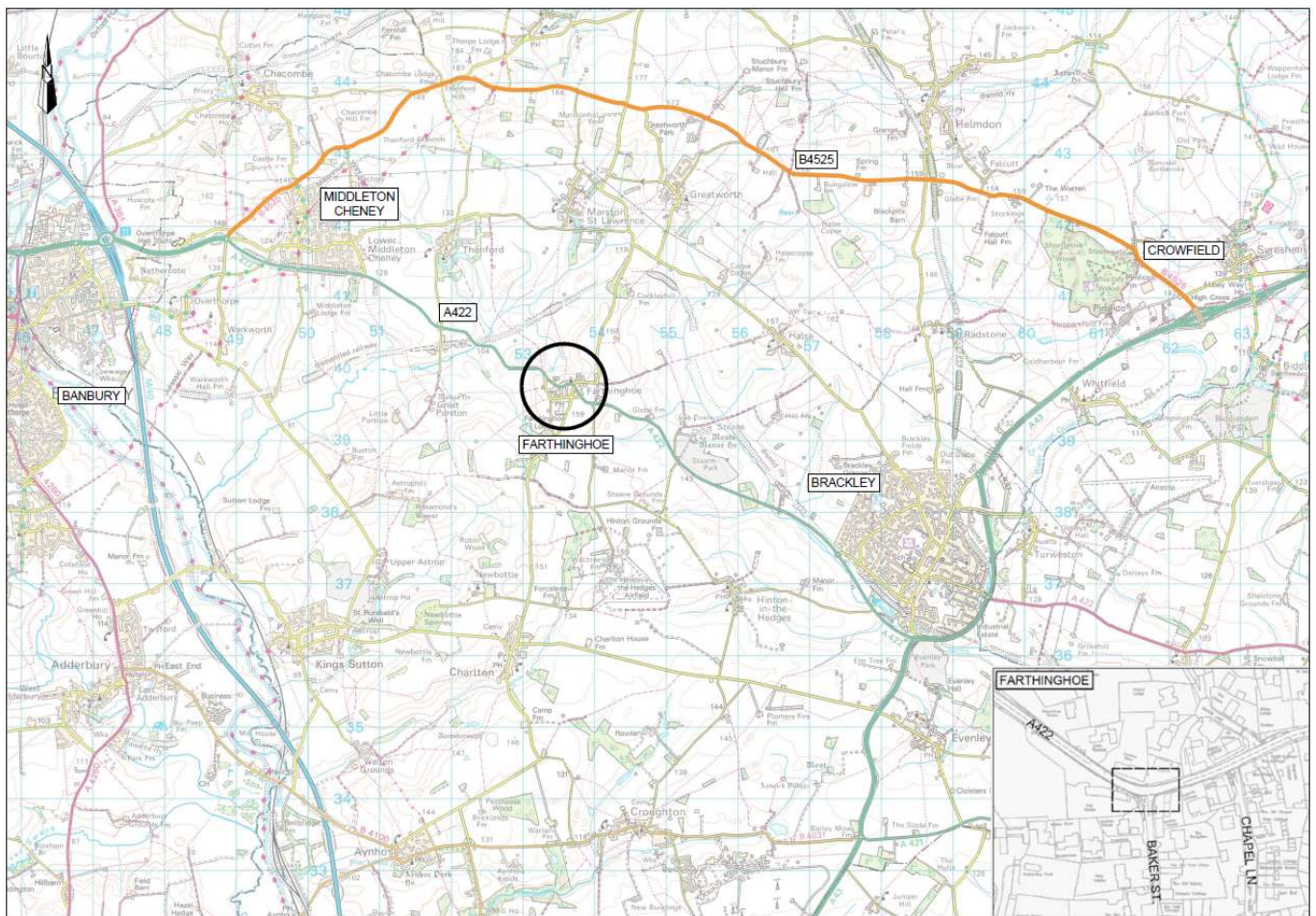


Figure 1 – Location Plan



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2.0 Scope of Study

This study report is presented in three parts. The first part will examine options for treatment at the pinch point in Farthinghoe village. The second part of the study will review the potential for the B4525 to form an alternative route for HGV traffic. The third part will look at measures to reduce HGV traffic on the A422.

