Land Adjacent to Wyvern Farm, Stanway

Technical Working Paper Review

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Produced for
Essex County Council

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1 Introduction

1.1 Background
A Technical Working Paper (TWP) has been produced by Intermodal Transportation Limited (ITL) on behalf of RF West Limited to inform the Colchester LDF Site allocation process of the potential transport impacts of a proposed mixed use development at Wyvern Farm, Stanway, Colchester.

1.2 Documentation
2 Summary of Findings

We have undertaken a review of the Technical Working Paper (TWP) that has been submitted to inform the Colchester LDF site allocation process by Intermodal Transportation Limited (ITL) on behalf of RF West Limited. The TWP is associated with the proposed development Wyvern Farm, Stanway.

Our review has indicated that we would consider the following to be appropriate:

- Base traffic flows along the B1408 London Road;
- The trips expected to be generated by the residential dwellings and their distribution across the site access junctions;
- That ITL have not considered any pass-by, diverted or combined trips; and
- The background traffic growth rates for the periods from 2005 to 2012 and 2005 to 2017.

However, we would not agree with the following:

- The trip rates used for the B1 Office component of the proposed development or the distribution of these trips across the site access junctions;
- The committed development flows; and
- The forecast traffic flows used in the junction capacity assessments.

We would also request further information on the following:

- Whether the opening year referred to in the TWP corresponds to the year of completion of the proposed development;
- The location of the proposed pedestrian crossing facility on the B1408 London Road and if it is to be funded by the developer.
Furthermore, we would consider that the study area should be expanded so that the impact of the proposed development is assessed at the junctions in the vicinity of Stane Park further to the east.

We would also consider that the combination of site access junction types might create road safety concerns and should be revisited.

As a result of the above, we have not been able to fully check the junction capacity assessments that have been undertaken by ITL.

We would also request that ITL provide swept path drawings demonstrating that the proposed site access junctions can accommodate the type of vehicles that are likely to require access and egress.
3 Proposed Development

3.1 Development Location
The proposed development is located on the northern side of the B1408 London Road in Stanway, Colchester. The site is bounded to the north by the A12 and to the west by open fields.

To the east the site is abutted by the Stane Park retail/employment area, the most western part of which has been the subject of a planning application for a new mixed use employment development that has recently been approved.

3.2 Development Details
Existing
The site currently comprises mainly green fields with some residential properties intermittently spaced around its outer edges.

Proposed
The proposed development comprises the following:

- 525 Residential Dwellings; and
- 5,200sq.m GFA of B1 Office land use.

ITL have not given a breakdown of the types of residential properties that are proposed and therefore, in the interests of robustness, we have assumed that they will be large detached houses.

3.3 Site Access
ITL state that a dual access strategy is proposed for the development, both of which will connect on to the B1408 London Road. The access at the western end of the site frontage is proposed as a signal-controlled T-junction with separate lane for right turning traffic from the B1408 London Road into the site. This would form the primary access in to the site and is shown in Drawing No.IT919/TWP02 in the TWP.

The secondary access is located towards the eastern side of the site frontage on the B1408 London Road and is proposed to be a left-in/left-out priority T-junction. The layout of this junction is shown in Drawing No.IT919/TWP/03 in the TWP.
While both junctions may theoretically operate within capacity (we have not been able to agree the forecast traffic flows, so this has still not been determined), the combination of a traffic signalled junction and left-in left-out junction may be not the most appropriate in terms of road safety.

Vehicles travelling from the Stanway area in the east to residential properties on the eastern side of the development will be required to travel past the secondary site access to the primary site access junction further west and then travel around the development spine road to arrive at their destination.

It could therefore, be tempting for them to turn right into the development at the secondary site access junction instead. This could lead to road safety concerns at this location as vehicles queue on London Road to turn right into the site, possibly resulting in an increase in rear-end shunts or vehicles turning right colliding with oncoming traffic.

Furthermore, it is difficult to appreciate how the left-in only component of the eastern access junction will be regulated. Presumably a traffic regulation order will be required to reinforce the junction layout shown in Drawing No.IT919/TWP/03, prohibiting vehicles from turning right into the site from London Road. However, this could be open to abuse if a robust enforcement strategy from the local traffic police is not implemented.

Therefore, we would suggest that a more appropriate access strategy would be to replace the signalised junction with a roundabout, allowing vehicles travelling from the east that require access to the eastern side of the development to U-turn on the B1408 London Road and access the site via the eastern access.

Alternatively, if ITL insist that the western access junction will be constructed as a signalised T-junction then the eastern access should be redesigned to allow all traffic movements.

3.4 Study Area

ITL have assessed the impact of the proposed development on the two site accesses that are proposed on the B1408 London Road. However, while we are unsure in what context their assessments are going to be used, we would consider that the impact of the vehicle trips generated by the proposed development could be over a significantly greater area than has been assessed by ITL.
In particular, even though a new bypass road is currently being constructed through Stanway, our knowledge of the area suggests that it will be operating at, or close to, capacity almost from when it opens. This would be without the traffic generated by the development proposed at Wyvern Farm being considered.

