TECHNICAL NOTE

Job Name: Reading Local Plan Transport Modelling

Job No: 332611429

Note No: LPNHMOD02

Date: 10/11/2025

Prepared By: Jamie Pound

Subject: **M4 J11 Merge Diverge Assessment**

1. Introduction

1.1. This technical note details the results of the merge/diverge assessment of the M4 J11 using the methodology as agreed with National Highways (NH) in technical note LPNHMOD01 dated 2nd September 2025.

1.2. The assessment has utilised model flows from a VISSIM microsimulation model produced by Wokingham Borough Council (WBC) to inform assessment for the WBC Local Plan. Agreement was obtained from Wokingham Borough Council (WBC) to use flows from the 2040 VISSIM model Reference Case at junction 11.

2. Methodology

2.1. LPNHMOD01 set out the methodology used for the assessment which is shown below.

"RBC propose to do the sensitivity test using 2040 flows from WBCs VISSIM model at the M4 J11 assuming WBC are happy to provide them and to use them as the basis of a merge/diverge assessment following the process set out within Design Manual for Roads and Bridges (DMRB) CD 122, Geometric Design of Grade Separated Junctions.

The 2040 VISSIM flows will be used for the Reference Case and the merge/diverge assessment made using them which should be the same as WBC will have provided in their LP modelling report.

For the LP sensitivity test the flows will come from the RTM. The LP flows in Reading can be calculated by taking the difference between the RTM LP model and the RTM Reference Case model. These will then be added to the WBC Reference Case flows and the merge/diverge assessment made.

This will show if the current merge/diverge configurations are likely to be able to cope with the increases in flow as shown by the RTM.

Utilising CD122 each of the merge and diverges will be assessed and the current layout reviewed against the outputs from the CD122 assessment, to identify whether the layouts are adequate for predicted flows.

Should the Reference Case and/or Local Plan tests demonstrate the need for changes to the layout, an assessment of the likely timeline for this will be identified and commentary provided. This will require an assessment using base year flows or current observed flows to identify the adequacy of the current layout and assuming uniform growth up to the forecast year, identify the likely year when changes may be required."

2.2. For the diverges the flows on the slips have been compared to the flows on the mainline that want to leave the motorway. This is so the assessment is robust and includes all vehicles wanting to make the movement. The comparison showed that the highest difference in flow was 82 in the AM for the Westbound diverge. The higher flows have been used in the assessment.

2.3. For the merges the flows used are free flow flows at the merge point, which are seen as the proportionate flows to be used within the assessment.

3. Results

3.1. The results of the assessment are reported below for each of the merges and diverges. These indicate the base year flows, along with 2041 Reference Case and 2041 Local Plan models. The Local flows have been extracted from the SATURN model used for the RBC Local Plan assessment and added to the Reference Case Flows, as per the methodology above.

3.2. Merge and Diverge diagrams for each of the merges and diverges are included within Appendix A.

M4 J11 Eastbound Merge

3.3. The traffic flows which have been used to assess the eastbound merge for the Existing, Reference Case and Local Plan in 2041 are shown in Table 1.

Table 1: Eastbound Merge Flows

2041 Scenarios	AM peak hour		PM peak hour	
	Upstream Mainline	Merge Lane(s)	Upstream Mainline	Merge Lane(s)
Existing	3,006	1,266	3,162	1,668
Reference Case	3,642	1,479	3,674	1,488
Local Plan	3,642	1,516	3,668	1,486

3.4. Table 2 provides the results of the assessment.

Table 2: Eastbound Merge Assessment

2041 Scenarios	Merge Layouts		Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
	AM	PM			
Existing	E (OPTION 1)		3	4	2
Reference Case	C (!)	C (!)	3	3	2
Local Plan	C (!)	C (!)	3	3	2

3.5. As shown in the tables above, the existing layout is adequate to facilitate the future flows in both the Reference Case and Local Plan scenario.

M4 J11 Westbound Merge

3.6. The traffic flows which have been used to assess the westbound merge for the Existing, Reference Case and Local Plan in 2041 are shown in Table 3.