2.1 A422 pinch point options

For the first part it is proposed to evaluate three options:

1. Widening at the pinch point to provide fully compliant geometry and visibility including full width footways.
2. Traffic Signals that would provide safety benefits without taking third party land.
3. Traffic Calming measures to reduce vehicle speeds and improve safety.

A Topographical survey of the A422 pinchpoint through Farthinghoe has been completed to determine the existing geometry, levels, property boundaries and features.

2.2 B4525 alternative route

The second part of this study will assess the B4525 in terms of signing, carriageway condition, road geometry, stakeholder impact, costs, and other parameters for suitability as a HGV route.

2.3 A422 Traffic Mitigation

The final part of this study will explore ways to alleviate the A422 from HGV traffic by looking at the implementation of mandatory or advisory signs to discourage vehicles over a certain weight from using the A422. A traffic survey has been undertaken to ascertain the wider traffic flows and current HGV movements in the area.



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3.0 Existing Conditions

3.1 A422 Pinch Point

The existing A422 through Farthinghoe is a single carriageway road typically between 6.1m and 6.4m wide. There are variable width footways that are mostly narrower than the minimum 2.0m recommended in Design Manual for Roads and Bridges (DMRB) CD 143. A 30mph speed limit applies within the village with a 10mph advisory speed limit for HGVs on both approaches to the pinch point opposite Baker St.

The minimum existing carriageway width through the pinch point is approximately 5.60m, which is insufficient for two large vehicles to pass in opposing directions, when allowing for the body and trailer overhang on long vehicles. Although an advisory speed limit of 10mph and narrow carriageway signs have been installed, incidents involving HGVs still take place from time to time.

In addition to the sub-standard road geometry, the visibility is severely compromised by residential dwellings situated within the visibility splay across the inside of the bend. The available stopping sight distance (SSD) at the apex of the bend is approximately 25m. Assuming a design speed of 50km/h, a compliant SSD would be 70m (ref. CD 109).

The A422 is the designated diversion route for when the M40 is closed between junctions 10 and 11.



Figure 2 - looking north along the A422 taken from the Baker St junction. HGV utilising the full width of the A422 to negotiate the bend.



Figure 3 - looking north along the A422 taken from the Baker St junction. Passing vehicles having to track across Baker St Give-Way markings to pass.



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3.2 B4525

The B4525 is a rural 2-lane single carriageway 9.5 miles in length and approximately 6.1m in width. The western end starts at the roundabout with the A422 Middleton Cheney bypass then runs in an easterly direction ending at a dumbbell grade separated junction with the A43 on the Syresham Bypass.

The road is subject to various speed limit changes as it flanks the village of Middleton Cheney, the hamlet of Crowfield and where sections of the route warrant lower vehicle speeds due to horizontal road alignment changes.

Road studs are installed along the majority of the route with white edge of carriageway lines to help define the carriageway extents.

The carriageway surface is considered to be in fair overall condition. Some rutting is evident with numerous locations of patching/pothole repairs. It was noted that the edge of carriageway was subject to vehicle over-run in several locations resulting in break-up of the carriageway edge and ruts in the soft verge. Instances of this verge encroachment by HGVs were witnessed during a route drive through.



Figure 4 – B4525 typical verge over-run and damage to edge of carriageway. Evidence of previous edge of carriageway strengthening.



Figure 5 - B4525 typical verge over-run and damage to edge of carriageway with significant rutting in the verge.

3.3 Traffic Data Analysis

The A422 is a favourable route for vehicles as it offers a shorter and sometimes quicker route for movements between the M40 at Banbury and the surrounding areas of Bedford, Milton Keynes and Luton when compared to using the M40 or B4525.

Traffic surveys were undertaken by Intelligent Data Collection Ltd across the months of May and June 2024. The surveys comprised an Automatic Traffic Count Survey on the A422 in Farthinghoe from the 05/06/24 to 11/06/24 and an ANPR Origin/Destination Report. Figure 6 below shows a summary of HGV movements and counts.

The survey data categorises vehicles depending on their size; Cars, Light Good Vehicles (LGV<3.5T), Ordinary Good Vehicles 1 (OGV1), Ordinary Good Vehicles 2 (OGV2 over 7.5t) and Public Services Vehicles. For the purpose of this report OGV 2 will be classed as HGV which will generally be a 3-axle articulated vehicle and larger or a 4 or more axle rigid vehicle.



