Wycombe Local Plan Sites
Wycombe District Council

Wycombe Local Plan Sites Traffic Modelling

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Wycombe Local Plan Sites
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1. Introduction

1.1 Preamble

Jacobs is framework consultant to the Transport for Buckinghamshire Alliance (TfB) between Ringway Jacobs and Buckinghamshire County Council (BCC), and through this were appointed by Wycombe District Council (WDC) to provide transport consultancy advice with regards to the emerging Wycombe Local Plan (WLP). This report summarises the transport modelling results.

1.2 Background to project and scope of work

The WLP is being developed to identify where new homes, jobs and infrastructure can be provided to meet the demand and government requirement for WDC. High Wycombe is the largest town in the district and a focus for development.

The High Wycombe Highway Assignment Model (HWHAM) has been used to assess four development scenarios and inform a potential package of transport schemes to facilitate the emerging developments. The model has been updated to consider a future year of 2033 to be consistent with the timescale of the WLP. The locations of the developments being considered are shown in Figure 1.1.

![Figure 1.1: Locations of the local plan developments](image)
2. Base year and do minimum models

2.1 Base model

HWHAM was developed with a 2013 base year and has been updated previously to test the impact of the Town Centre Masterplan, Reserve Sites and other development applications including planned retail development at Cresssex Island. The extent of the base model is shown in Figure 2.1.

Figure 2.1: Extent of area included in the Wycombe Town Model

2.2 2033 do minimum model

The base model has been updated to reflect the year 2033, which includes the extra traffic created by committed developments that will be constructed during this period. The sites included in the do minimum are consistent with wider countywide modelling1 that is being undertaken as part of other studies, and therefore this study does not include the reserve sites, which are predominantly located in the eastern quadrant of the town. This is to ensure focus on the schemes required to facilitate the developments at the Wycombe Local Plan sites and consistency between do minimum scenarios considered in the local plan models.

Growth factors need to be used to forecast the increase in background traffic between the model base year and model forecast year. Essentially the base traffic flows are multiplied by the growth factor to give future traffic flows. The timing of the modelling used traffic growth factors covering the period 2013 to 2033 that were

1 Countywide Local Plan Modelling, Forecast Modelling Report, Jacobs, 6th July 2016
derived from the TEMPro database (version 6.2 with dataset version 6.2). The version used in this assessment provides multi-modal trip data for the years 1991 to 2041. Prior to calculating the future year traffic volumes, the growth factors were multiplied by fuel price and income adjustment factors (sourced from Table M4.2.1 of DfT WebTAG Databook Spring 2016 release v1.6), which is appropriate for the transport model used in this assessment.

The overall 2013 to 2033 growth factors for car trips, calculated by multiplying TEMPRO growth by the combined adjustment factor, are presented in Table 2.1.

<table>
<thead>
<tr>
<th>Geographical area</th>
<th>AM Origins</th>
<th>AM Destinations</th>
<th>PM Origins</th>
<th>PM Destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Wycombe Town</td>
<td>1.2560</td>
<td>1.3737</td>
<td>1.3544</td>
<td>1.2775</td>
</tr>
<tr>
<td>Rest of Wycombe District</td>
<td>1.2367</td>
<td>1.3641</td>
<td>1.3407</td>
<td>1.2593</td>
</tr>
<tr>
<td>Buckinghamshire excl. Wycombe District</td>
<td>1.3694</td>
<td>1.3567</td>
<td>1.3739</td>
<td>1.3849</td>
</tr>
<tr>
<td>SE Region excl. Buckinghamshire</td>
<td>1.2817</td>
<td>1.2869</td>
<td>1.2961</td>
<td>1.2937</td>
</tr>
<tr>
<td>Rest of GB</td>
<td>1.3154</td>
<td>1.3142</td>
<td>1.3222</td>
<td>1.3228</td>
</tr>
</tbody>
</table>

Table 2.1: 2013 to 2033 overall growth factors for car trips

The 2013 to 2033 LGV and HGV growth factors for the South East region were extracted by interpolation from Table 1 in the Road Traffic Forecasts 2015 (Scenario 1), which bases its forecasts on the National Transport Model (NTM). The factor for M40 car through-trips was similarly derived from Table 4 in the same document, combined with the combined adjustment factor described above. The resulting factors are shown in Table 2.2.

