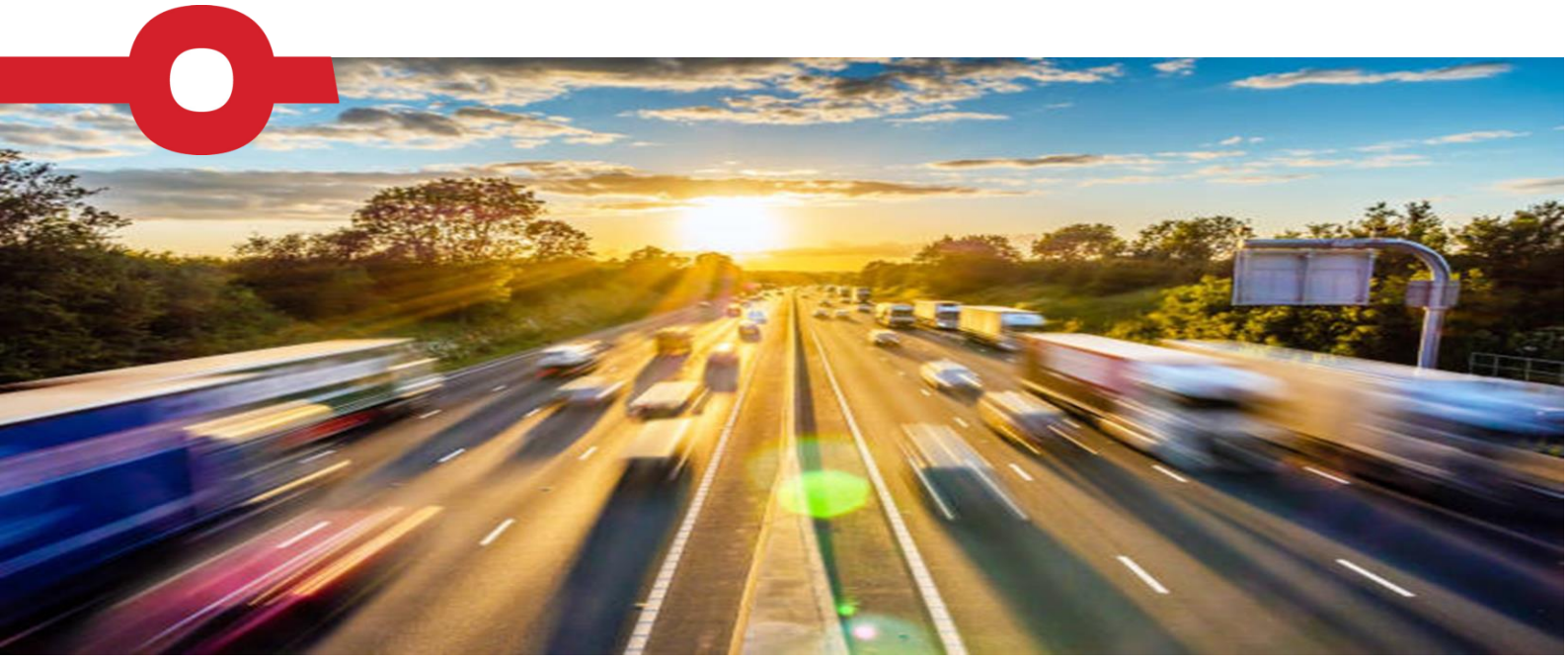
Mid Sussex District Plan **20/09/2024**

Reference number GB01T24C55/RPT/02

MID SUSSEX M23 AND A23 MERGE DIVERGE ASSESSMENT



MID SUSSEX DISTRICT COUNCIL

SYSTRA

MID SUSSEX DISTRICT PLAN

MID SUSSEX M23 AND A23 MERGE DIVERGE ASSESSMENT

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1. INTRODUCTION

1.1 Introduction and Overview

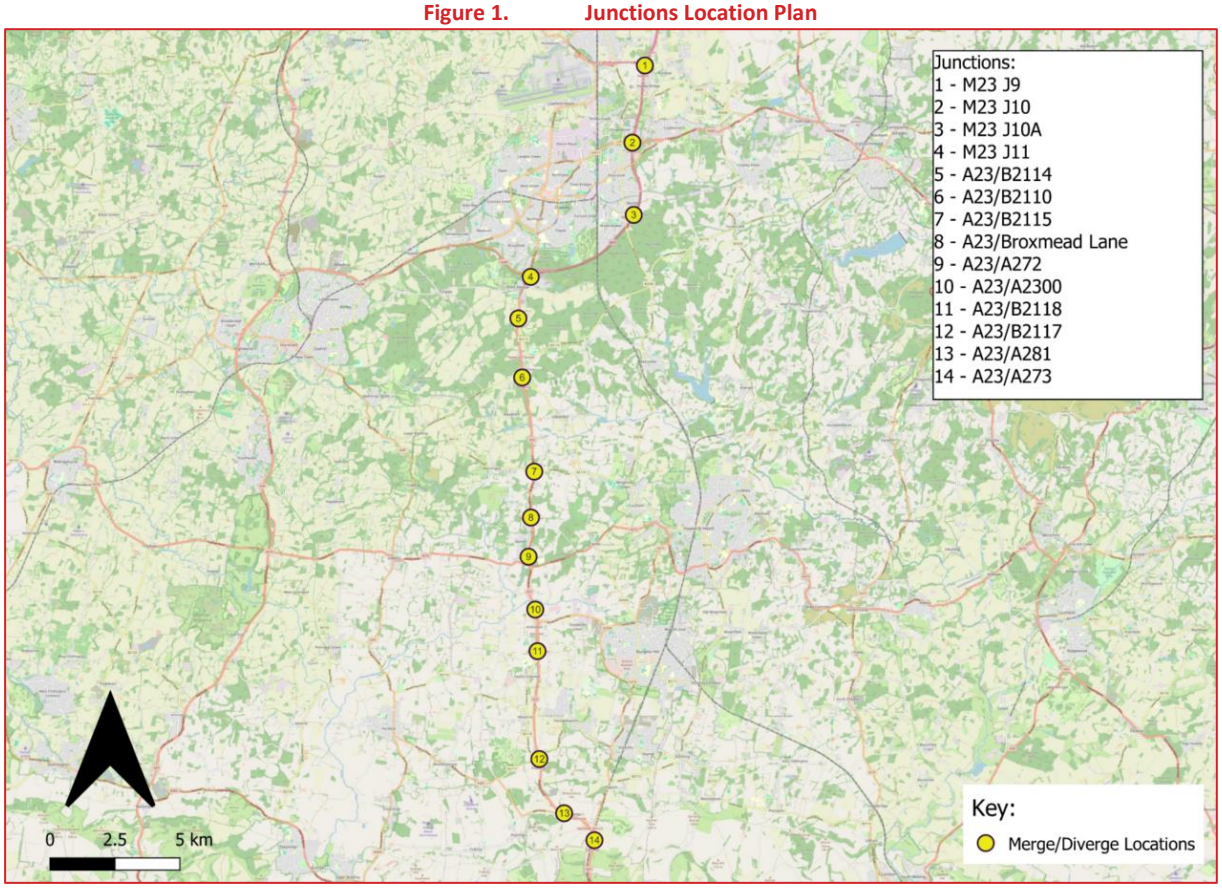
1.1.1 SYSTRA have been commissioned by Mid-Sussex District Council (MSDC) to develop the transport evidence base to support the development of the Mid Sussex District Plan. This report details the outcomes of the merge and diverge assessment exercise which has been undertaken to assess the impact of the targeted growth in the District Plan on the Strategic Road Network. The assessments identify how the traffic growth forecasts impact the merge/ diverge and mainline layout type requirements in accordance with Design Manual for Roads and Bridges (DMRB) CD 122 Geometric design of grade separated junctions.

1.1.2 The main strategic route through Mid Sussex is the A23 which leads into the M23 to the north outside of the district boundary. Following consultation and agreement of the scope with National Highways, the following 14 junctions have been taken forward for merge diverge assessment:

1. M23 J9
2. M23 J10
3. M23 J10A
4. M23 J11
5. A23 B2114
6. A23 B2110
7. A23 B2115
8. A23 Broxmead Lane
9. A23 A272
10. A23 A2300
11. A23 B2118
12. A23 B2117
13. A23 A281
14. A23 A273

1.1.3 The location of these junctions can be seen below in **Figure 1**.

Figure 1. Junctions Location Plan



1.2 Methodology

1.2.1 The merge diverge assessment has considered the following aspects:

- **Existing Conditions –** current layout type, number of mainline lanes upstream/ downstream.
- **Traffic Flow Scenarios –** Including the number of vehicles forecast on the mainline and merge/diverges for the 2019 Baseline, 2039 Reference Case and 2039 6m2 District Plan scenario, as well as the difference to identify traffic flow uplift (or slight reduction in certain instances).
- **Merge/ Diverge Diagrams –** demonstrating the layout types required for the three scenarios assessed.
- Commentary on the **layout trigger upgrades**.
- Assessment of **feasibility of upgrade** where relevant.

1.2.2 The 14 junctions identified for the merge diverge assessment have been reviewed for the 2019 Base scenario, 2039 Reference Case (also referred to ref case) and 2039 District Plan scenario (also referred to as 6m2).

1.2.3 General arrangement drawings for the proposed mitigation schemes to form part of the Mid Sussex District Plan mitigation package are included within each relevant junction location in Chapter 2 and included at full scale in **Appendix A**.

1.2.4 The assessment reviewed each junction using baseline and forecast traffic flow volumes (actual flows in vehicles)s to map onto DMRB CD 122 (Geometric design of grade separated junctions) figures 3.12a; 3.12b; 3.26a; 3.26b.

1.2.5 These graphs look at the mainline traffic flow against the diverge / merge traffic flow to advise the most appropriate slip road merge or diverge arrangement. When plotting these graphs, the existing layout was noted to compare against to highlight if the current layout type is within standard for the 2019 baseline traffic flow. This exercise was then undertaken for both 2039 Reference Case and 2039 Scenario 6m2.

1.2.6 The full analysis and associated merge/diverge assessment graphs are included for reference at **Appendix B**.

1.2.7 It is noted that the reference case includes committed development and highway infrastructure as well as background growth to 2039, acting as a baseline when assessing the impacts of development scenarios. The 2039 6m2 District Plan scenario includes the growth factored in the reference case as well as the trips generated from the developments proposed within the forthcoming District Plan.

1.2.8 The merge & diverge assessments identify if there is any potential requirement change for the type of slip road merge / diverge for each scenario. For each location potentially requiring a layout type change it is identified whether this is a result of uplift between the Reference Case and the 6m2 District Plan Scenario or whether the upgrade is already required in the Baseline or Reference Case. It has also been identified whether the potentially required change is associated with a merge / diverge type change or a change in the number of mainline lanes.

1.2.9 In order to further support the decision making for proposing mitigation measures, the absolute flow increases for each scenario have been evaluated to identify any significant increases as well as consideration of the proximity of each junction to the significant developments proposed in the District Plan.

1.2.10 This has resulted in a small number junctions and slip roads being identified which require potential upgrades from a result of change from Reference Case to Scenario 6m2 as a priority. These junctions were evaluated through design feasibility checks for available highway boundary space and limitations such as existing structures to assess if the required upgrades are feasible. Wherever possible, appropriate physical mitigation proposals have been developed which reflect the outcomes of the merge/diverge assessments; where hard constraints exist, alternative potential measures have been put forward which seek to minimize the effects of the additional District Plan traffic. Additional locations, following scoping with National Highways, have been assessed within Chapters 3 and 4. These locations focus on junctions where, even if the layout type upgrade is not triggered between the Reference Case to Scenario 6m2, National Highways have expressed the view that the traffic flow growth and/ or substandard existing conditions meant that a further safety check was necessary.

