New Monks Farm development

Technical Note 2 – Phase 1 Residential Development Impact

Comments by West Sussex County Council

Observed Baseline Flows:

These were collected in neutral period and cover all required junctions and time periods.

Background traffic growth:

Five years growth is in line with WSCC guidance for WSCC network.

TEMPRO NTM figures for Worthing – urban, all types - have been used rather than for Adur. This makes little difference, being slightly higher at 1.0709 rather than 1.0666 to 2020 and 1.1370 rather than 1.1345 to 2025 in AM peak. In PM peak 1.0704 is used rather than 1.0671 to 2020 and 1.1381 rather than 1.1373 to 2025. Background traffic in this analysis will be slightly greater than if the local NTEM zone had been used.

Traffic distribution:

Distribution and assignment have been treated together, for a manual assignment. As the study is looking at relatively low numbers (250 dwellings) in a local area with limited route choice, this is considered to be acceptable.

The distribution is based on travel to work trips, which should lead to longer average trip length and hence a greater proportion of trips using the strategic network, than if distribution had been separately examined by trip purpose according to a trip purpose split for each peak. For example, a high proportion of education trips, notably in the AM peak are likely to access the Sir Robert Woodard Academy via Crabtree Lane and Upper Boundstone Lane. Local retail trips, notably in the PM peak may access shops in North Road and South Street Lancing via Crabtree Lane or Grinstead Lane respectively. However, the retail offer in Lancing is relatively weak and there is also likely to be a spread of retail trips to:

- Worthing Town Centre – via A259W
- Lyons Farm Retail Park (Broadwater) – via A27W
- Holmbush Retail Park (Upper Shoreham Rd) – via A27E
- Shoreham Town Centre – mainly via A259E
- Brighton & Hove – via A27E

This pattern may not be greatly different to the travel to work pattern in respect of the assignment within the local study area shown in Figure 5 of the Vectos Technical Note. Some of these trips in PM peak will be linked trips with return

from work, with the choice of shopping location used based largely or partly on convenience for minimising diversion from normal work to home route.

On this basis, I do not consider it necessary to request a separate gravity model analysis of distribution and assignment for non-commuter home-based trips in respect of this particular analysis to support a Local Plan allocation. This may well, however, be appropriate in future to support discussions leading towards an outline planning application for the full site.

It would be useful to have some map based information showing the minimum travel cost paths used to determine which locations to west (e.g. Worthing neighbourhoods) route via A27, A259 or Crabtree Lane and which to east (e.g. Southwick, Portslade) route via A27/A270 or A259. Paragraph 2.10 suggests that traffic to Shoreham town centre may have been routed via A27/A283 and that traffic to the west may have been routed via Crabtree Lane, even if it joins A27 later at Busticle Lane or elsewhere. Directions on Google Maps, using "depart at" 8-8:30am and 5pm and an origin point on Mash Barn Lane do not support either of these contentions, suggesting instead that:

- fastest traffic routes to A27 in Worthing or Sompting Road join A27 from Grinstead Lane, with Crabtree Lane picking up traffic to Sompting and the part of Broadwater which can be accessed by avoiding A27.
- Traffic to Shoreham Town centre has equally competing routes via A259 or A27, sensitive to which street in the town centre is selected as the destination (I looked at locations of car park entries).

This indicates that the traffic using the A27 / Grinstead Lane / Manor Road roundabout to/from the east may have been over-represented, but that using this junction to/from the west is likely to have been under-represented in favour of Crabtree Lane. It may be helpful for these assumptions to be examined further via a sensitivity test. This would, of course also affect the balance of turning movements at the Grinstead Lane / Mash Barn Lane / Crabtree Lane junctions.

Vectos have decided to do a worst case assessment on the Grinstead Lane / Mash Barn Lane / Crabtree Lane junction by routing all development trips through this junction, whilst in reality a proportion would use the Curvins Way junction. This has the merit of making the assignment easier to follow, but does mean that fewer conflicts are modelled at the Curvins Way junction. It is therefore important to assess whether the Curvins Way junction would operate with a sufficiently large reserve capacity that it would not require a sensitivity test with a different assignment of generated trips, which would model a greater number of conflicting turns from development generated traffic.