<table>
<thead>
<tr>
<th>Geographical area</th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>M40 (cars)</td>
<td>1.3597</td>
<td>1.3732</td>
</tr>
<tr>
<td>LGV</td>
<td>1.5321</td>
<td>1.5321</td>
</tr>
<tr>
<td>HGV</td>
<td>1.1539</td>
<td>1.1539</td>
</tr>
</tbody>
</table>

Table 2.2: 2013 to 2033 Road Traffic Forecasts (NTM) Growth Factors
3. Do something modelling

3.1 Overview

This chapter describes the development and network changes considered in the assessment of the scenarios being modelled as part of the WLP evidence base. Four different ‘do something’ models will be developed to understand the impact of the WLP developments.

3.2 Development scenarios

The development scenarios that were considered in this modelling include:

**Scenario 1**: Tralee Farm + Air Park (intensification and expansion of existing land use) + High Heavens Open Storage site + Horns Lane + Cressex Island + Hollands Farm.

**Scenario 2**: Tralee Farm + Air Park (intensification and expansion of existing land use) + Hollands Farm.

**Scenario 3**: Air Park (intensification of existing land use only) + Hollands Farm.

**Scenario 4**: Tralee Farm (northern part of site only) + Air Park (expansion of existing land use only) + Hollands Farm.

The scale of the development and site access network changes in each scenario are summarised in Table 3.1.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Developments</th>
<th>Network changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>Tralee Farm 360 homes. Air Park 10,000sqm employment (526 jobs), and 20,000sqm light industrial/warehousing (556 jobs). High Heavens Open Storage 50 jobs at B8 land use. Horns Lane 64 homes. Cressex Island 13,635sqm retail. Hollands Farm 510 homes.</td>
<td>Priority T-junctions provided to Wycombe Road and the A404 Amersham Road. Existing Airfield and High Heavens site accesses used. Priority T-junction provided to Horns Lane. Priority T-junction with right turn ghost island for Cressex Island access. Priority T-junction to Hedsor Road and Millboard Road.</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>Tralee Farm 360 homes. Air Park 10,000sqm employment (526 jobs), and 20,000sqm light industrial/warehousing (556 jobs). Hollands Farm 510 homes.</td>
<td>Priority T-junctions provided to Wycombe Road and the A404 Amersham Road. Existing Airfield site access used. Priority T-junction to Hedsor Road and Millboard Road.</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>Air Park 10,000sqm employment (526 jobs). Hollands Farm 510 homes.</td>
<td>Existing Airfield site access used. Priority T-junction to Hedsor Road and Millboard Road.</td>
</tr>
<tr>
<td>Scenario 4</td>
<td>Tralee Farm 120 homes. Air Park 20,000sqm light industrial/warehousing (556 jobs). Hollands Farm 510 homes.</td>
<td>Priority T-junctions provided to Wycombe Road and the A404 Amersham Road. Existing Airfield site access used. Priority T-junction to Hedsor Road and Millboard Road.</td>
</tr>
</tbody>
</table>

Table 3.1: Development and network scenarios

3.3 Modelling results

3.3.1 Development traffic route choices

Scenario 1 includes all of the local plan development sites. Figures 3.1 and 3.2 show the development traffic route choices from all of the sites during the AM and PM peak hours respectively. The assignment of development traffic trips in the network shows the areas where focus should be given for potential mitigation measures.