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The A422 through Farthinghoe has a two-way Annual Average Daily Traffic (AADT) of 11250. Flows are slightly higher in the WB direction and over the survey week, average daily flows would see 230 HGVs pass through the village. In addition to HGVs, there were also 492 OGV1 category vehicles (2 & 3-axle rigid). Although not strictly classed as a HGV, vehicles of this size would still be affected by the tight radius.

Westbound HGV traffic through Farthinghoe generally stems from 4 main locations; the A43 southbound, A422 Brackley Road, the A421 via A43 northbound and Brackley. Approximately 74% of OGV 1 vehicles travelling through Farthinghoe originated from Brackley. Refer to Green highlight in Figure 6.

For Banbury/M40 Northbound HGV traffic from the A43 southbound prior to Syresham, approximately 64% of HGVs currently utilise the B4525 instead of using the A422 through Farthinghoe. Refer to Blue highlight in Figure 6. This is to be expected as the B4525 is the shortest and quickest route when compared to the A422.

It is assumed that eastbound HGV movements through Farthinghoe originate from either the M40 SB at J11 or from Banbury with their final routes beyond Farthinghoe being a reversal of the westbound origins.

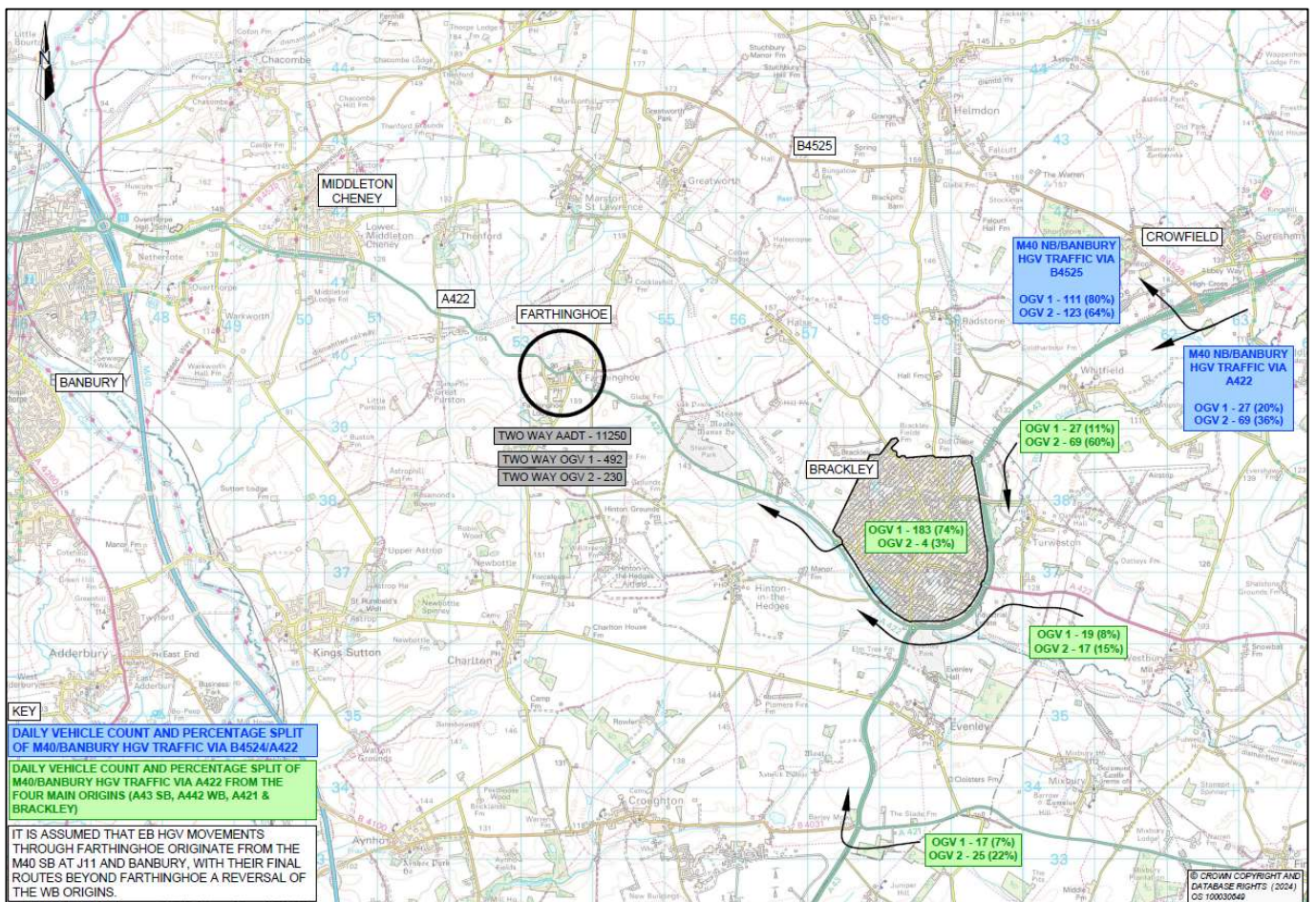


Figure 6 – Heavy Goods Vehicle movement and flow characteristics



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3.4 Accident Data

3.4.1 A422

The latest 5-year accident data (2019-2023) for Farthinghoe shows no recorded injury accidents located at the pinch point. Near miss and damage only accident data is not available.

3.4.2 B4525

Accident data for the B4525 was assessed over a period of 4 years from 2020 to 2023. There was a total of 20 personal injury collisions comprising 5 serious and 15 slight.