Table 3: Westbound Merge Flows

2041 Scenarios	AM peak hour		PM peak hour	
	Upstream Mainline	Merge Lane(s)	Upstream Mainline	Merge Lane(s)
Existing	2,723	1,222	3,273	1,373
Reference Case	3,105	1,325	3,660	1,440
Local Plan	3,103	1,368	3,651	1,452

3.7. Table 4 provides the results of the assessment.

Table 4: Westbound Merge Assessment

2041 Scenarios	Merge Layouts		Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
	AM	PM			
Existing	D		3	4	1
Reference Case	D	C (!)	3	3	2
Local Plan	E	C (!)	3	3	2

3.8. As shown in the tables above, the existing layout is sufficient for all of the future scenarios.

M4 J11 Eastbound Diverge

3.9. The traffic flows which have been used to assess the eastbound diverge for the Existing, Reference Case and Local Plan in 2041 are shown in Table 5.

Table 5: Eastbound Diverge Flows

2041 Scenarios	AM peak hour		PM peak hour	
	Downstream Mainline	Diverge Lane(s)	Downstream Mainline	Diverge Lane(s)
Existing	3,006	1,335	3,162	1,393
Reference Case	3,642	1,724	3,674	1,149
Local Plan	3,642	1,729	3,668	1,159

3.10 Table 6 provides the results of the assessment.

Table 6: Eastbound Diverge Assessment

2041 Scenarios	Diverge Layouts		Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
	AM	PM			
Existing	D (OPTION 2)		4	3	2
Reference Case	B	A	3	3	2
Local Plan	B	A	3	3	2

3.11 As shown in the tables above, the existing layout is sufficient to meet the future requirements.

M4 J11 Westbound Diverge

3.12 The traffic flows which have been used to assess the westbound diverge for the Existing, Reference Case and Local Plan in 2041 are shown in Table 7.

Table 7: Westbound Diverge Flows

2041 Scenarios	AM peak hour		PM peak hour	
	Downstream Mainline	Diverge Lane(s)	Downstream Mainline	Diverge Lane(s)
Existing	2,723	1,716	3,273	1,661
Reference Case	3,105	2,033	3,660	1,804
Local Plan	3,103	2,025	3,651	1,868

3.13Table 8 provides the results of the assessment.

Table 8: Westbound Diverge Assessment

2041 Scenarios	Diverge Layouts		Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
	AM	PM			
Existing	D (OPTION 2)		4	3	2
Reference Case	D	D	4	3	2
Local Plan	D	D	4	3	2

3.14As shown in the tables above, the existing layout is sufficient to meet the future requirements.

4 Conclusion

4.1 The assessment for each of the merges and diverges at the junction show the current layouts are sufficient to accommodate the assumed forecast flows.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
LPNHMOD02		29-10-25	JP	PG	PG	PG
LPNHMOD02	V2	08-12-25	JP	PG	PG	PG
LPNHMOD02	V3	07-01-26	JP			

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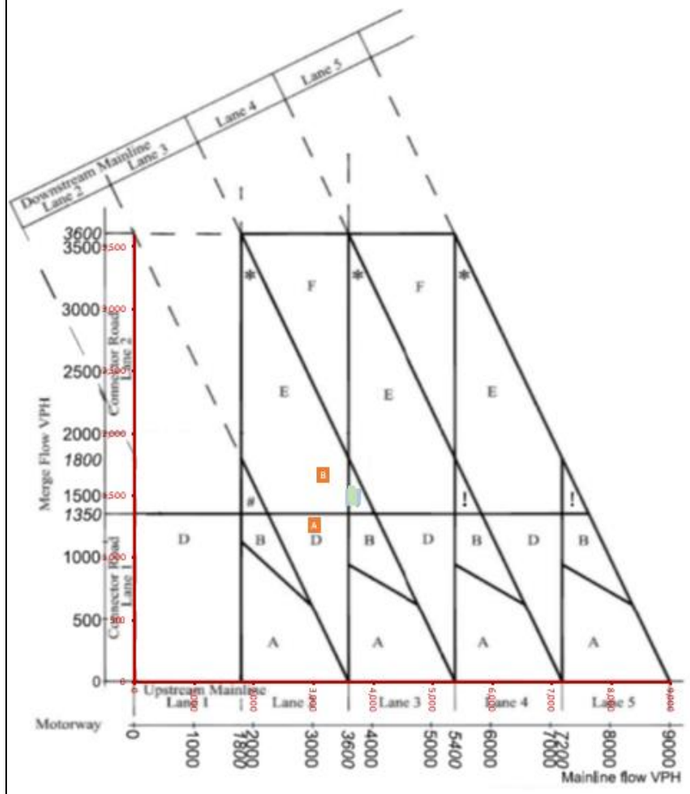
Appendix A – Merge and Diverge Diagrams