Analysis of the development traffic routes for scenarios 2 to 4 shows that the same routes are used (compared to scenario 1). Figure 3.3 shows the AM and PM development traffic routes for scenarios 2 to 4.
Figure 3.1: AM Peak hour development traffic distribution (scenario 1)

Figure 3.2: PM Peak hour development traffic distribution (scenario 1)
Traffic travelling to and from Tralee Farm uses the A404, B474 Penn Road and Holmer Green Road, which places demand on the double roundabout in Hazlemere. Traffic travelling to and from Hollands Farm is using the A4094, A4155 and B4440 as the preferred route choices. The development traffic generated by the Air Park, High Heavens, Horns Lane and Cressx Island sites uses Clay Lane, B482, Cressex Road, Horns Lane, and the A4010 to travel in the area immediately surrounding the sites.

Similar route choices are observed in all four of the scenarios considered. The AM and PM development trip distribution plots for scenarios 2, 3 and 4 are shown in Figure 3.3.

Figure 3.3: Development traffic route choices (scenarios 2, 3, and 4) in AM and PM peak hours

### 3.3.2 Congestion ratios

The congestion ratio is the ratio of congested travel time to free-flow travel time on each link. The links are categorised according to the criteria shown in Table 3.2. These bands have been selected to allow changes to be perceived in the context of the scale of development considered in this study.

<table>
<thead>
<tr>
<th>Colour of the band</th>
<th>Congestion ratio</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparent</td>
<td>1</td>
<td>Free flow conditions</td>
</tr>
<tr>
<td>Green</td>
<td>1 to 1.1</td>
<td>Travel times are between free flow and an increase in travel time of up to 10%</td>
</tr>
<tr>
<td>Yellow</td>
<td>1.2 to 2</td>
<td>Travel times are between 20% and 100% (i.e. two times) higher than free flow</td>
</tr>
<tr>
<td>Orange</td>
<td>2.1 to 3</td>
<td>Travel times are between 2.1 and 3 times higher than free flow</td>
</tr>
<tr>
<td>Red</td>
<td>&gt;3</td>
<td>Travel times are more than three times higher than free flow</td>
</tr>
</tbody>
</table>

Table 3.2: Congestion ratio criteria and ranges

### Tralee Farm area

The Tralee Farm site will increase the traffic demand to and from the Holmers Farm area, which is shown to impact on the free flow travel times in the area (Figure 3.4). The do minimum modelling shows that there will be congestion at the A404/ Totteridge Lane, A404/ Kingshill Road, Hazlemere Crossroads, and Brimmers Hill/ Cryers Hill Lane junctions regardless of whether the local plan developments are built.
Comparison of the results between scenario 1 and the do minimum shows that there is increased congestion at junctions local to the site, including the Hazlemere Crossroads. There is also congestion at the A404/ Totteridge Lane and A404/ Kingshill Road junctions which has been considered in more detail as part of a previous study relating to the impact of the Wycombe Reserve Sites\(^2\). The modelling in the Reserve Sites work showed that the majority of traffic to/from the Terriers site was using routes to travel to/from areas south of this development. The junction schemes proposed as part of the Terriers site transport package were widening of approaches to the mini roundabouts at the A404/ Totteridge Lane and A404/ Kingshill Road junctions, and introduction of MOVA control to the A404/ Arnison Avenue and A404/ Hamilton Road junctions.

The conclusion of the project workshop held on 27\(^{th}\) January was that potential mitigation schemes for the Tralee Farm site should focus on the Hazlemere Crossroads.

The outputs from the do something 2 and do something 4 scenarios show similar congestion trends and increases to those shown in Figure 3.5. The results from the do something 3 scenario shows similar results to the do minimum, which is expected given the Tralee Farm site is not included in this scenario.

**Hollands Farm area**

The Hollands Farm site is located east of Bourne End. The do minimum modelling (Figure 3.6) shows there is delay at The Parade/ A4155/ Station Road, Millboard/ Cores End Road junctions, and on the A4094.

---

\(^2\) High Wycombe Reserve Sites, Transport Framework, Jacobs, 19 January 2016
(northbound) and Marlow Road (westbound). Figure 3.7 shows the results from the do something 1 modelling and it is noted that the results are comparable in the do something 2, 3 and 4 scenarios. There are increased travel times on the A4094 (towards the M40) which is logical given the traffic route choices shown in Figures 3.1 and 3.2.