2. MERGE DIVERGE ASSESSMENTS

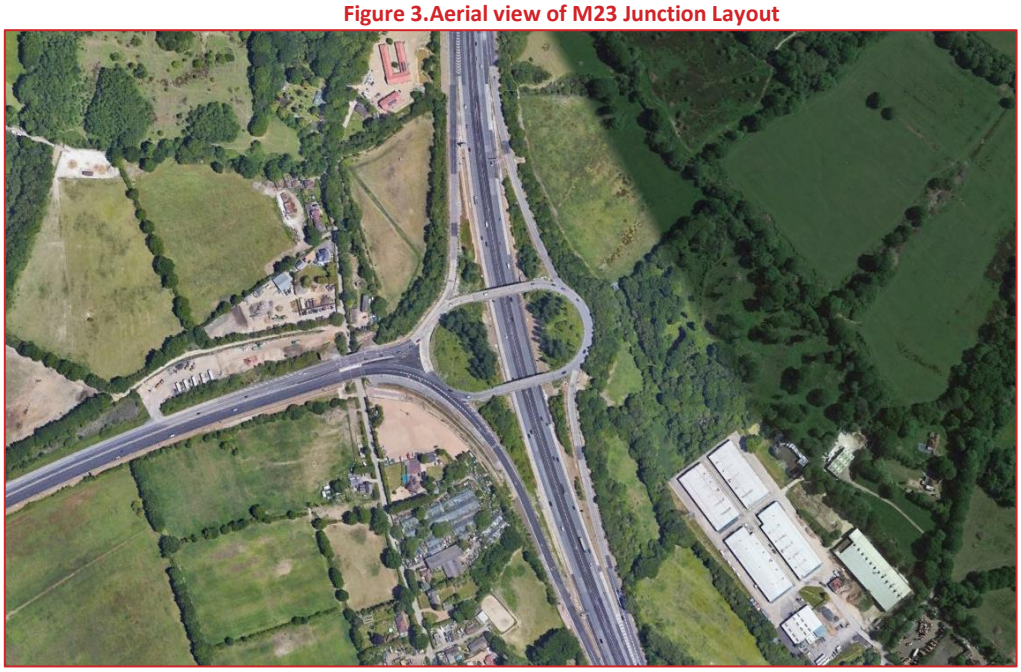
2.1 M23 Junction 9

2.1.1 Junction 9 on the M23 includes four slip roads: the northbound on slip, the northbound off slip, the southbound on slip and the southbound off slip.

2.1.2 The M23 mainline at this junction has four lanes upstream and downstream in both directions, three lanes on the intermain with lane drops and gains on all arms. The location of the M23 Junction 9 is shown below in **Figure 2**, with the aerial view shown in **Figure 3**.

Figure 2. Location of M23 Junction 9

Figure 3.Aerial view of M23 Junction Layout



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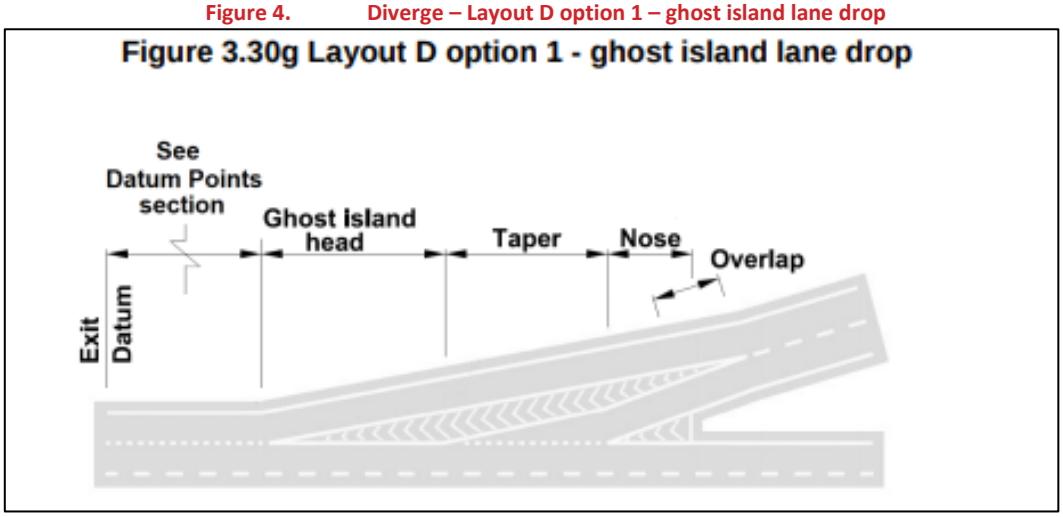
Northbound Off Slip Diverge

2.1.3 The existing layout of the northbound off slip is Layout D Option 1. This arrangement can be seen in **Figure 4** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 4. Diverge – Layout D option 1 – ghost island lane drop



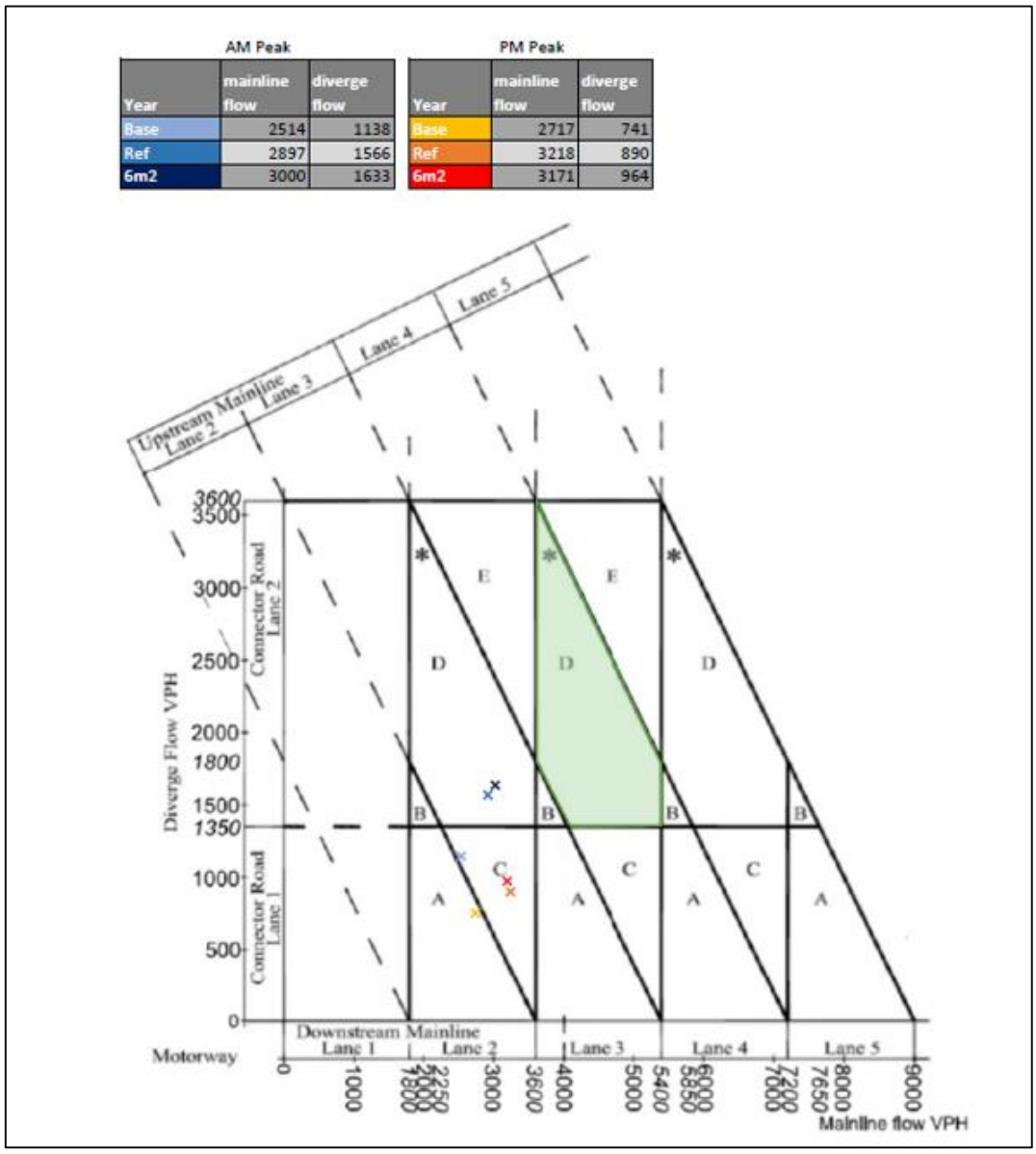
2.1.4 **Table 1** displays the actual flow data (vehicles) for the northbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 1. M23 Junction 9 Northbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2514	2717	2897	3218	3000	3171	103	-47
Slip Road	1138	741	1566	890	1633	964	67	74

2.1.5 **Figure 5**2.10 show the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

Figure 5. M23 Junction 9 Northbound Diverge Diagram



2019 Baseline:

2.1.6 Both the AM and PM 2019 Baseline flows indicate a Type D layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.1.7 The Reference Case traffic flows indicate a Type D diverge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

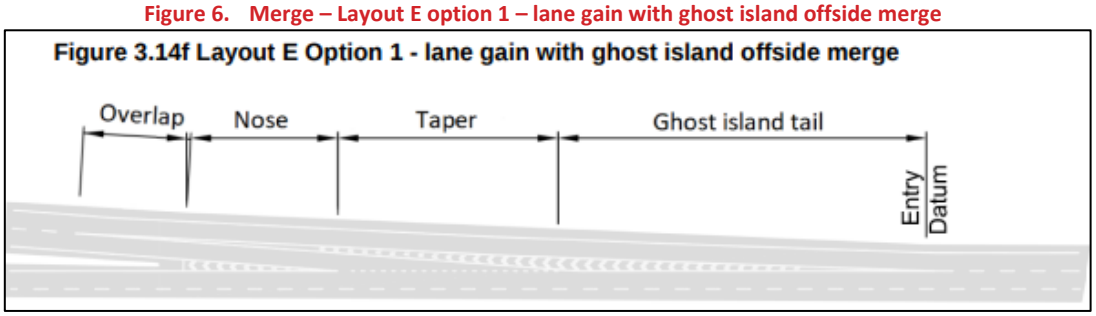
Scenario 6m2

2.1.8 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type D layout will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

Northbound On Slip Merge

2.1.9 The existing layout of the northbound on slip is Layout E Option 1 This arrangement can be seen in **Figure 6** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 6. Merge – Layout E option 1 – lane gain with ghost island offside merge



2.1.10 **Table 2** displays the actual flow data (vehicles) for the northbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 2. M23 Junction 9 Northbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2514	2717	2897	3218	3000	3171	103	-47
Slip Road	1252	1586	1399	1369	1319	1324	-80	-45

2.1.11 **Figure 7** shows the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

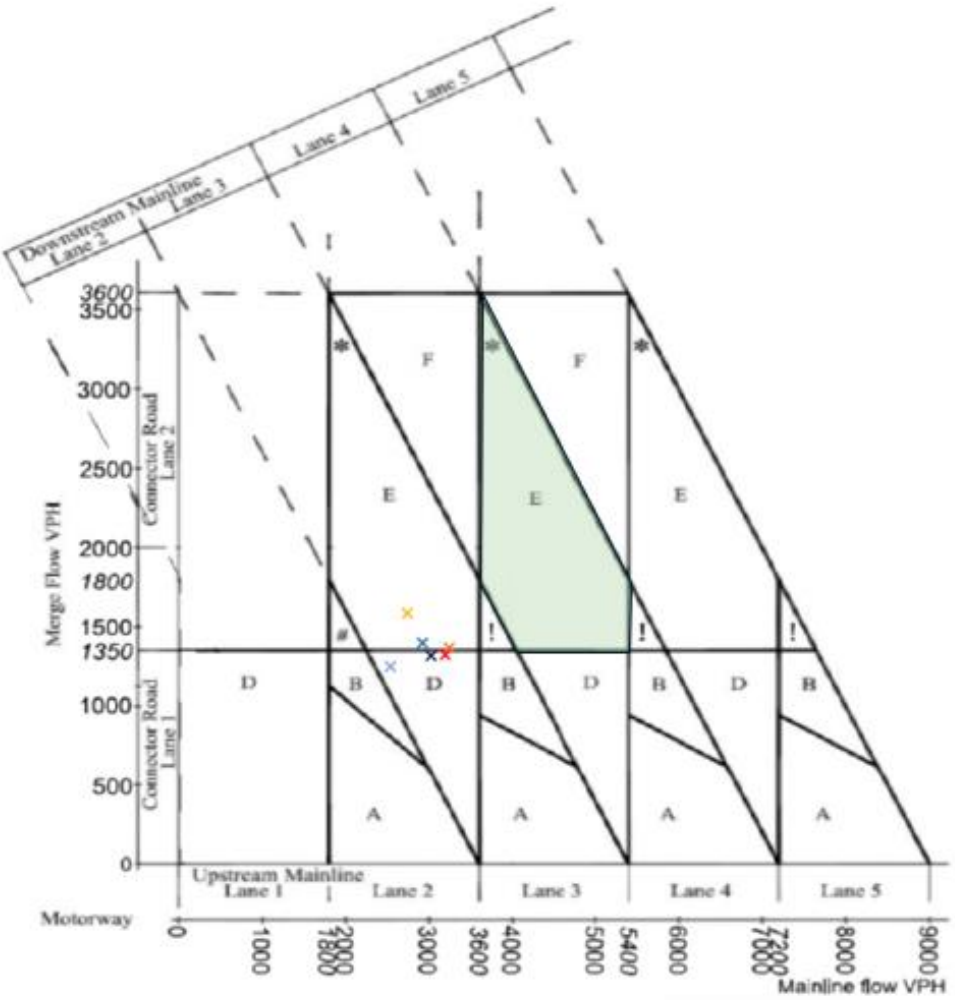
Figure 7. M23 Northbound On Slip Merge Diagram