Eastbound Merge



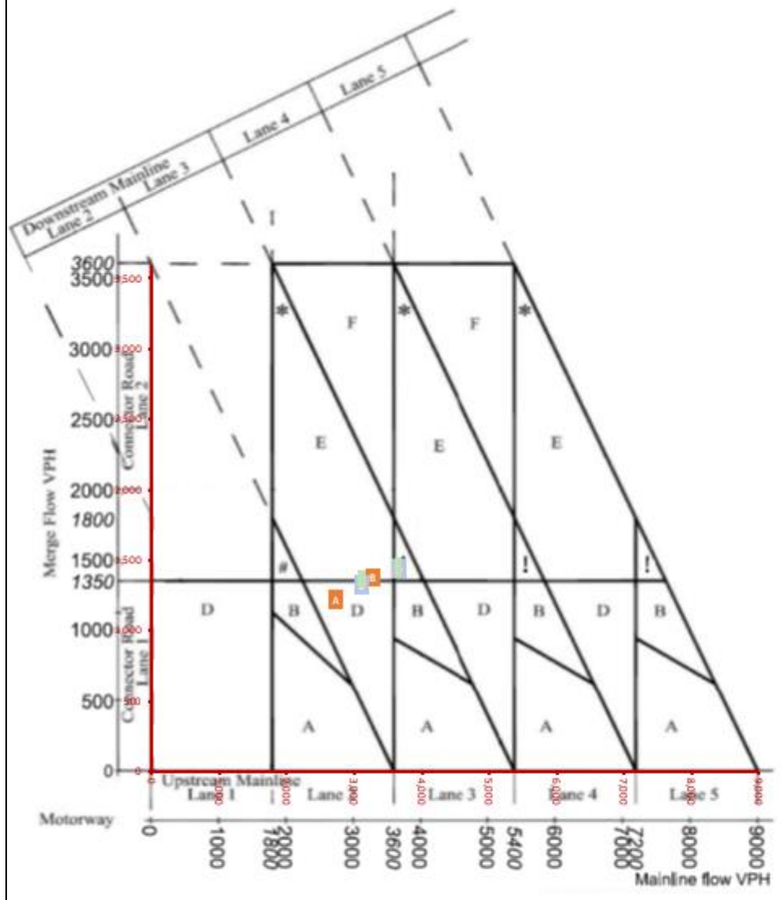
CD122 - Figure 3.12b Motorway merging diagram

Scenario		Upstream Mainline	Merge Flow
A	AM Baseline	3,006	1,266
B	PM Baseline	3,162	1,668
C	AM Baseline + Development	3,642	1,479
D	PM Baseline + Development	3,674	1,488
E	AM Local Plan	3,642	1,516
F	PM Local Plan	3,668	1,486
G			
H			
I			
J			

Output Summary

Scenario	Merge Layouts AM	Merge Layouts PM	Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
Current Layout	E	E	3	4	2
Reference Case	C (!)	C (!)	3	3	2
Local Plan	C (!)	C (!)	3	3	2

Westbound Merge



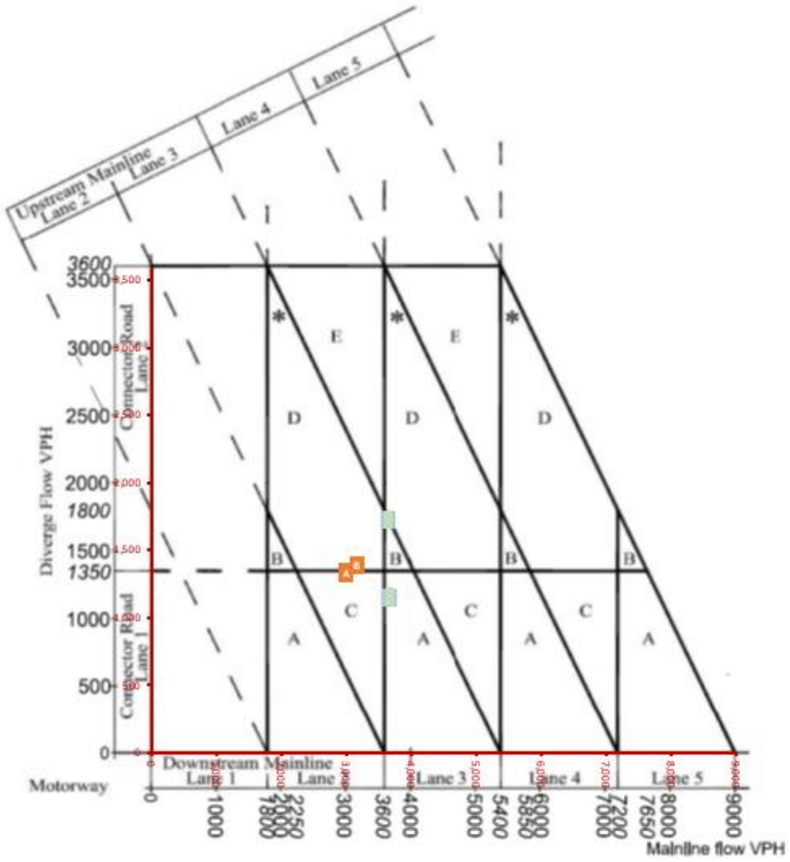
CD122 - Figure 3.12b Motorway merging diagram