Airpark, High Heavens, Horns Lane, and Cressex Island area

These four sites are considered in combination because of their proximity to each other in the south western corner of the High Wycombe urban area. The Cressex Road and A4010 already experience delay and congestion and this is reflected in the do minimum scenario congestion ratios shown in Figure 3.8.

The modelling results from the do something 1 scenario shows that there is an increase in delay at the Rutland Avenue/ A4010, Clay Lane/ B482, and Cressex Road/ A4010 junctions. The Crest Road/ A4010 junction currently experiences delay, so the additional traffic generated by the development would exacerbate conditions here if not mitigated.
Figure 3.8: AM and PM peak hour congestion ratios in do minimum scenario

Figure 3.9: AM and PM peak hour congestion ratios in do something 1 scenario
4. Transport package

4.1 Overview

This chapter discusses the modelling of the potential transport packages determined through a project workshop and subsequent stakeholder discussions.

4.2 Project workshop and transport package

A project workshop was held on 27th January 2017 to discuss potential mitigation schemes for the proposed developments. This was attended by representatives from BCC and WDC and supported subsequently with input from other officers from BCC. The schemes that were modelled in this study are shown in Table 4.1.

Table 4.1: Transport schemes to be considered in the do something + mitigation modelling

<table>
<thead>
<tr>
<th>Scheme code</th>
<th>Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF1</td>
<td>New road connection and closure of Penn Road arm of the junction</td>
</tr>
<tr>
<td>TF2</td>
<td>New road connection but no changes to the Hazlemere double roundabout.</td>
</tr>
<tr>
<td>TF3</td>
<td>Upgrade junctions at either end of Eastern Dene Road. The upgrade scheme will need to be considered. Mini-roundabouts could be an option, but these can only be provided on roads which have a posted speed limit of 30mph or less.</td>
</tr>
<tr>
<td>Scheme code</td>
<td>Scheme</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>TF4</td>
<td>Divert, or part divert, an existing service via Earl Howe Road. This would allow the majority of the site to be within 400m (as the crow flies) of a bus route. The mode shift that this could yield is considered to be 4.5% (based on advice from BCC)</td>
</tr>
</tbody>
</table>

**Hollands Farm**

<table>
<thead>
<tr>
<th>HF1</th>
<th>Provide link road through the development connecting Hedsor Road and Cores End Road. Standard roundabout modelled at the link Road/ A4094/ Kiln Lane junction.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF2</td>
<td>Junction improvements in the vicinity of the site. Refined option(s) to be agreed/ proposed by the highway authority.</td>
</tr>
<tr>
<td></td>
<td>• The Parade/ Cores End Road/ Station Road roundabout (relocate mini roundabout south east to allow flaring of arms)</td>
</tr>
<tr>
<td></td>
<td>• Ferry Lane/ Hedsor Road junction (mini-roundabout)</td>
</tr>
<tr>
<td></td>
<td>• Hedsor Road/ Site Access junction (simple T-junction)</td>
</tr>
<tr>
<td>HF3</td>
<td>Diversion of bus route 37. 4.5% mode shift along bus corridor to be considered in the modelling.</td>
</tr>
</tbody>
</table>
Scheme code | Scheme
--- | ---
Airpark, High Heavens, Horns Lane and Cressex Island

AP1 | Junction upgrades at multiple junctions. Refined option(s) to be agreed/proposed by the highway authority.
- Clay Lane/ Marlow Road (priority junction with ghost island for right turn and widening of exit on the minor arm)
- Horns Lane/ Cressex Road (mini-roundabout)
- A4010/ Crest Road (traffic signals, as shown in drawing below)
- A4010/ Rutland Avenue (2 lane exit from Rutland Avenue and increased length of right turn facility for turn into Rutland Avenue)

WDC advised that the number of development scenarios to be considered could be reduced. The do something plus mitigation development scenarios that were considered in the modelling included:

- **Scenario 1**: Tralee Farm + Air Park (intensification and expansion of existing land use) + High Heavens Open Storage site + Horns Lane + Cressex Island + Hollands Farm.
- **Scenario 4**: Tralee Farm (northern part of site only) + Air Park (expansion of existing land use only) + Hollands Farm.