Two cluster sites have been identified at junctions, one at the roundabout with Chacombe Road, and the other at the Crossroads with Station Rd, these accounted for 7 of the 20 accidents. The causation was predominantly attributed to ‘failing to look’.

The remaining collisions occurred at various other locations along the route. Causations as follows;

- 3 attributed to overtaking manoeuvres to pass slower moving vehicles
- 2 clipping nearside verge and losing control, likely attributed to the narrow carriageway.
- 2 loss of control negotiating bend

Other collisions were related to slowing down to negotiate junctions, drug and alcohol impairment, avoiding obstacle in road and driver inexperience.



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4.0 A422 Pinch Point Improvements

4.1 Options Appraisal

4.1.1 Option 1

Improvement Scheme Option 1 – Widening of the A422 at the pinch point to achieve a fully compliant geometrical layout in accordance with the Design Manual for Roads & Bridges (DMRB). This would increase the radius of the bend and widen the A422 at the pinch point improving forward visibility.

To achieve this, adjacent land would need to be acquired as the existing width of the A422 carriageway and verges are insufficient to accommodate the improvement.

4.1.2 Option 2

Improvement scheme Option 2 – The installation of traffic signals to regulate traffic flow by implementing a shuttle system. This would remove the vehicle conflict at the pinch point and maintain the existing alignment of the A422. This could coincide with some footway widening on the north side of the A422 adjacent to London Barn for safer passage of pedestrians. See Figure 7 below.