Scenario		Upstream Mainline	Merge Flow
A	AM Baseline	2,723	1,222
B	PM Baseline	3,273	1,373
C	AM Baseline + Development	3,105	1,325
D	PM Baseline + Development	3,660	1,440
E	AM Local Plan	3,103	1,368
F	PM Local Plan	3,651	1,452
G			
H			
I			
J			

Output Summary

Scenario	Merge Layouts AM	Merge Layouts PM	Upstream Mainline Lanes	Downstream Mainline Lanes	nnector Road La
Current Layout	D	D	3	4	1
Reference Case	D	C (!)	3	3	2
Local Plan	E	C (!)	3	3	2

Eastbound Diverge



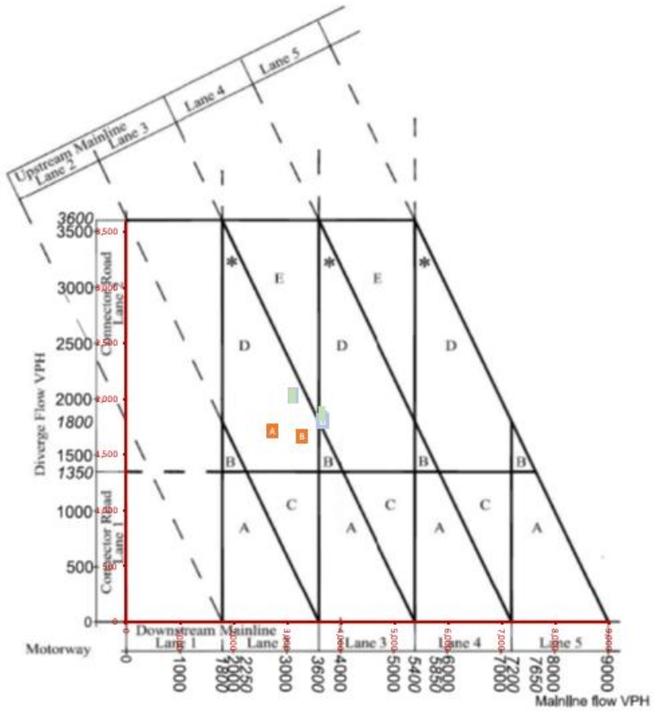
CD122 - Figure 3.26b Motorway diverging diagram

Scenario		Downstream Mainline	Diverge Flow
A	AM Baseline	3,006	1,335
B	PM Baseline	3,162	1,393
C	AM Baseline + Development	3,642	1,724
D	PM Baseline + Development	3,674	1,149
E	AM Local Plan	3,642	1,729
F	PM Local Plan	3,668	1,159
G			
H			
I			
J			

Output Summary

Scenario	Diverge Layouts		Upstream Mainline Lanes	Downstream Mainline Lanes	Connector Road Lanes
	AM	PM			
Current Layout	D	D	4	3	2
Reference Case	B	A	3	3	2
Local Plan	B	A	3	3	2

Westbound Diverge



CD122 - Figure 3.26b Motorway diverging diagram

Scenario		Downstream Mainline	Diverge Flow
A	AM Baseline	2,723	1,716
B	PM Baseline	3,273	1,661
C	AM Baseline + Development	3,105	2,033
D	PM Baseline + Development	3,660	1,804
E	AM Local Plan	3,103	2,025
F	PM Local Plan	3,651	1,868
G			
H			
I			
J			

Output Summary

Scenario	Diverge Layouts AM	Diverge Layouts PM	Upstream Mainline Lanes	Downstream Mainline Lanes	nnector Road La
Current Layout	D	D	4	3	2
Reference Case	D	D	4	3	2
Local Plan	D	D	4	3	2