AM Peak

Year	mainline flow	merge flow
Base	2514	1252
Ref	2897	1399
6m2	3000	1319

PM Peak

Year	mainline flow	merge flow
Base	2717	1586
Ref	3218	1369
6m2	3171	1324



2019 Baseline:

2.1.12 Both the AM and PM 2019 Baseline flows indicate a Type E layout merge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.1.13 The Reference Case traffic flows indicate a Type E merge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

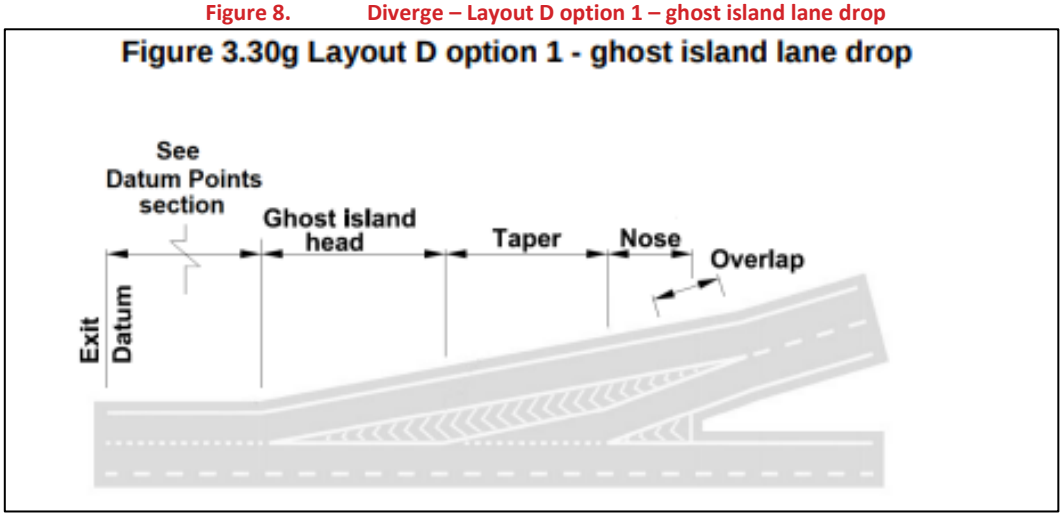
Scenario 6m2

2.1.14 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type E layout will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

Southbound Off Slip Diverge

2.1.15 The existing layout of the southbound off slip is Layout D Option 1. This arrangement can be seen in **Figure 8** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 8. Diverge – Layout D option 1 – ghost island lane drop



2.1.16 **Table 3** displays the actual flow data (vehicles) for the southbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 3. M23 Junction 9 Southbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3032	3147	3803	3472	3697	3431	-106	-41
Slip Road	1497	1179	1369	1712	1298	1674	-71	-38

2.1.17 **Figure 9** show the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

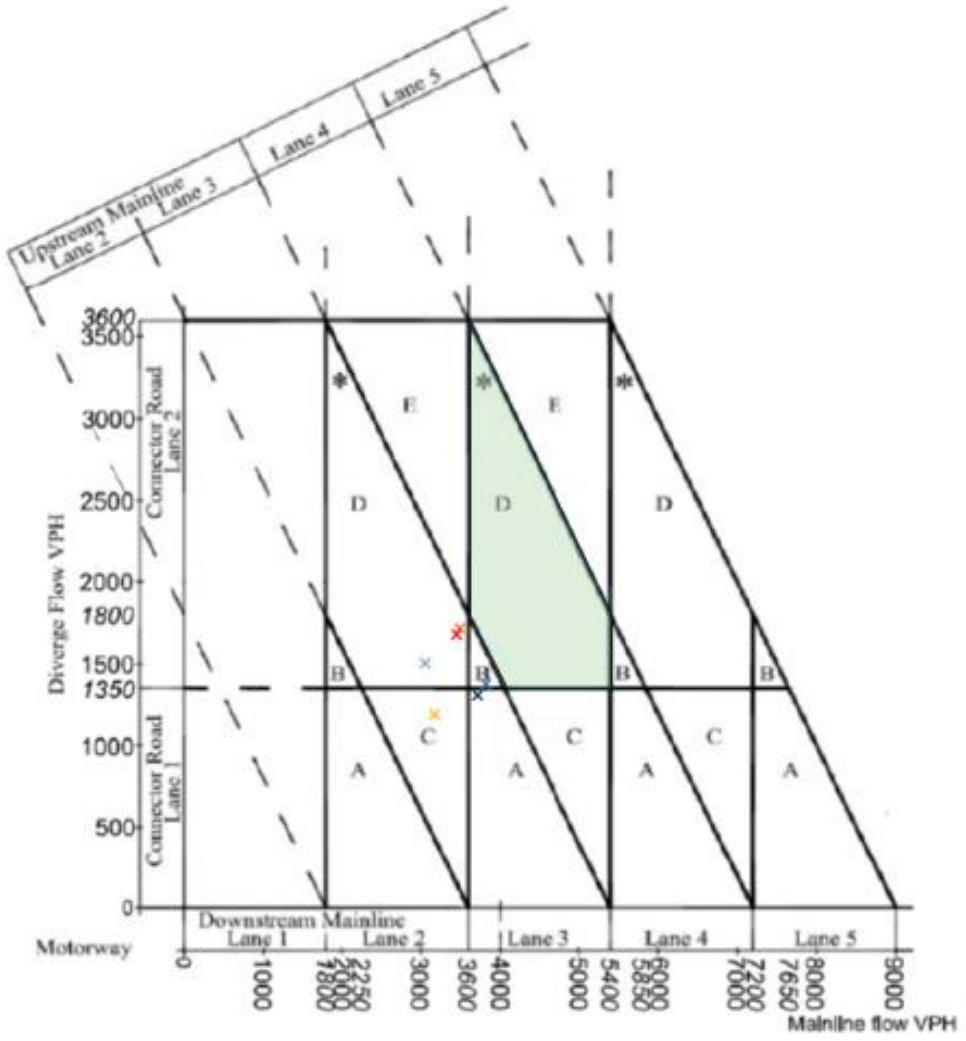
Figure 9. Southbound Off Slip Diverge Diagram

AM Peak

Year	mainline flow	diverge flow
Base	3032	1497
Ref	3803	1369
6m2	3697	1298

PM Peak

Year	mainline flow	diverge flow
Base	3147	1179
Ref	3472	1712
6m2	3431	1674



2019 Baseline:

2.1.18 Both the AM and PM 2019 Baseline flows indicate a Type D layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.1.19 The Reference Case traffic flows indicate a Type D diverge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

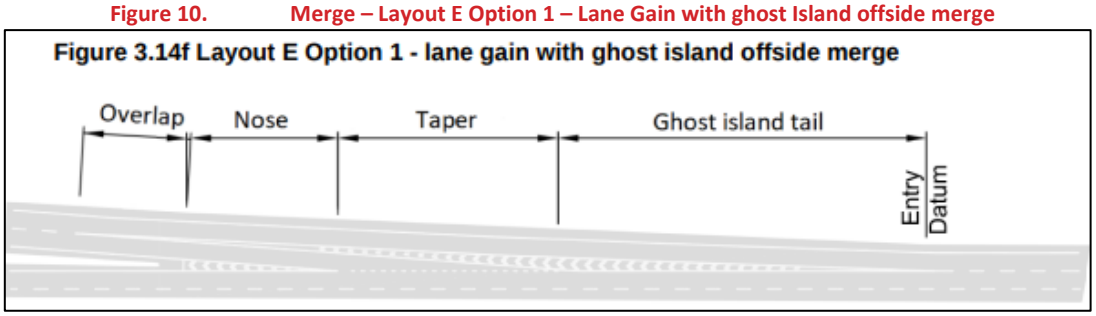
Scenario 6m2

2.1.20 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type D layout will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

Southbound On Slip Merge

2.1.21 The existing layout of the southbound on slip is Layout E Option 1. This arrangement can be seen in **Figure 10** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 10. Merge – Layout E Option 1 – Lane Gain with ghost Island offside merge



2.1.22 **Table 4** displays the actual flow data (vehicles) for the southbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 4. M23 Junction 9 Southbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3032	3147	3803	3472	3697	3431	-106	-41
Slip Road	663	1085	907	1551	961	1570	54	19

2.1.23 **Figure 11** show the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

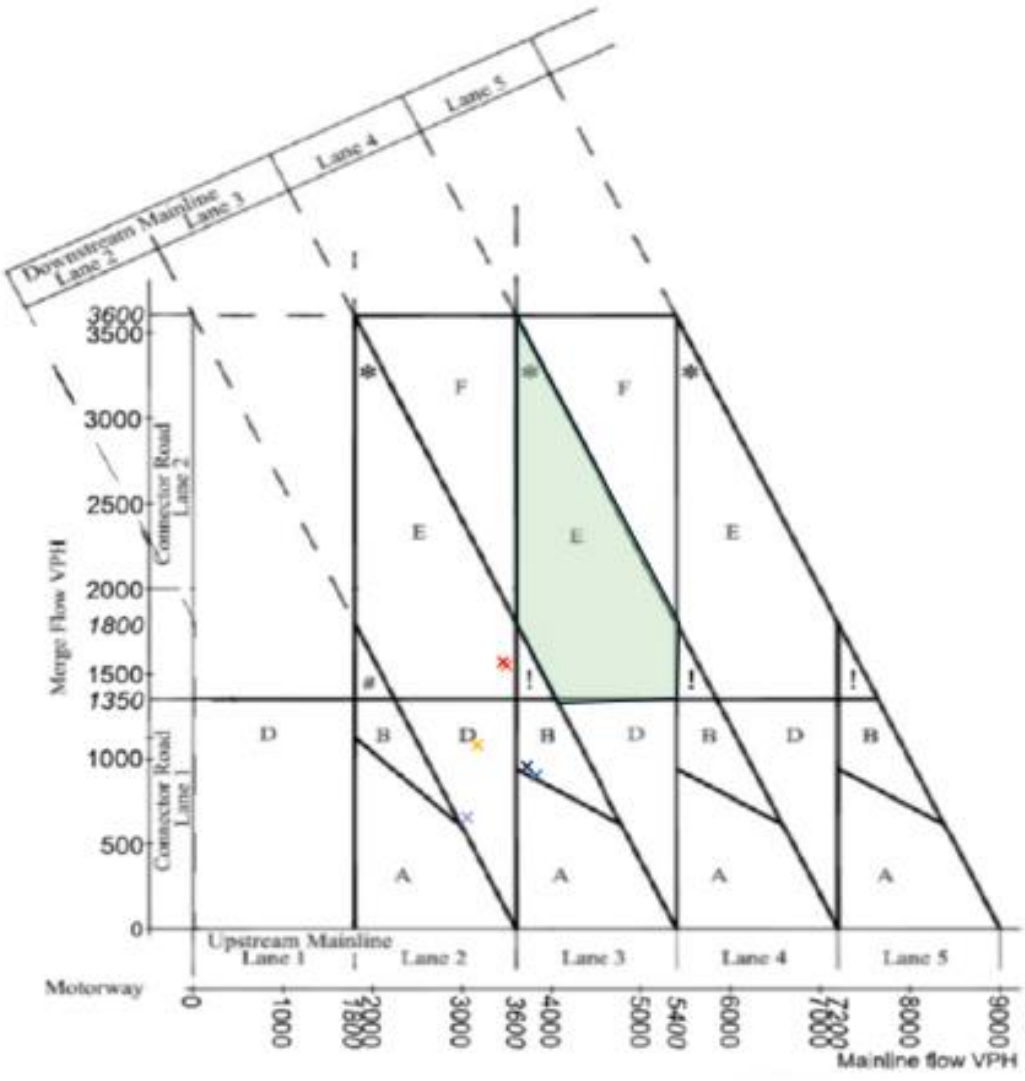
Figure 11. Southbound On Slip Merge Diagram

AM Peak

Year	mainline flow	merge flow
Base	3032	663
Ref	3803	907
6m2	3697	961

PM Peak

Year	mainline flow	merge flow
Base	3147	1085
Ref	3472	1551
6m2	3431	1570



2019 Baseline

2.1.24 Both the AM and PM 2019 Baseline flows indicate a Type E layout merge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.1.25 The Reference Case traffic flows indicate a Type E merge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

Scenario 6m2

2.1.26 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type E layout will continue to be the appropriate layout for the merge in this scenario for both AM and PM peaks.