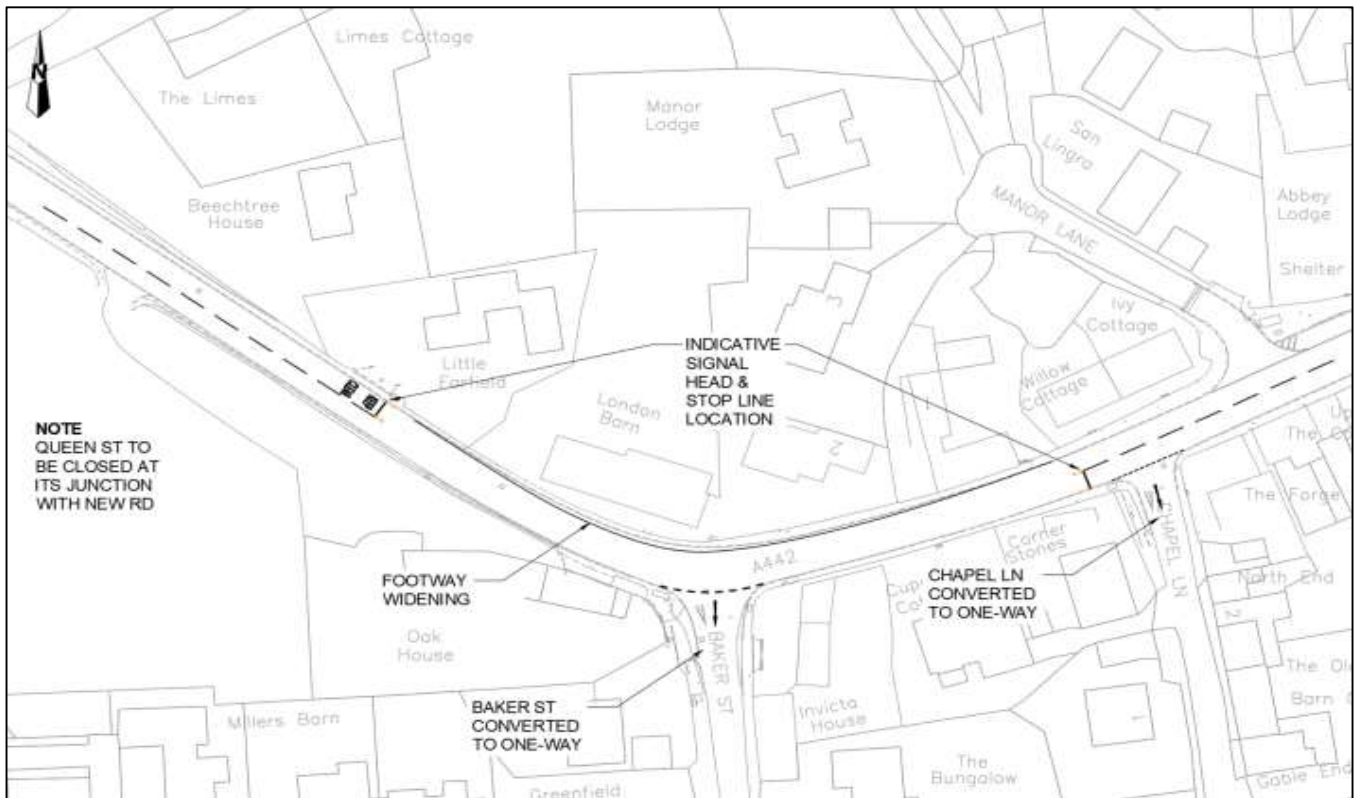


Figure 7 – Indicative arrangement showing traffic signals to implement shuttle flow.

To prevent ‘rat-running’ and the need for 3-way signals, Baker St & Chapel Lane would be converted to one-way streets. In addition, Queen St would need to be permanently closed at its junction with New Road. See Figure 8 below. These measures would require permanent Traffic Regulation Orders to implement, but no land acquisition.



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The impact of the signals has been modelled using LinSig. Under current traffic flows the maximum average queue lengths during peak periods are expected to be between 21 and 24 vehicles with a maximum delay of 50 seconds. Delays during the off peak would be less than this. The introduction of part time traffic signals could also be explored so that traffic control was only implemented during periods where flows are highest, for example 07:00-19:00 weekdays.

Advanced warning signs would also be needed on approach to the signals, particularly from the southbound approach to warn vehicles of potential queues backing up towards the A422 junction with New Rd which is on a bend.