Table 4.2 provides a summary of the modelling scenarios required. These cover each of the assumed model mitigation packages for the four do something development scenarios. These scenarios assume that either TF1 or TF2 are modelled, and that HF1 is only included in the modelling of DS1M1 and DS4M1.
Mitigation schemes in the modelling scenario

<table>
<thead>
<tr>
<th>Model scenario</th>
<th>TF1</th>
<th>TF2</th>
<th>TF3</th>
<th>TF4</th>
<th>HF1</th>
<th>HF2</th>
<th>HF3</th>
<th>AP1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do something 1 developments</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
</tr>
<tr>
<td>DS1M1</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>DS1M2</td>
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<td>✔️</td>
</tr>
<tr>
<td>Do something 4 developments</td>
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<td>✔️</td>
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</tr>
<tr>
<td>DS4M1</td>
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<td></td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>DS4M2</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Table 4.2: Scenarios to be considered in the do something plus mitigation modelling

4.3 Modelling results

The results from the modelling of the four do something plus mitigation scenarios are discussed on an area by area basis.

Tralee Farm area

The modelling shows (Figures 4.1 and 4.2) that the transport schemes TF1, TF2, TF3, and TF4 do result in a change in the local route choice for traffic. Traffic using the double roundabout at the Hazlemere cross roads was shown to experience delay in the do something modelling. Figures 4.1 and 4.2 show the following:

- The new section of link road between Amersham Road and Penn Road reduces the traffic flow on the section of Penn Road between the junction of the new road and the crossroads.
- The closure of the Penn Road Arm (scheme TF1) of the double roundabout at the Hazlemere cross roads simplifies the operation of the junction and therefore removes the traffic using this arm. The flow differences shown in Figure 4.1 suggest that some of the traffic that would have used Penn Road to travel via the double roundabout is now using Park Lane and Eastern Dene.
- Figure 4.2 shows that the new link road will still contribute towards a reduction in traffic using the Penn Road arm of the double roundabout even if the Penn Road arm remains open. However, the traffic reduction in TF2 is approximately 50% lower than TF1.
- Transport scheme TF3 appears to result in Eastern Dene being a more favourable route for traffic to choose, and in combination with the other schemes in this area is reducing the traffic on the Holmer Green Road arm of the double roundabout at the Hazlemere cross roads.
Figure 4.1: AM peak hour traffic flow differences between scenario DS1M1 and scenario DS1 (Mapping © OpenStreet Map Contributors)

Figure 4.2: AM peak hour traffic flow differences between scenario DS1M2 and scenario DS1 (Mapping © OpenStreet Map Contributors)
The traffic flow difference model outputs for the PM peak hour shows similar trends to the AM peak hour. The trends shown in the DS4M1 and DS4M2 scenarios are the same as those reported above, so therefore the same conclusions can be extracted. The congestion ratio plots for the DS1M1 and DS1M2 scenarios are shown in Figures 4.3 and 4.4. The outputs show the following, which is consistent with DS4M1 and DS4M2:

- There is a reduction in delay at the Hazlemere Crossroads on the Holmer Green Road arm and on Amersham Road (southbound exit).
- The junction at the northern end of the new link is causing delay, however this could be mitigated with an amendment to the design.

![Figure 4.3: AM and PM peak hour traffic flow congestion ratios for scenario DS1M1 (Mapping © OpenStreet Map Contributors)](image)

![Figure 4.4: AM and PM peak hour traffic flow congestion ratios for scenario DS1M2 (Mapping © OpenStreet Map Contributors)](image)

Overall, the modelling shows that the transport schemes TF1, TF2, TF3, and TF4 offer benefit to the network and can contribute to the facilitation of the developments considered in this assessment. Refinement of the schemes is recommended to maximise the performance, design and opportunities that could be realised.