2.2 M23 Junction 10

2.2.1 Junction 10 on the M23 includes four slip roads: the northbound on slip, the northbound off slip, the southbound on slip and the southbound off slip.

2.2.2 The M23 mainline at this junction in the northbound direction has three lanes upstream (south of junction) and 4 lanes downstream (north of junction). In the southbound direction, there is 4 lanes upstream (north of junction) and 3 lanes downstream (south of junction) The location of the M23 Junction 10 is shown below in **Figure 12** with the aerial view shown in **Figure 13.**

Figure 12. Location And M23 Junction 10

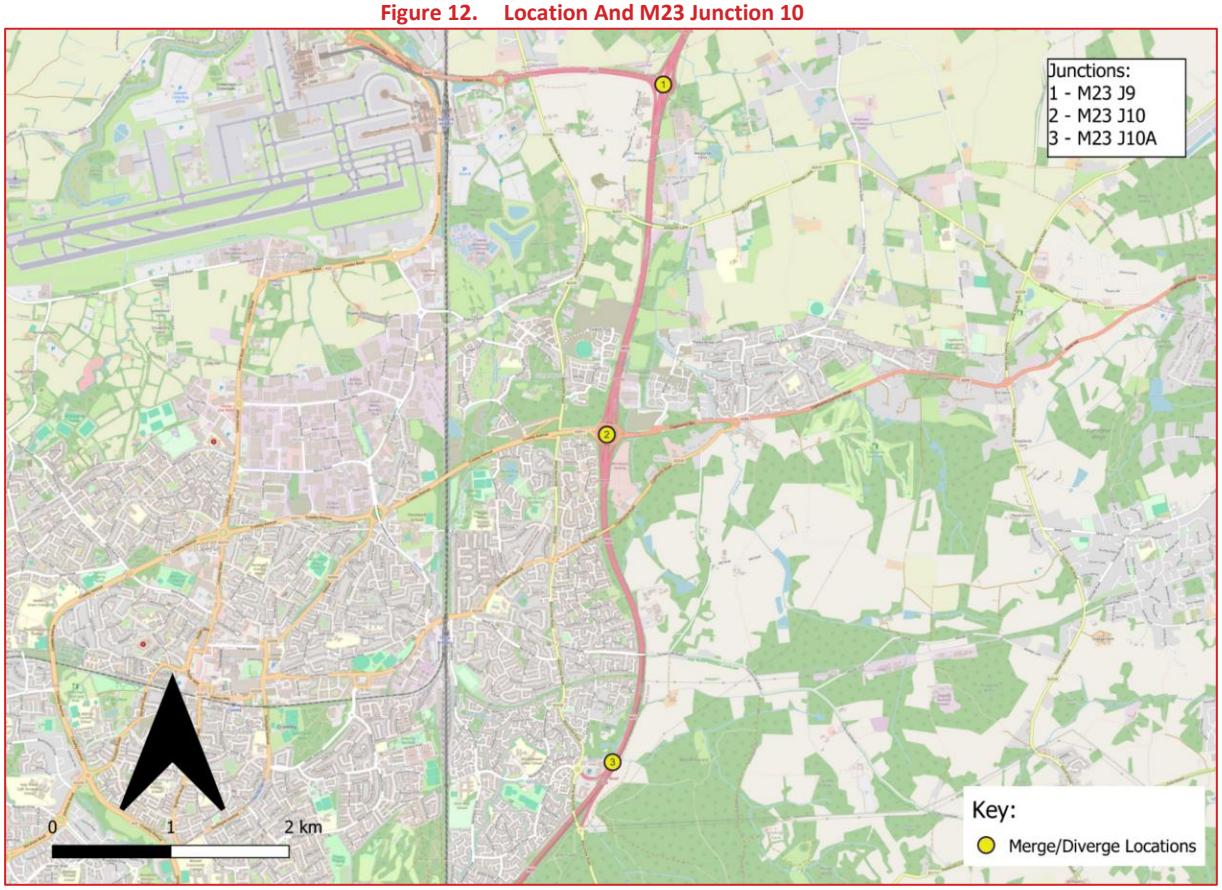
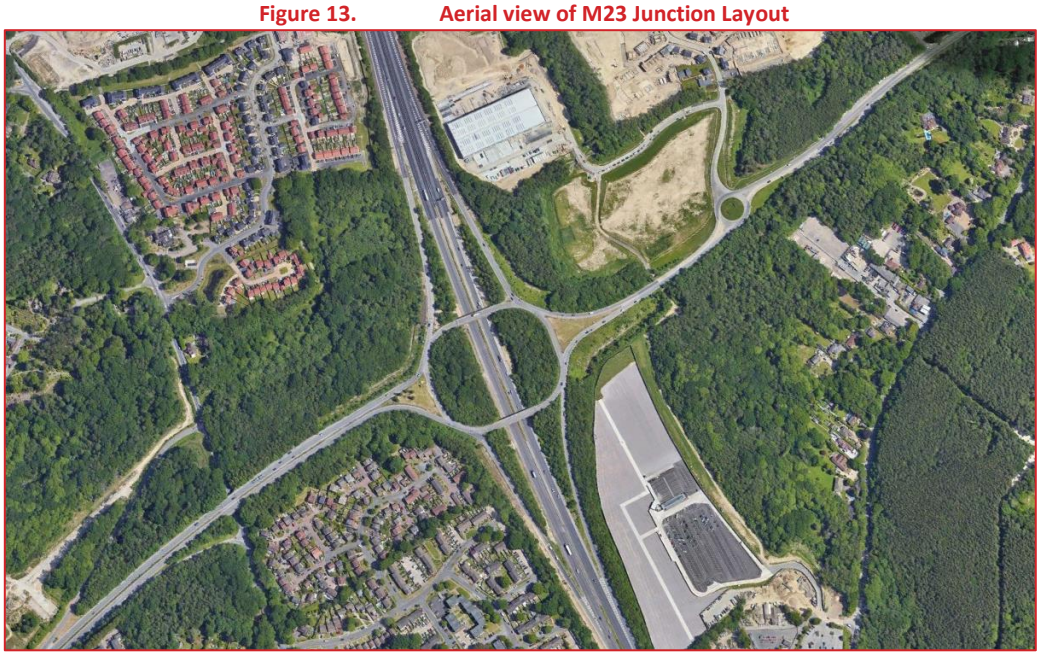


Figure 13. Aerial view of M23 Junction Layout



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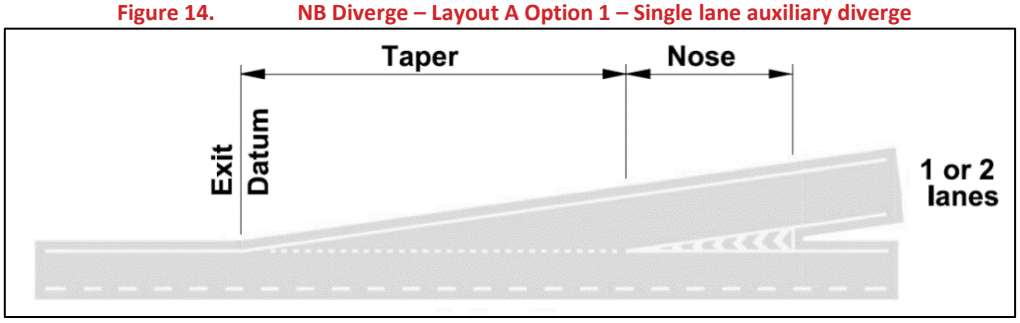
Northbound Off Slip Diverge

2.2.3 The northbound off slip diverge is Layout A option 1 and this arrangement is shown in **Figure 14** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 14. NB Diverge – Layout A Option 1 – Single lane auxiliary diverge



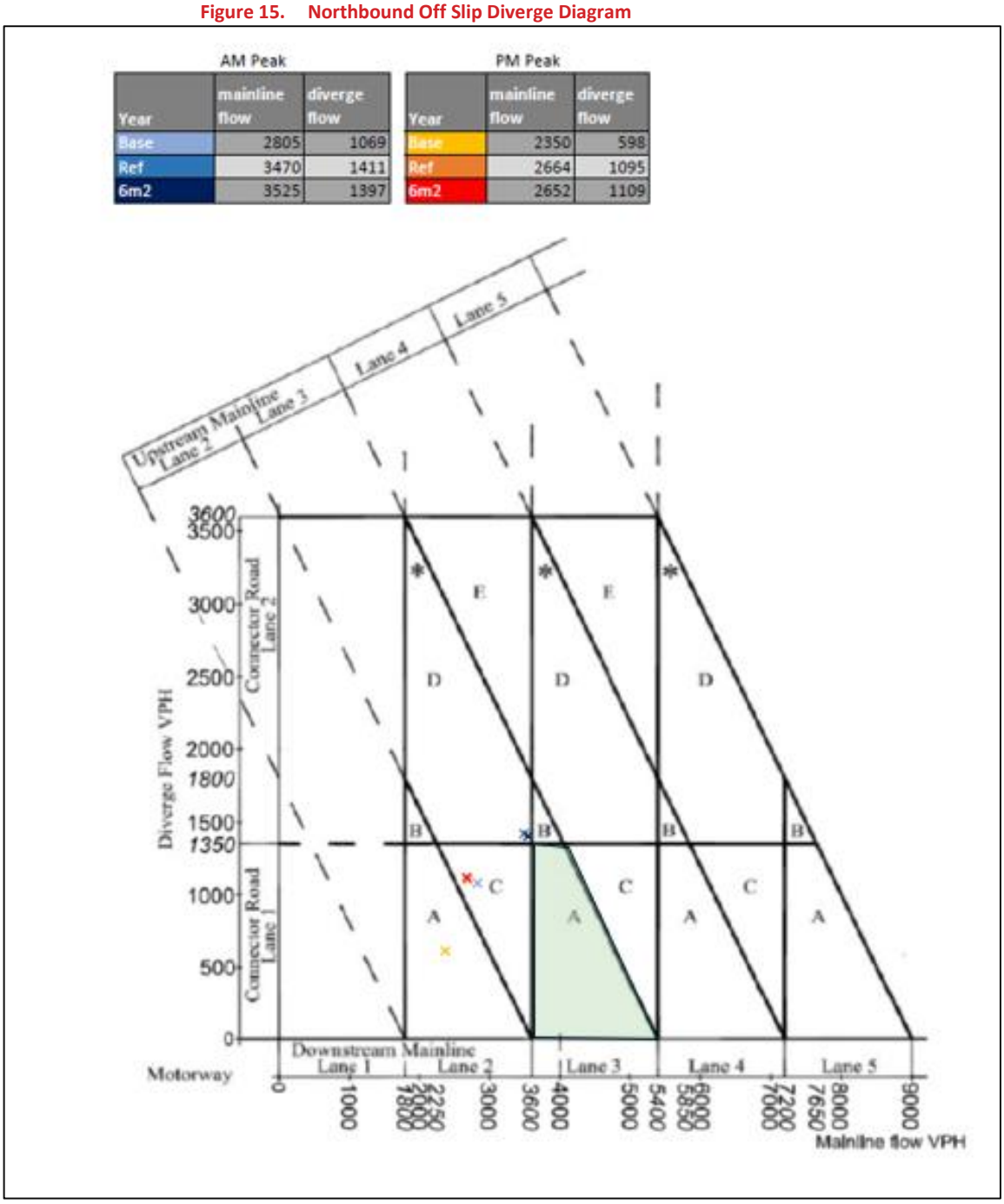
2.2.4 **Table 5** displays the actual flow data (vehicles) for the northbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 5. M23 Junction 10 Northbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2805	2350	3470	2664	3525	2652	55	-12
Slip Road	1069	598	1411	1095	1397	1109	-14	14

2.2.5 **Figure 15** shows the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

Figure 15. Northbound Off Slip Diverge Diagram



2019 Baseline

2.2.6 Both the AM and PM 2019 Baseline flows indicate a Type A layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.2.7 The PM Reference Case flows show that the existing layout is adequate, but the AM flows indicate that the layout A diverge does not have adequate capacity. A layout D is therefore

required, which comprises a ghost island lane drop or an auxiliary lane drop as shown in **Figure 16** and **Figure 17**.