The cost to implement this option is estimated at £500k

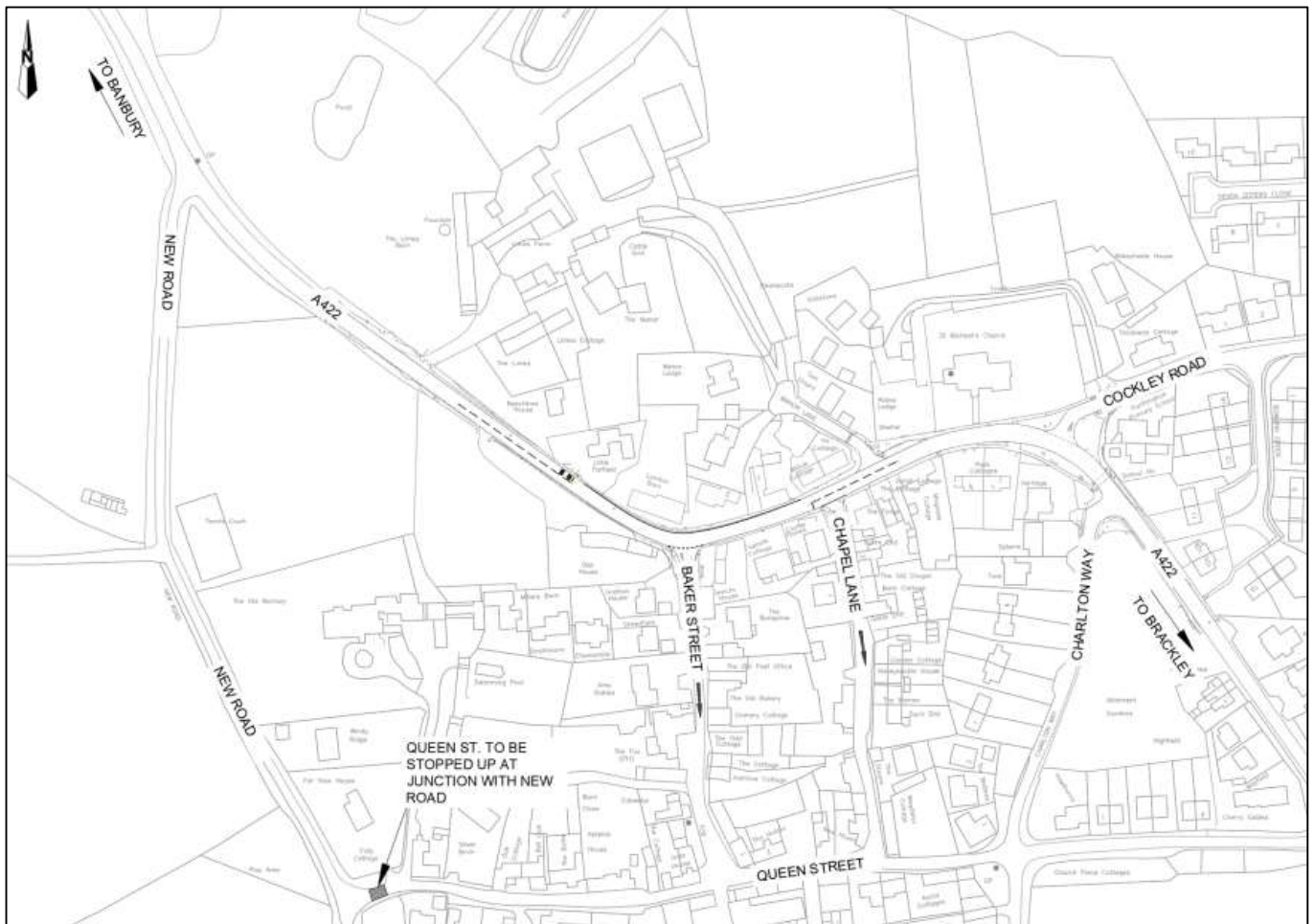


Figure 8 – Overview showing changes to Queen St, Baker St and Chapel Ln.



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4.1.3 Option 3

Improvement scheme Option 3 – The introduction of traffic calming measures to promote better speed compliance and improve safety through the village and at the pinch point.

There are various forms of traffic calming measures that can be introduced, and their effectiveness depends on the local objectives that are to be met. Measures also need to be sympathetic to the local environment so that levels of noise and vibration, for example, are not adversely impacted after implementation.

Examples of traffic calming features include, inter alia, reducing speed limits, road humps, rumble devices, gateways and entry treatments, coloured surfacing and vehicle activated signs.



Speed roundel on red surfacing



Vehicle Activated Sign



SLOW marking on red surfacing



Signs indicating a 20mph Zone

An illustrative scheme layout is shown below in Figure 9. The cost to implement a traffic calming scheme of this nature is estimated at £150k.