Traffic Generation

The re-use of trip generation rates from the Adur Local Plan and Shoreham Harbour Transport Study was agreed between Vectos and WSCC for consistency of consideration of the development between the two studies. The generated trips flow from this decision and are therefore agreed.

Traffic Impact

The junction turning flow increases at the Grinstead Lane / Curvins Lane junction and the A27 roundabout are at the TA threshold level of 50 vehicles per hour (vph) at the most affected entry arm (this uses a post NPPF relaxation from previous WSCC guidance of 30vph to reflect the criterion of severe impact in NPPF, rather than material impact in the 2007 DfT TA guidance). The flow increases at the Mash Barn Lane junction are higher at 80vph in AM peak but at TA threshold level in PM peak. This demonstrates the need to undertake junction capacity analysis, but also indicates that there is not a need to expand the study area to take in additional junctions, as flow changes further from the development will be under threshold levels.

Junction Capacity Assessments

The use of the Junctions 8 software package and the forecast scenarios are supported.

Grinstead Lane / Mash Barn Lane / Crabtree Lane

The geometric inputs to the junction assessment match sufficiently against re-measurement from the County Council's GIS browser.

The summary tables only present results for RFC and queues. The highest RFC in the AM peak is 0.72 and in the PM peak 0.57. Queues are under 3 vehicles. The detailed results show that the delays per vehicle for straight ahead and right turns from Crabtree Lane in both peaks and from Mash Barn Lane in AM peak are above 30 seconds but below one minute, which reduces the level of service to "E" but is within County Council acceptable standards for non-strategic roads.

This junction has a "worst case" assessment of impacts from Mash Barn Lane due to the assignment of all development flows through this junction.

Conclusion: From the evidence presented, there is no reason to anticipate that the junction would not be able process additional demand from a development of 250 homes, prior to opening of a second point of access onto the A27 or provision of mitigation to highway capacity. A sensitivity test of the assignment of development generated trips would be unlikely to greatly alter this picture as the main change would be between turning movements on Mash Barn Lane which share the same entry lane.

Grinstead Lane / Curvins Way

Note: Curvins Way is erroneously referred to as “Curvins Lane” in this part of the Vectos TN, although this is not consistently applied.

The geometric input parameters to this junction largely match acceptably well. The County Council’s GIS browser suggests that the width of the right turn lane in Grinstead Lane is 2.2m wide rather than 2.45m and that the width at the give-way line of Curvins Way is 9.5m rather than 10m, based on 2012 aerial photography overlaid on OS mapping. Neither of these are considered to be critical and they may be within the accuracy limits of the mapping information available.

This junction has a highest RFC value of 0.66 in AM peak and 0.16 in PM peak on the minor arm, with a maximum queue of 2 vehicles. These figures are low enough to indicate that if development generated traffic was to spread to use this junction in addition to Mash Barn Lane, rather than the TN’s assumption of routing via Mash Barn Lane, then there is no reason why the RFC value for either junction should rise above the threshold level for congestion of 0.85 in the situation where no more than 250 dwellings were occupied, with no alternative route to A27E and without physical improvements at this junction.

Grinstead Lane / Old Shoreham Road / Upper Brighton Road Roundabout

This junction is on the Highways England network and is severely congested in the baseline situation with maximum RFC values of 1.31 in the AM peak and 1.32 in the PM peak. The assessment of the junction suggests that the development traffic has a minor impact on RFC, which results in some larger changes in queues on the A27 arms. It is up to Highways England to determine what is acceptable without mitigation for A27, which should take into account average delay information not included in the summary tables.

Forecast changes in RFC and queues on entries from County Council roads are minimal and could not be interpreted to constitute NPPF severe residual impacts. It would be useful to see the results of a sensitivity analysis based on changes in route assignment choice discussed earlier in this note.

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