Figure 16. Diverge – Layout B Option 1 – Ghost Island Diverge

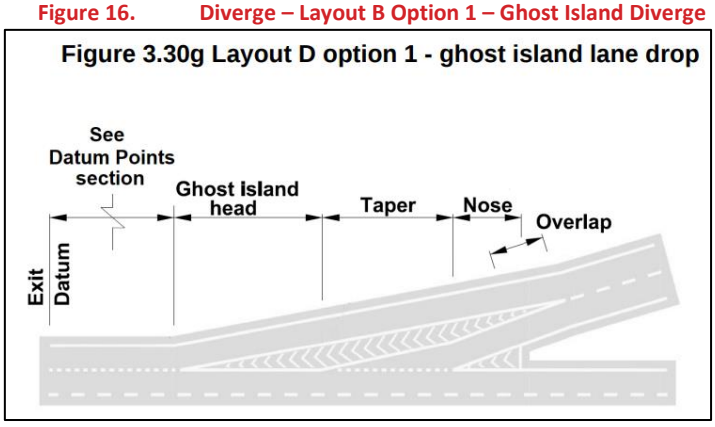
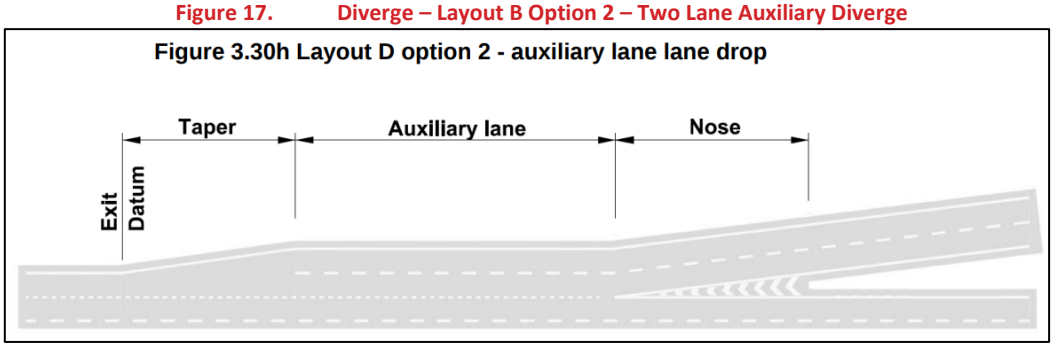


Figure 17. Diverge – Layout B Option 2 – Two Lane Auxiliary Diverge



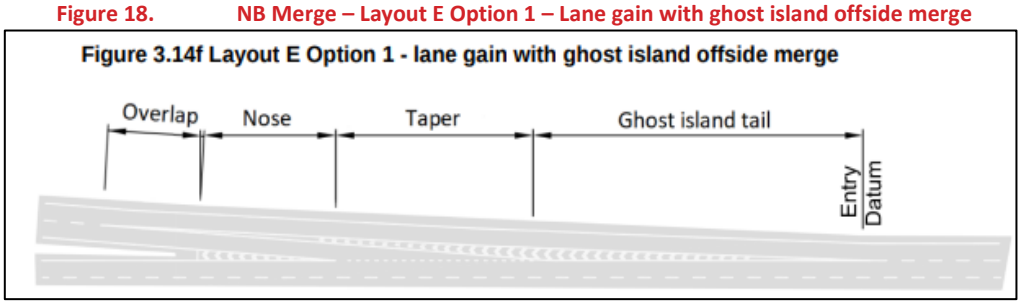
Scenario 6m2

2.2.8 As per the reference case, the PM traffic levels can still be accommodated by the existing layout, but the AM flows continue to require an upgrade to a layout D lane drop arrangement. Whilst an upgrade to layout D is required, this requirement is not attributable to additional District Plan traffic. As the requirement for both Reference Case and Scenario 6M2 are the same within the diverge layout type and consistent mainline lanes required.

Northbound On Slip Merge

2.2.9 The northbound on slip is a Layout E Option 1. This arrangement can be seen in **Figure 18** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 18. NB Merge – Layout E Option 1 – Lane gain with ghost island offside merge



2.2.10 **Table 6** displays the actual flow data (vehicles) for the northbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 6. M23 Junction 10 Northbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2805	2350	3470	2664	3525	2652	55	-12
Slip Road	846	1107	993	1443	1107	1482	114	39

2.2.11 **Figure 19** show the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

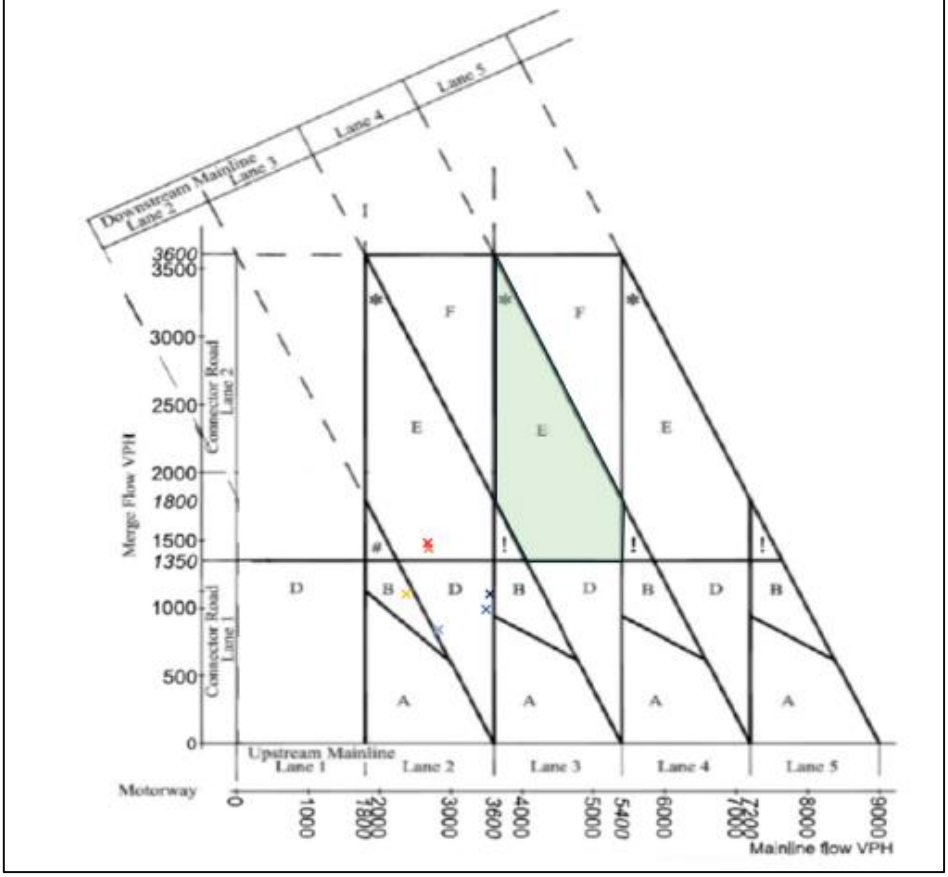
Figure 19. Northbound On Slip Merge Diagram

AM Peak

Year	mainline flow	merge flow
Base	2805	846
Ref	3470	993
6m2	3525	1107

PM Peak

Year	mainline flow	merge flow
Base	2350	1107
Ref	2664	1443
6m2	2652	1482



2019 Baseline

2.2.12 Both the AM and PM 2019 Baseline flows indicate a Type E layout merge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.2.13 The Reference Case traffic flows indicate a Type E merge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and merge.

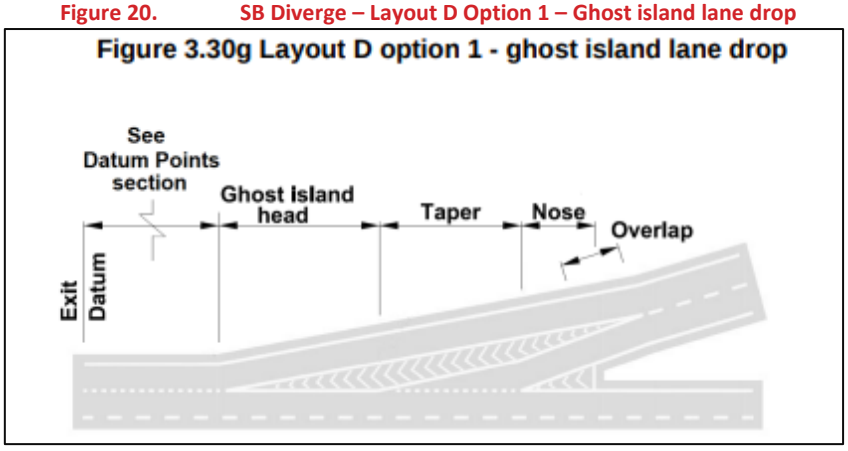
Scenario 6m2

2.2.14 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type E layout will continue to be the appropriate layout for the merge in this scenario for both AM and PM peaks.

Southbound Off Slip Diverge

2.2.15 The southbound off slip is Layout D option 1 and this arrangement can be seen in **Figure 20** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 20. SB Diverge – Layout D Option 1 – Ghost island lane drop



2.2.16 **Table 7** displays the actual flow data (vehicles) for the southbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 7. M23 Junction 10 Southbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2268	3162	2952	3765	2905	3704	-47	-61
Slip Road	1427	1070	1758	1258	1753	1298	-5	40

2.2.17 **Figure 21** show the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

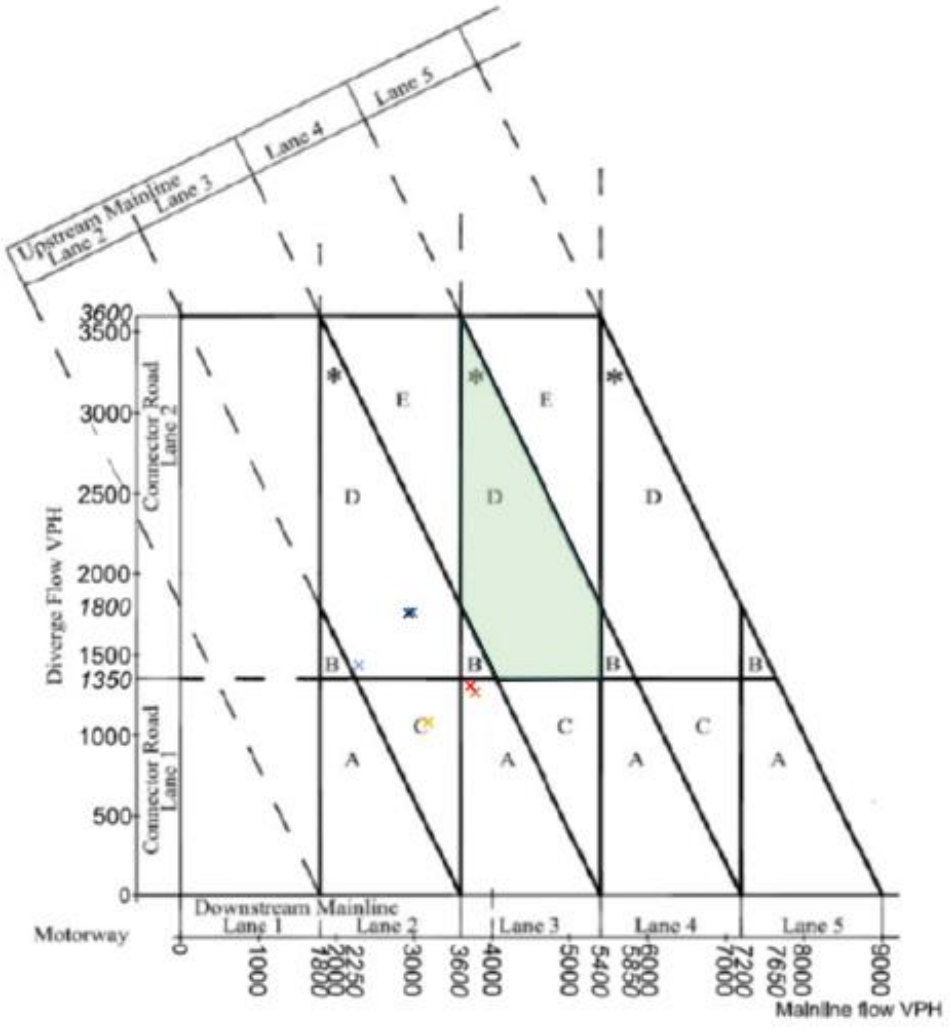
Figure 21. Southbound Off Slip Diverge Diagram

AM Peak

Year	mainline flow	diverge flow
Base	2268	1427
Ref	2952	1758
6m2	2905	1753

PM Peak

Year	mainline flow	diverge flow
Base	3162	1070
Ref	3765	1258
6m2	3704	1298



2019 Baseline

2.2.18 Both the AM and PM 2019 Baseline flows indicate a Type D layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.2.19 The Reference Case traffic flows indicate a Type D diverge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