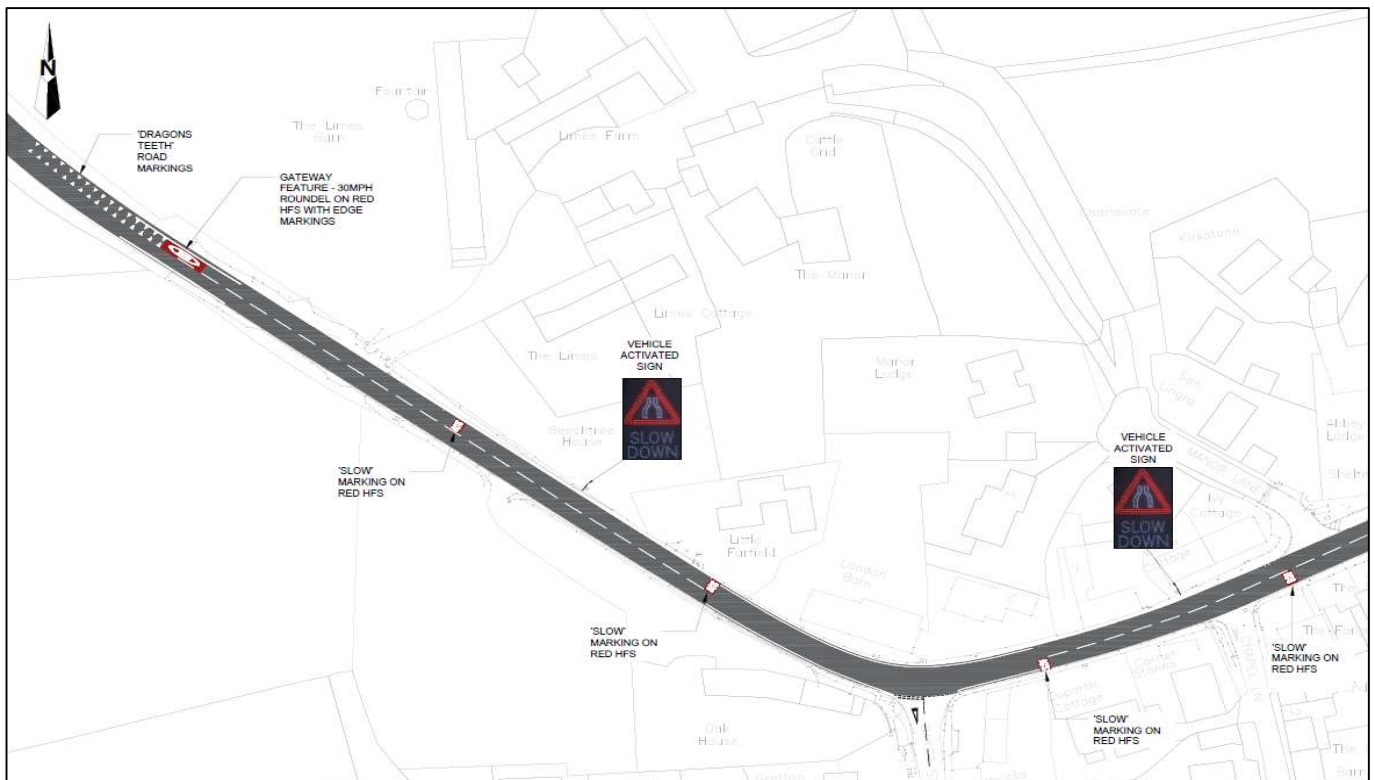


Figure 9 – Illustrative traffic calming scheme.



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5.0 B4525 Suitability

5.1 Route Appraisal

The B4525 has substandard width along its full length; at an average of 6.1m this is 1.2m less than the 7.3m required in DMRB CD 127. The width between the trafficked edge of the carriageway edge lines is approximately 5.8m. There is no apparent widening on curves as required by CD 109.

Traffic flows were observed to be moderate with some HGV traffic using the B4525 to bypass the A422 Farthinghoe/Brackley. Other HGV traffic was associated with the ongoing HS2 works.

The overall accident severity ratio for the B4525 is 30% lower than the national average. A total of 15% of recorded collisions occurred during wet weather and 25% occurred during the hours of darkness, both numbers well below the national average. Two recorded accidents were caused by clipping the nearside verge and losing control, likely attributed to the narrow carriageway and rutting in the soft verge area. There was one recorded incident involving a HGV where a vehicle overtaking the HGV lost control.

In terms of geographical location, the B4525 is the signed route for vehicles moving between M40 J11 and the A43 NB (and similarly in reverse), however, vehicles moving to and from Buckingham and the Milton Keynes area are still likely to opt to use the A422 as this is a more direct and quicker route when compared to the B4525 and the M40.