The decision to close Penn Road will require consideration of factors beyond traffic capacity. The closure of Penn Road reduces the traffic, simplifies the operation of the junction, and yields an opportunity to create a quality urban realm transformation in the form of public space in the highway land that can be reclaimed. Potential economic impacts on local businesses should also be considered in this context.
Hollands Farm area

The Hollands Farm AM peak hour flow difference model outputs for DS1M1 and DS1M2 are shown in Figures 4.5 and 4.6. The traffic flow difference model outputs for the PM peak hour shows similar trends to the AM peak hour. The trends shown in the DS4M1 and DS4M2 scenarios are the same as those reported above, so therefore the conclusions that can be drawn are the same. Figures 4.5 and 4.6 show the following:

- The transport schemes HF1, HF2, and HF3 do result in a change to the local route choice for traffic, with the new link road allowing traffic to avoid using roads in the centre of Bourne End.
- The new link through the Hollands Farm site is shown to reduce traffic using the A4094 Cores End Road.
- Figure 4.6 shows the flow changes without the link road. In this there is an increase in traffic using the A4094 Cores End Road, which could be due to the junction schemes included in HF2 providing additional capacity that can be utilised.

The congestion ratio plots for the DS1M1 and DS1M2 scenarios are shown in Figures 4.7 and 4.8. The outputs show the following, which are consistent with DS4M1 and DS4M2:

- The introduction of the link road through the Hollands Farm site in scenarios DS1M1 and DS1M4 improves travel times on the A4094 Cores End Road and A4094 Hedsor Road.
- The absence of the link road but the inclusion of the junction schemes modelled in HF2 increase traffic volumes in this area, which results in greater journey times on the A4094 Cores End Road.

Overall the modelling suggests that providing a link road through the Hollands Farm development will benefit existing roads in the Bourne End area. It is assumed that the development would require internal access roads and therefore upgrade of this to allow it to accommodate through traffic is considered to be reasonable. This will require further discussion to develop a design rationale for the road that meets both the local and through traffic needs.

Figure 4.5: AM peak hour traffic flow differences between scenario DS1M1 and scenario DS1 (Mapping © OpenStreet Map Contributors)
Figure 4.6: AM peak hour traffic flow differences between scenario DS1M2 and scenario DS1 (Mapping © OpenStreet Map Contributors)

Figure 4.7: AM and PM peak hour traffic flow congestion ratios for scenario DS1M1 (Mapping © OpenStreet Map Contributors)
Airpark, High Heavens, Horns Lane, and Cressex Island area

The AM peak hour flow difference model outputs in this area for the DS1M1 scenario is shown in Figure 4.9 and the congestion ratios are shown in Figure 4.10. The model outputs for the PM peak hour shows similar trends to the AM peak hour. The trends shown in the DS1M2, DS4M1 and DS4M2 scenarios are also the same as those reported above, so therefore the conclusions that can be drawn are the same. Figures 4.9 and 4.10 show the following:

- Traffic volumes increase southbound on Horns Lane and eastbound on the section of Cressex Road between the junctions with Horns Lane and Holmers Lane.
- Traffic volumes reduce on Cressex Road (westbound), Clay Lane (both directions), New Road (southbound between junctions with Cressex Road and Lane End Road), and Holmers Farm Way.
- The changes in traffic volumes observed are reflected in the changes in delays reported in Figure 4.10, where improved journey times on Cressex Road, Clay Lane, New Road, and Holmers Farm Way are also observed.