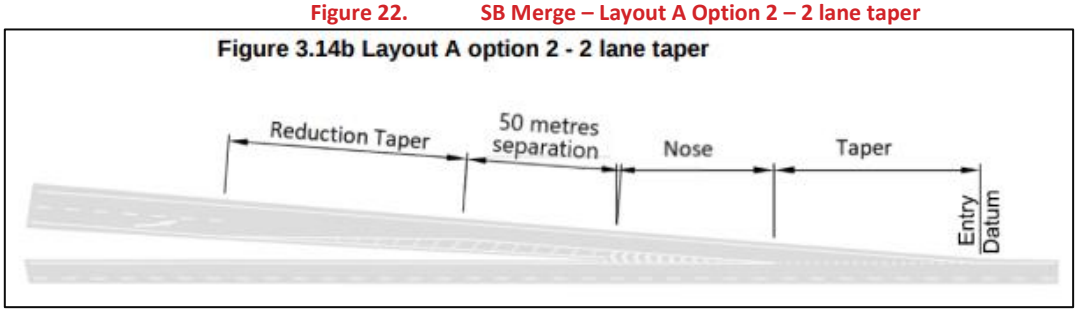
Scenario 6m2

2.2.20 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type D layout will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

Southbound On Slip Merge

2.2.21 The southbound on slip is Layout A option 2 and this arrangement is shown in **Figure 22,** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 22. SB Merge – Layout A Option 2 – 2 lane taper



2.2.22 **Table 8** displays the actual flow data (vehicles) for the southbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 8. M23 Junction 10 Southbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2268	3162	2952	3765	2905	3704	-47	-61
Slip Road	531	1197	1077	1181	1180	1185	103	4

2.2.23 **Figure 23** shows the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

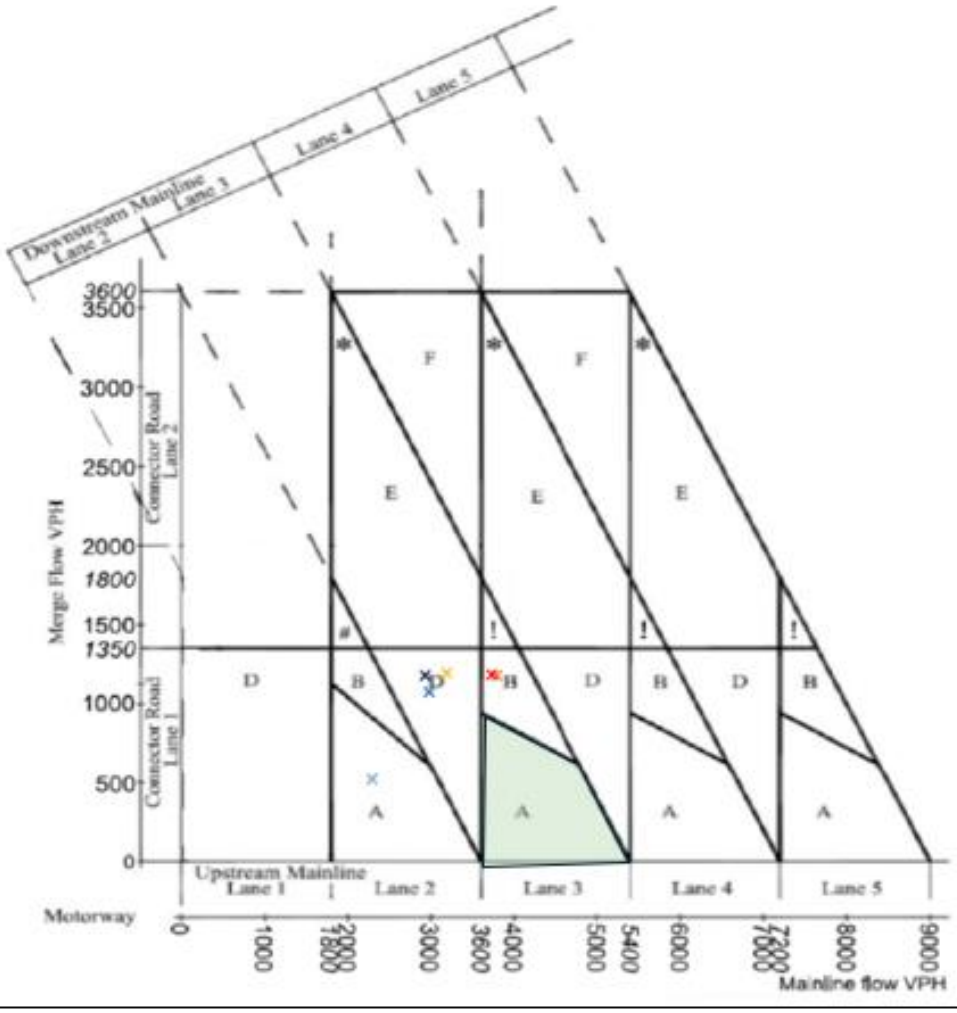
Figure 23. Southbound On Slip Merge Diagram

AM Peak

Year	mainline flow	merge flow
Base	2268	531
Ref	2952	1077
6m2	2905	1180

PM Peak

Year	mainline flow	merge flow
Base	3162	1197
Ref	3765	1181
6m2	3704	1185



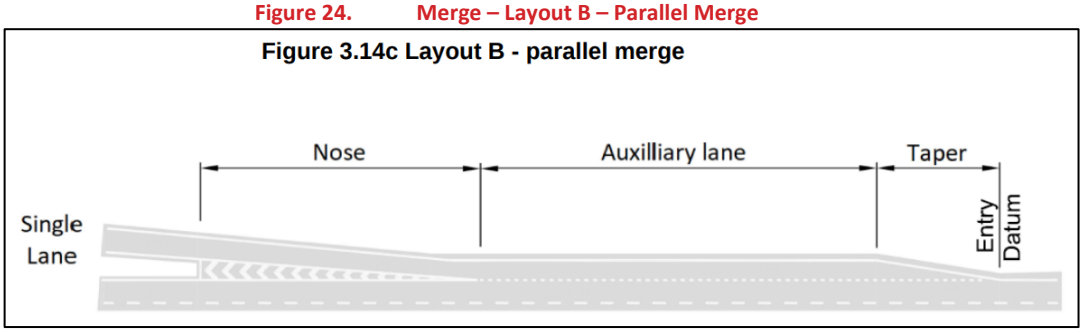
2019 Baseline

2.2.24 The Baseline 2019 flows shows that the existing layout A with three lanes on the mainline is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.2.25 Within the Reference Case the graph shows that the AM flows can be accommodated within the existing arrangement. However, for the PM flows, it shows a requirement for an upgrade to a layout B parallel merge the form of which is presented below in **Figure 24.**

Figure 24. Merge – Layout B – Parallel Merge



Scenario 6m2

2.2.26 The Scenario 6m2 also shows that the AM can be accommodated by the existing layout, however the PM flows require a type B parallel merge. It is noted that whilst traffic levels will increase further with District Plan allocation no further upgrade is required in comparison to the Reference Case.

2.2.27 Whilst an upgrade to layout B parallel merge is required, this requirement is not attributable to additional District Plan traffic.

2.3 M23 Junction 10A

2.3.1 Junction 10A on the M23 includes two slip roads: the northbound on slip and the southbound off slip.

2.3.2 The M23 mainline at this junction has three lanes upstream and downstream in both directions. The location of the M23 Junction 10A is shown below in **Figure 25**, with the aerial view shown in **Figure 26.**

Figure 25. Location Of M23 Junction 10A

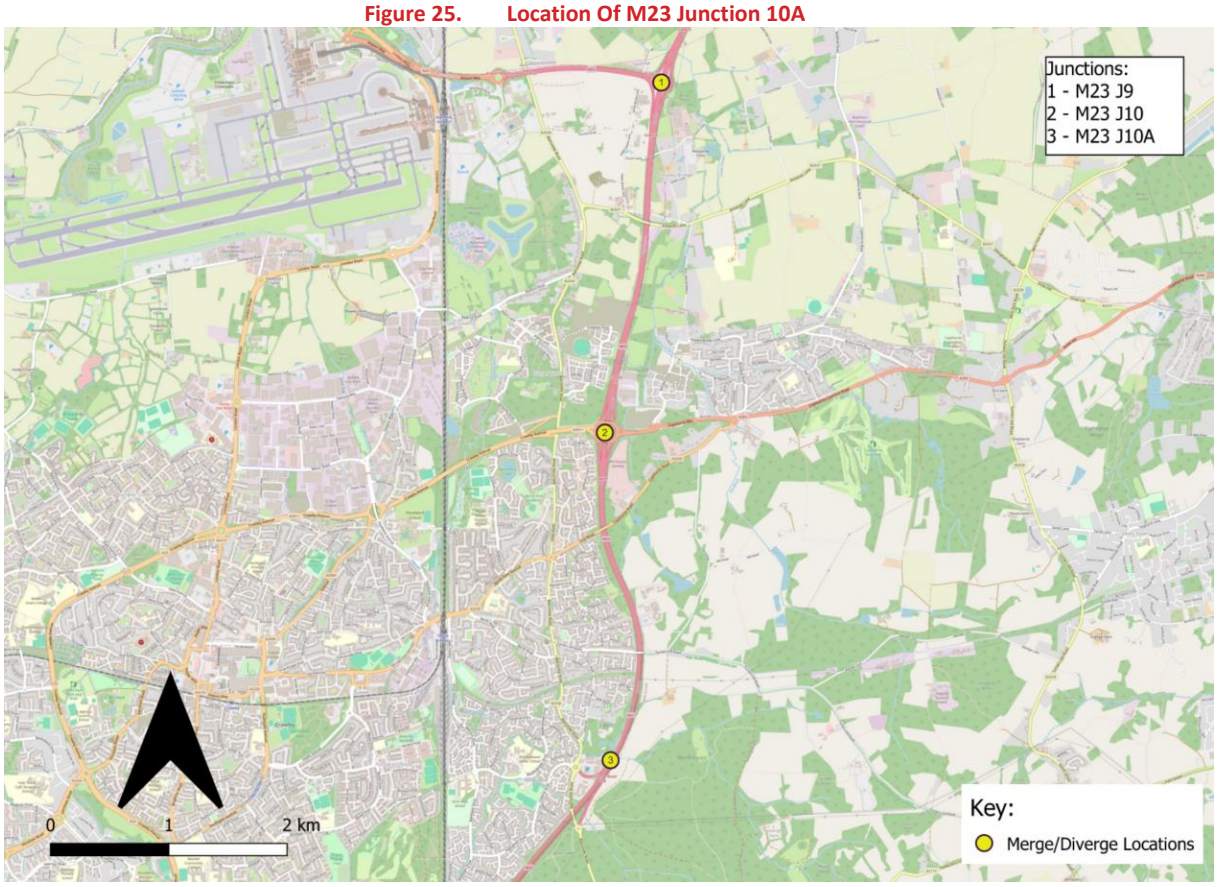
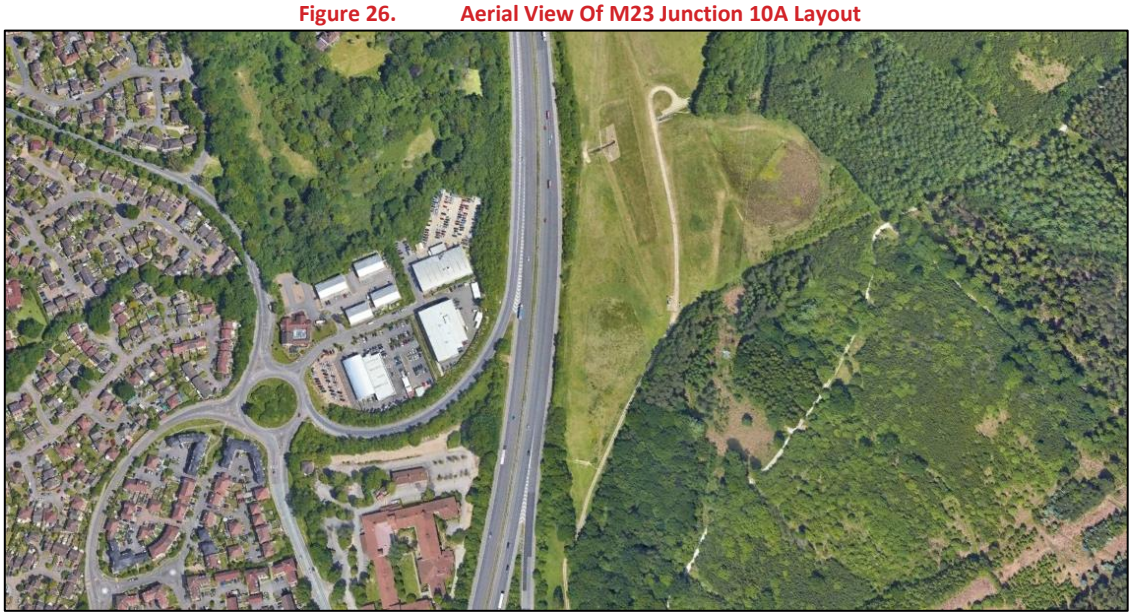