When the proposed development traffic is taken in consideration, it could be the case that the road network in the Stanway area operates above its current capacity and may be subjected to substantial congestion and delays. ITL should be aware of this as they were involved in the planning application process for the proposed development at Stane Park.

Based on ITL's own traffic figures, the proposed development would lead to a 13% increase in 2-way traffic flow on London Road to the east of the site in 2012. We would therefore, recommend that ITL be asked to consider a wider study area if this is appropriate to the LDF process being undertaken.
4 Traffic Forecasts

4.1 Base Traffic Flows
ITL state that they have obtained traffic data for the B1408 London Road from their previous work for the Stane Park development. These comprised traffic surveys at the B1408 London Road/Tollgate West Roundabout that were undertaken in 2005. A summary of the traffic flows they have obtained are shown in Table 5.2 of TWP, a precise of which is reproduced below in Table 1.

<table>
<thead>
<tr>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastbound</td>
<td>Westbound</td>
</tr>
<tr>
<td>543</td>
<td>588</td>
</tr>
<tr>
<td>28</td>
<td>18</td>
</tr>
<tr>
<td>637</td>
<td>447</td>
</tr>
<tr>
<td>16</td>
<td>9</td>
</tr>
</tbody>
</table>

Figures in brackets are total HGV’s.

Table 1: Summary of Traffic Flows on B1408 London Road
West of Tollgate Roundabout

We have revisited our review of the Transport Assessment (TA) by ITL that related to the Stane Park development, which was dated May 2006. Our review indicated that the traffic flows contained therein were appropriate.

We have then reviewed the traffic flow diagrams contained in the TWP to ascertain if they correspond to the traffic flows used by ITL in their TA for the Stane Park development. It would appear that ITL have transposed the flows correctly and therefore, we would consider the 2005 flows shown in Table 5.2 of the TWP to be appropriate.

4.2 Trip Generation
ITL state that the have obtained the trip generation rates for the land use types that are proposed at the development by interrogating the TRICS database for similar developments. A summary of the trip generation rates they have used in their assessments and the subsequent number of total trips that would be expected to be generated is shown in Table 2 below:
Table 2: Summary of Trip Generation Rates & Total Trips extracted from TWP

We have reviewed the above trip rates and would consider that those relating to the residential dwelling are appropriate. However, the trip rates associated with the office floor area seem to represent average rates. We would suggest that a development of this nature located on the edge of town with only moderate public transport links (the existing bus stops are over 500m from the office component of the development) could probably generate trip generation rates that would be similar to 85th percentile.

We have therefore, undertaken a similar assessment to ITL to obtain 85th percentile trip rates for B1 Office floor space developments up to 10,000sq.m GFA in England outside Greater London for developments that are not in town centre locations. A summary of the trip rates that we have obtained and the subsequent number of vehicle trips that would be expected to be generated is shown in Table 3.

Table 3: Summary of Trip Generation Rates & Total Trips obtained by Mouchel

The above trip rates and subsequent number of vehicle trips are considerably higher than those obtained by ITL for the office component of the proposed development. We would therefore, recommend that they use our trip generation rates for their assessments in any resubmission.

As a result, we have not been able to agree that the number of trips that ITL expect to be generated by the proposed development is robust.
4.3 **Modal Split**
ITL have not provided any information relating to the expected modal split at the proposed development. We would therefore, request that this information is provided in any resubmission.

4.4 **Trip Distribution**
ITL state that the likely distribution of the development traffic has been based on the 2017 base plus committed development traffic flows taken from Table 5.2 of their TWP.

Furthermore, in the case of the residential traffic, they state that it was assumed that departures to the east would be split 50:50 between the two accesses and that arrivals from the west would be split 2/3rds via the main access and 1/3 via the secondary access.

In terms of the commercial land use, ITL state they have used the same assumption as for the residential units for departures to the east but that all arrivals from the west were assumed to use the main access. As a result of the above, they have produced Table 5.5 in their TWP, which summarises the distribution for all development traffic across both site accesses.

We have reviewed the assumptions that ITL have made regarding distribution of development trips across the site accesses and, given the proposed layout of the development, would consider that those applicable to the residential component seem reasonable.

However, we would not agree that the commercial development departures to the east would be split 50:50 across both site accesses. The commercial land use is located at the northeastern corner of the site, which would make the eastern left-in left-out access far more attractive to vehicles travelling to the east than the primary site access. We would suggest that a more realistic proportion would be to split the commercial departures to the east 80:20 in favour of the eastern site access junction.

We have therefore, been unable to agree that ITL’s trip distribution proportions shown in Table 5.5 are appropriate.
4.5 Pass-by, Diverted and Combined Trips
ITL have not included any allowance for pass-by, diverted or combined trips within their TWP. Given the nature of the proposed development, we would consider this to be appropriate.

4.6 Assessment Year and Traffic Growth

Assessment Years
ITL have assumed an opening year for the proposed development of 2012 and a future design year of 2017. However, in developments whose construction is to be staged, such as large housing sites, it is important to differentiate between the opening year and year of completion.