As an alternative route, there are concerns over the suitability of the B4525 to cater for increased volumes of HGV traffic. The existing carriageway width cannot safely accommodate 2 passing HGVs without some tyre over-run into the verge, particularly noticeable on curves when larger vehicles are passing.

For the B4525 to accommodate any increased numbers of HGVs, extensive improvement works would be needed including widening of the carriageway along its full length with an estimated cost of £10m.



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6.0 A422 HGV Traffic Mitigation Measures

6.1 Heavy Goods Vehicle signing

To mitigate HGV traffic through Farthinghoe, HGV signs could be implemented. This could be in the form of a mandatory environmental weight limit or advisory sign indicating that the route is unsuitable for HGVs. Examples are shown below.



Diag. 622.1A



Diag. 818.4



Diag. 820A

The introduction of signs indicating HGV restrictions (advisory or mandatory) would prevent the A422 being used as the diversion route when the M40 is closed and therefore a suitable alternative route would need to be sought. The B4525 is considered as an option, however, extensive improvement works would need to be undertaken to make this route suitable.

7.0 Conclusions and Recommendations

7.1 Conclusions

The current traffic conditions at the Farthinghoe pinch point are unsatisfactory due to the narrowness of the carriageway and footway together with the tight radius of the bend.

7.1.1 A422 pinch point

Widening of the carriageway at the pinch point to create a compliant alignment (**Option 1**) is not considered feasible due to the impact on neighbouring properties. Additionally, the costs associated with land acquisition and construction works would be high and deemed disproportionate to the benefit gained. Widening would also be disruptive with long periods of road closures anticipated to facilitate safe construction which would affect the local community.

Although the pinch point is the focal point for improvement, the adjacent stretches of the A422 leading up to the pinch point, particularly from the east at Queen Street approaching Cockley Road, are also not designed for HGVs. The concern with widening at the pinch point is that this may encourage increased HGV traffic and higher vehicle speeds through the village, putting more strain on the A422 and village environment. An increase in HGVs may compromise pedestrian safety given the proximity of the primary school and associated pedestrian movements. HGV traffic also negatively impacts noise and air quality in the village. This is not therefore considered a viable option.

Installing traffic signals (**Option 2**) supported by permanent traffic management measures would provide a greater degree of traffic control which would significantly reduce vehicle collisions and damage to property. It could be installed at a much lower cost when compared to Option 1 and other than permanent Traffic Regulation Orders, would not require formal legal processes. It could be quick to implement and reversible if another longer-term solution is developed or circumstances change. taken forward, consideration would need to be given to ensuring sufficient advanced warning for vehicles approaching the signals.

The introduction of traffic calming measures (**Option 3**) would look to manage vehicle conflict at the pinch point by reducing vehicle speeds and provide better advanced warning of the road conditions ahead. It is the least costly option and would be simple to construct. A Traffic Regulation Order would be required if changes to speed limits are proposed.

7.1.2 B4525 alternative route

The B4525 is already a well-used route for HGVs and is the preferred route for movements between the M40 J11 and the A43 towards Northampton. As an alternative route to the A422, however, significant widening works would be required to bring the road up to a standard so that it can be signed as such. Additionally, the uptake from those travelling to and from the A421 (Buckingham/Milton Keynes) is likely to be limited because of the additional journey time involved which would be in the region of 12-15mins depending on traffic conditions.

7.1.3 A422 Traffic mitigation

HGV signing (mandatory weight limit or advisory ‘Unsuitable for HGVs’) would reduce the number of HGVs through the village but this would require the B4525 to be used as the alternative route. This would necessitate extensive upgrades to the B4525 to accommodate the increased HGV traffic.

Although the introduction of HGV signing would relieve Farthinghoe from HGV traffic, smaller goods vehicles over 3.5t (2 and 3 axle rigid OGV 1) would still be permitted to pass through the village. This category of vehicle is also



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impacted by the pinch point and other measures would still be needed to remove the potential for clashing vehicles and improve safety for both road users and pedestrians.

7.2 Recommendations

It is recommended that Option 3 (Traffic calming) is taken forward to the next stage of scheme development as it is the least intrusive option and could be installed quickly and at relatively low cost.

This recommendation is given with a view to consider traffic signals in the future should post implementation monitoring show that initial traffic calming measures have limited effect.



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