Figure 26. Aerial View Of M23 Junction 10A Layout



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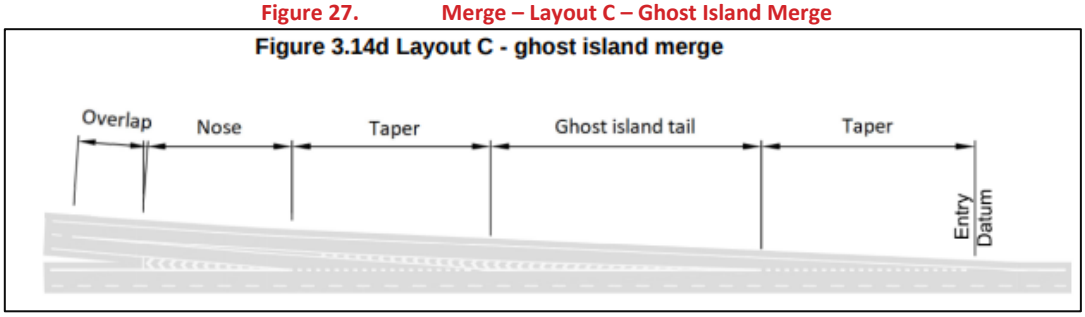
Northbound On Slip Merge

2.3.3 The northbound on slip is a Layout C ghost island merge. This arrangement can be seen in **Figure 27** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 27. Merge – Layout C – Ghost Island Merge



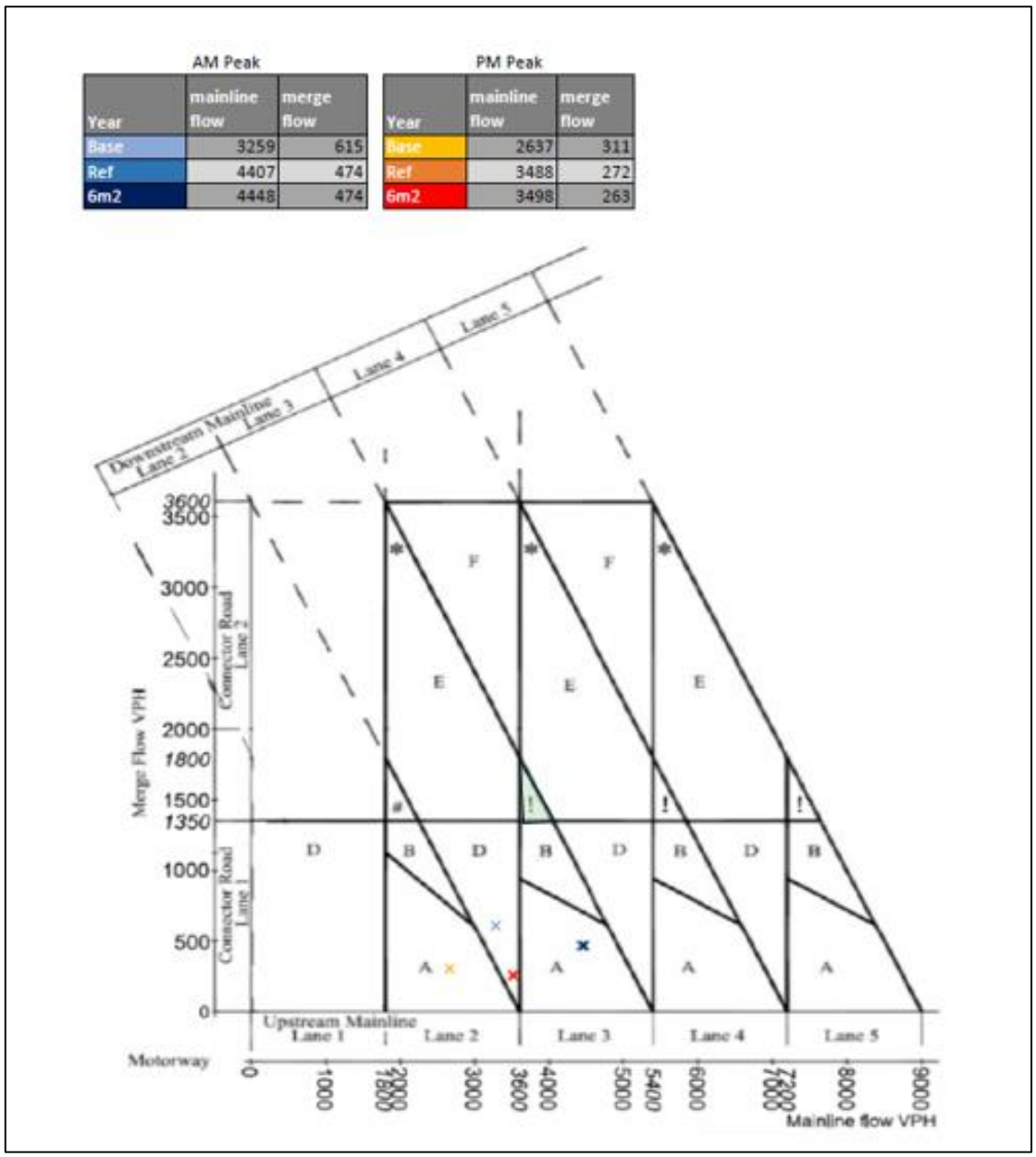
2.3.4 **Table 9** displays the actual flow data (vehicles) for the northbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 9. Northbound On Slip Merge Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Upstream)	3259	2637	4407	3488	4448	3498	41	10
Slip Road	615	311	474	272	474	263	0	-9

2.3.5 **Figure 28** shows the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

Figure 28. Northbound On Slip Merge Diagram



2019 Baseline

2.3.6 Both the AM and PM 2019 Baseline flows indicate a Type C layout merge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.3.7 The Reference Case traffic flows indicate a Type C merge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and merge.

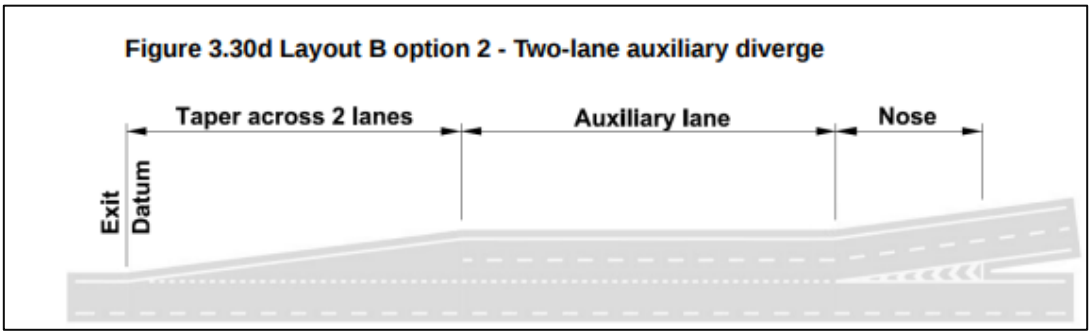
Scenario 6m2

2.3.8 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type C layout will continue to be the appropriate layout for the merge in this scenario for both AM and PM peaks.

Southbound Off Slip Diverge

2.3.9 The southbound off slip is layout B option 2 Two lane auxiliary diverge. This arrangement can be seen in **Figure 29** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 29. Diverge – Layout B Option 2 – Lane Auxiliary Diverge



2.3.10 **Table 10** displays the actual flow data (vehicles) for the southbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 10. Southbound Off Slip Diverge Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Upstream)	2336	3568	3353	4227	3409	4149	56	-78
Slip Road	464	791	677	720	678	742	1	22

2.3.11 **Figure 30** show the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

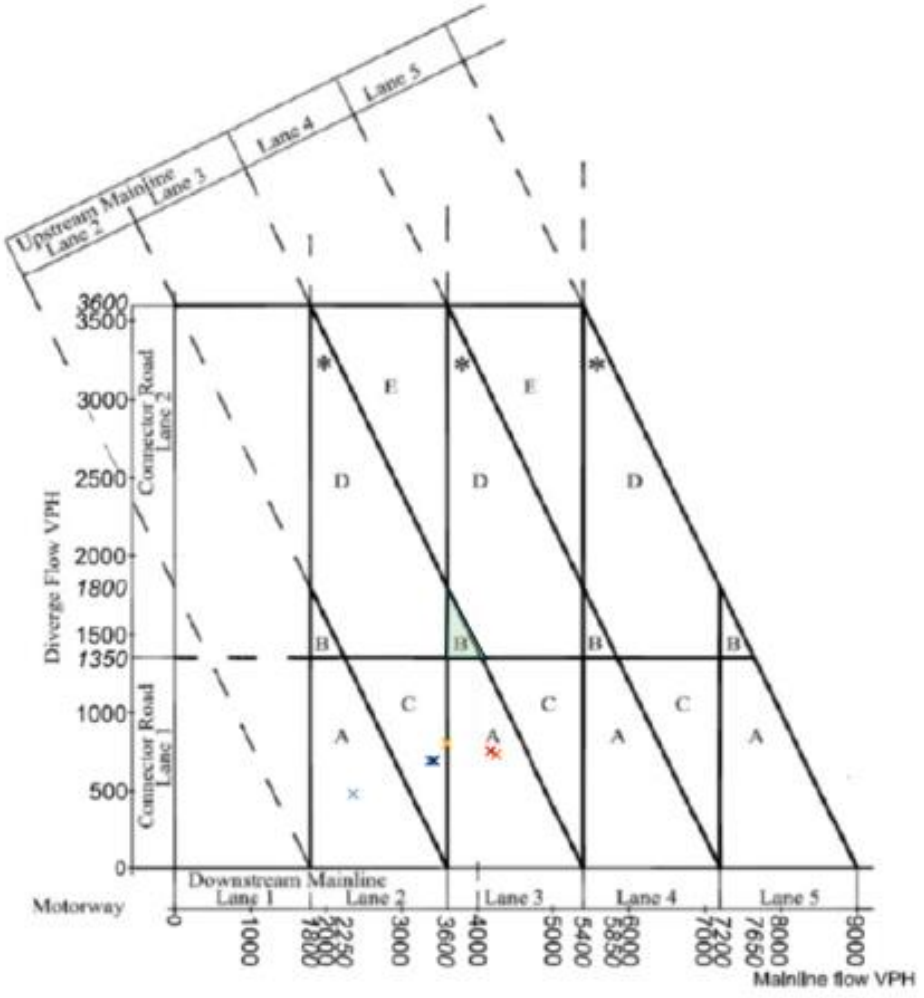
Figure 30. Southbound Off Slip Diverge Diagram

AM Peak

Year	mainline flow	diverge flow
Base	2336	464
Ref	3353	677
6m2	3409	678

PM Peak

Year	mainline flow	diverge flow
Base	3568	791
Ref	4227	720
6m2	4149	742



2019 Baseline

2.3.12 Both the AM and PM 2019 Baseline flows indicate a Type B layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.3.13 The Reference Case traffic flows indicate a Type B diverge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

Scenario 6m2

2.3.14 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Type B layout will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

2.4 M23 Junction 11

2.4.1 Junction 11 on the M23 includes four slip roads: the northbound on slip, the northbound off slip, the southbound on slip and the southbound off slip.