The impact of the proposed development should at least be assessed when the development is completed so that its full impact can be determined. Therefore, we would request that ITL clarify whether their opening year of 2012 will be when the whole development is completed or if this is when the first houses will be occupied.

It is then important to ensure that any new or significantly amended junctions be constructed so that they have a design life. For junctions on routes that have a strategic significance a design period up to 10 years after the development is completed is usually considered to be appropriate. For junctions on local routes a period of five years is considered to be reasonable.

Therefore, if Essex CC consider the B1408 London Road to be of strategic significance then it would be appropriate to request that ITL consider a design period up to 10 years after the proposed development is completed and fully occupied. However, if this is not the case then ITL’s current design period of five years would be reasonable.

Background Traffic Growth
ITL have factored up the base traffic flows from the 2005 surveys to the design years they have assumed in their TWP, i.e. 2012 and 2017 by applying TEMPRO / NRTF growth factors. A summary of the growth factors they have used is shown in Table 4.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>2012</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak Hour</td>
<td>1.135</td>
<td>1.234</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>1.154</td>
<td>1.260</td>
</tr>
</tbody>
</table>

Table 4: Background Traffic Growth Rates obtained by ITL
We have undertaken a similar assessment and would consider that ITL’s background traffic growth rates are reasonable if their design years are appropriate.

4.7 Committed Developments

ITL state that they have obtained the committed developments flows on the B1408 London Road from their previous TA for the Stane Park development. A summary is shown in Table 5.2 of their TWP. We have reviewed their results and would consider that they have transposed the flows correctly from their previous TA.

However, our review has also indicated that the committed development flows shown in the Stane Park TA are not contemporary. They still show the Danny Watts development site as being developed for employment whereas it now has planning permission to be developed as a supermarket. We would therefore, consider the committed development flows used by ITL in their TWP to have been superseded.

4.8 Forecast Traffic Flows

ITL have produced traffic flow diagrams that show the flows at the site access junctions in the AM and PM peak hours. The 2012 flows are shown in Drawing No.IT919/TWP/07 while the 2017 flows are shown in Drawing No.IT919/TWP/08.

However, we would not consider the flows shown in these drawings to be appropriate as we have not been able to agree the following:

- Total trips generated by the B1 office floor area;
- Assignment of the traffic generated by the B1 office floor space; and
- The committed development traffic flows.

We would also request that ITL clarify whether 2012 is the year of completion of the development or whether it will be when the first houses will be occupied.
5 Traffic Impact

5.1 Junction Capacities

ITL have undertaken capacity assessments of the two site access junctions using the forecast traffic flows that they have obtained. However, as we have stated previously, we have not been able to agree that the design flows are appropriate and therefore, are unable to comment on the results of their capacity assessments.

Nevertheless, we have reviewed their junction assessments to determine if their generally methodology is reasonable. Our comments for each junction are shown below.

Signalised Primary Site Access Junction

ITL have assessed the capacity of the primary site access junction using TRANSYT, which seems somewhat strange given that LINSIG would have been far simpler and more appropriate software for a stand-alone signalised junction. Nevertheless, our review of their TRANSYT model indicates that it is generally appropriate and would replicate the operation of the junction satisfactorily.

ITL also state that the proposed junction layout does not contain any signalised pedestrian crossing facilities. Rather, a pedestrian crossing facility will be provided to the east of the junction on the B1408 London Road, which they state is a more logical place to provide such facilities.

Unfortunately, they have not provided any justification for this statement. It might be more sensible to incorporate signal controlled pedestrian crossing facilities into the primary site access junction layout rather than requiring traffic on the B1408 to be stopped twice over a short section of highway.

Furthermore, the location of these pedestrian crossing facilities is not shown on either of the site access drawing or the masterplan drawing contained in the TWP. Therefore, it is not clear whether they would impact on the operation of the site access junctions.

If the pedestrian crossing facilities were to be located reasonably close to the signalised site access junction then it would seem logical to include them in the TRANSYT model, particularly as this software would be well equipped to deal with the operation of the two sets of signals in close proximity. This would allow an
assessment to be made to determine whether the operation of either set of signals would impact on the operation of the other set.

Furthermore, it is not clear from the TWP whether these pedestrian crossing facilities are being offered as part of the proposed development, or whether ITL expect them to be funded from some other source. We would therefore, request further clarification in this regard.

**Secondary Left-in Left-out Site Access Junction**

ITL have undertaken the capacity assessments of the secondary site access junction using PICADY, which we would consider to be appropriate. We have reviewed their geometrical inputs and would consider that they are reasonable.

Therefore, we would recommend that ITL be asked to rerun this model with their revised flows, which should provide valid results.

5.2 **Link Capacities**

ITL have not undertaken any link capacity assessments in the locality. Given the nature of the proposed development, we would consider this to be reasonable.

5.3 **Heavy Vehicles**

ITL have not provided any information regarding the nature of vehicles that would be generated by the B1 Office component of the site. In any event, we would consider that access would be required for delivery and service vehicles to the residential dwellings.

Therefore, we would request that ITL demonstrate that both access junctions could accommodate the type of service and delivery vehicles that would travel into and out of the proposed development.