Overall, the transport schemes modelled appear to have benefit for the network in this part of the Wycombe urban area. The junction upgrade at the Cressex Road/ Horns Lane junction appears to have facilitated a reassignment of traffic to Horns Lane. This reassignment can be accommodated by Horns Lane based on the capacity of this road type.
Figure 4.9: AM peak hour traffic flow differences between scenario DS1M1 and scenario DS1 (Mapping © OpenStreet Map Contributors)

Figure 4.8: AM and PM peak hour traffic flow congestion ratios for scenario DS1M1 (Mapping © OpenStreet Map Contributors)
5. **Summary and conclusions**

5.1 **Overview**

Jacobs has been appointed by Wycombe District Council (WDC) to provide transport consultancy advice with regards to the emerging Wycombe Local Plan (WLP). This report has summarised the transport modelling results.

The WLP is being developed to identify where new homes, jobs and infrastructure can be provided to meet WDC demand and government requirements. The Wycombe Town Model has been used to assess four development scenarios and inform potential transport packages for the developments. The base model was updated to consider a start year of 2033.

The findings from this study are discussed on a site by site basis below.

5.2 **Tralee Farm area**

The Tralee Farm site will increase the traffic demand to and from the Holmers Farm area, which is shown to impact on the free flow travel times in the area. Comparison of the results between do something scenario 1 and the do minimum shows that there is increased congestion at junctions local to the site, including the Hazlemere Crossroads. The outputs from the do something 2 and do something 4 scenarios show similar congestion trends and increases to those shown in the scenario 1 modelling. The results from the do something 3 scenario shows similar results to the do minimum, which is expected given the Tralee Farm site is not included in this scenario.

There is also congestion at the A404/ Totteridge Lane and A404/ Kingshill Road junctions which has been considered in more detail as part of a previous study relating to the impact of the Wycombe Reserve Sites. The conclusion of the project workshop held on 27\(^{th}\) January was that potential mitigation schemes should focus on the Hazlemere Crossroads.

The modelling of the do something plus transport packages shows that the transport schemes TF1, TF2, TF3, and TF4 offer benefit to the network and can contribute to facilitating the developments considered in this assessment. Refinement of the schemes is recommended to maximise the performance, design and opportunities that could be realised.

The decision to close Penn Road will require consideration of factors beyond traffic capacity. The closure of Penn Road reduces the traffic, simplifies the operation of the junction, and yields an opportunity to create a quality urban realm transformation in the form of public space in the highway land that can be reclaimed. Potential economic impacts on local businesses should also be considered in this context.

5.3 **Hollands Farm area**

The Hollands Farm site is located east of Bourne End. The do minimum modelling shows there is delay at the The Parade/ A4155/ Station Road, Millboard/ Cores End Road junctions, and on the A4094 (northbound) and Marlow Road (westbound). The do something modelling shows comparable congestion in the network. The results from the do something 1 modelling and it is noted that the results are comparable in the do something 2, 3 and 4 scenarios.

The do something plus transport package modelling suggests that providing a link road through the Hollands Farm development will benefit existing roads in the Bourne End area. It is assumed that the development would require internal access roads and therefore upgrade of this to allow it to accommodate through traffic is considered to be reasonable. This will require further discussion to develop a design rationale for the road that meets both the local and through traffic needs.
5.4 Airpark, High Heavens, Horns Lane, and Cressex Island area

These four sites are considered in combination because of their proximity to each other in the south western corner of the High Wycombe urban area. The Cressex Road and A4010 already experience delay and congestion and this is reflected in the do minimum scenario congestion ratios.

The modelling results from the do something 1 scenario shows that there is an increase in delay at the Rutland Avenue/ A4010, Clay Lane/ B482, and Cressex Road/ A4010 junctions. The Crest Road/ A4010 junction currently experiences delay, so the additional traffic generated by the development would exacerbate conditions here if not mitigated.

The transport schemes modelled appear to have benefit for the network in this part of the Wycombe urban area. The junction upgrade at the Cressex Road/ Horns Lane junction has allowed a reassignment of traffic to Horns Lane. This reassignment can be accommodated by Horns Lane (based on the capacity of this road type) to the benefit of the A4010 corridor.