2.4.2 The M23 mainline at this junction has three lanes upstream and downstream in both directions. The location of the M23 Junction 11 is shown below in **Figure 31** with the aerial view shown in **Figure 32.**

Figure 31. M23 Junction 11 Location

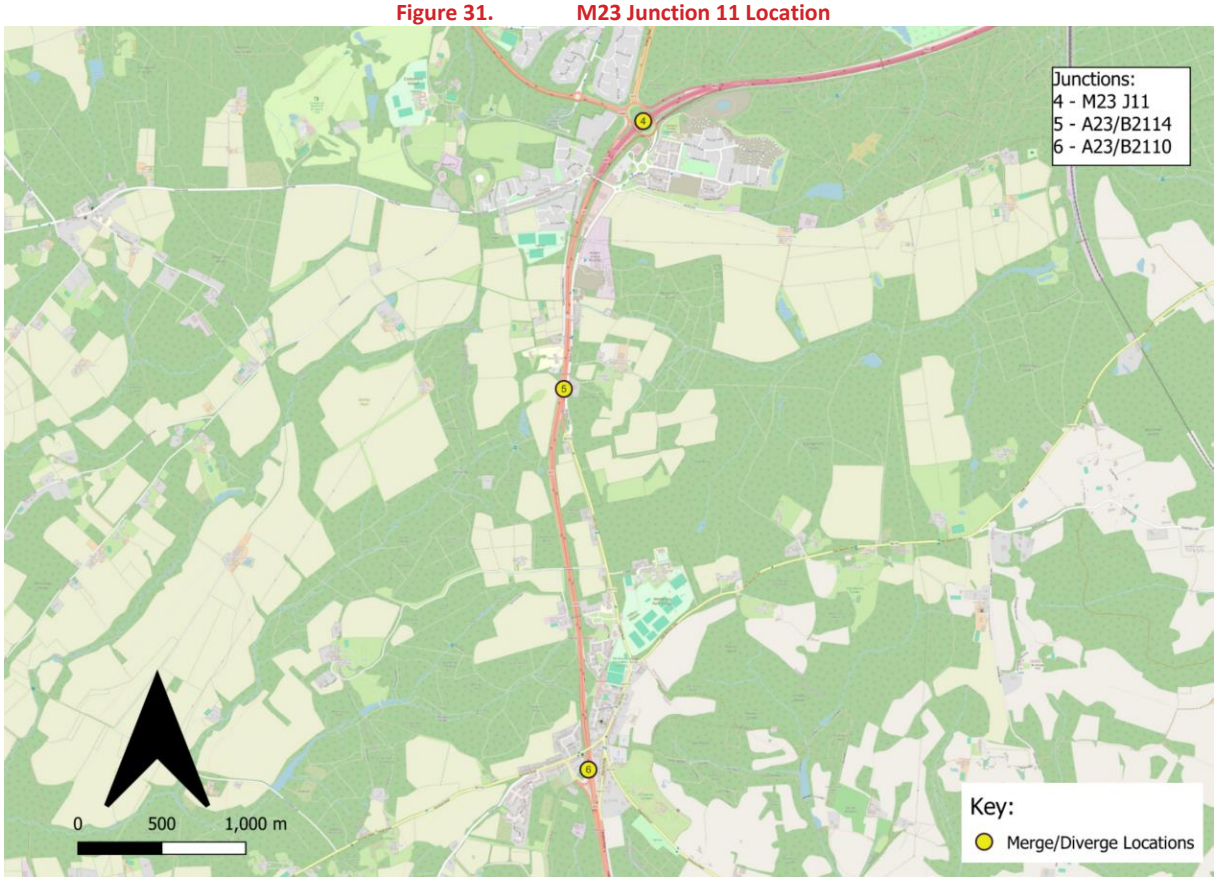
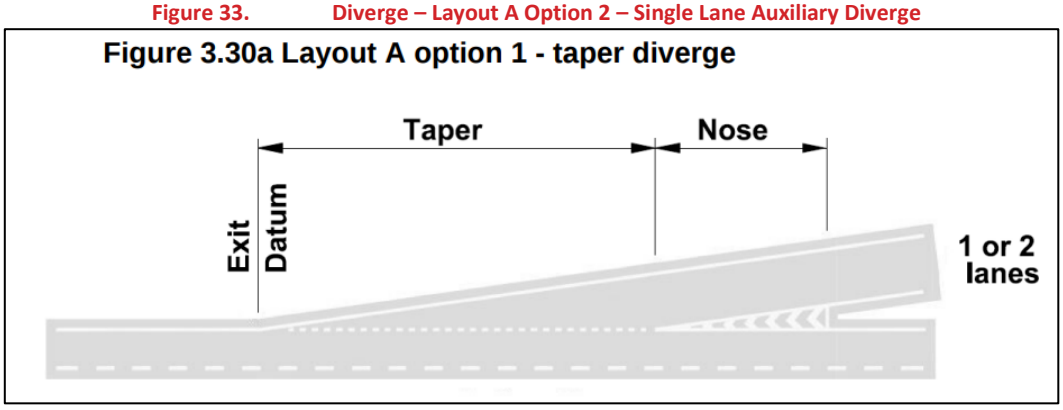


Figure 32. Aerial view of M23 Junction 11 Layout

Northbound Off Slip Diverge

2.4.3 The northbound off slip diverge is a Layout A option 1 and this arrangement can be seen in **Figure 33** from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 33. Diverge – Layout A Option 2 – Single Lane Auxiliary Diverge



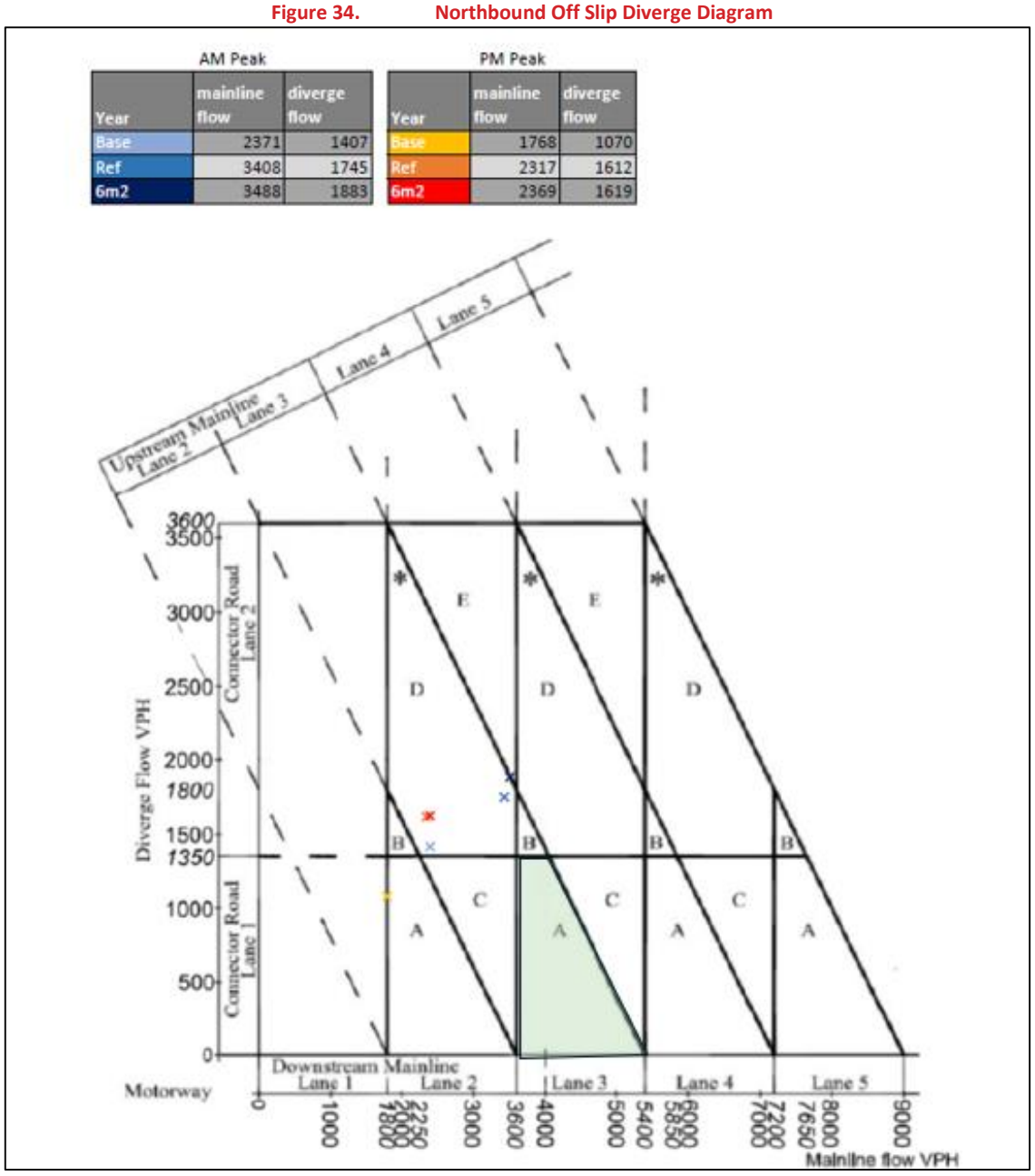
2.4.4 **Table 11** displays the actual flow data (vehicles) for the northbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 11. M23 Junction 11 Northbound Off Slip Flow data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2371	1768	3408	2317	3488	2369	80	52
Slip Road	1407	1070	1745	1612	1883	1619	138	7

2.4.5 **Figure 34** show the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

Figure 34. Northbound Off Slip Diverge Diagram



2019 Baseline

2.4.6 The PM 2019 Baseline flow shows that the existing layout is adequate, but the AM flows indicate that the Layout A diverge does not have adequate capacity. A layout D is required, either option 1 ghost island lane drop or option 2 auxiliary lane drop shown in **Figure 35** and **Figure 36** respectively.

Figure 35. Diverge – Layout D option 1 – ghost island lane drop

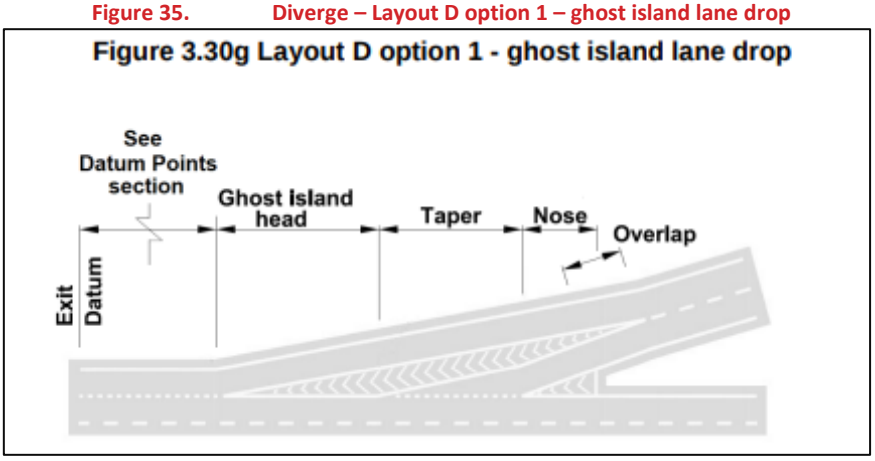
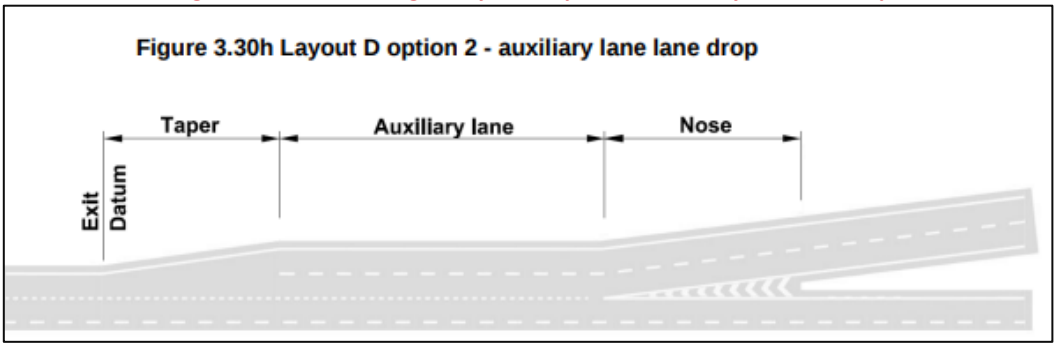


Figure 36. Diverge – Layout D Option 2 – auxiliary lane lane drop



2039 Reference Case

2.4.7 Within the Reference Case neither the AM or PM flow can be accommodated by the existing layout and similarly to the Baseline scenario require an upgrade to a layout D, either option 1 or 2.

Scenario 6m2

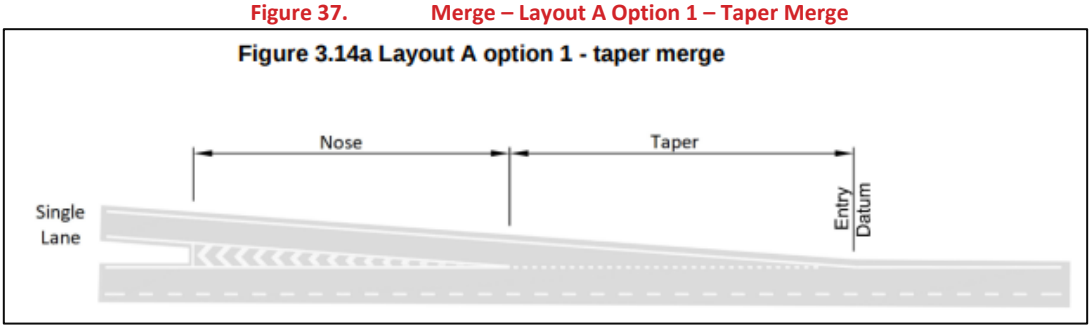
2.4.8 The Scenario 6m2 also shows that the AM or PM flows cannot be accommodated by the existing layout however it is noted that whilst traffic levels will increase further with District Plan allocation no further upgrade is required in comparison to the Reference Case.

2.4.9 Whilst an upgrade to Layout D is required, this requirement is not attributable to additional District Plan traffic. As shown by there being no requirement change between Reference Case and Scenario 6M2.

Northbound On Slip Merge

2.4.10 The northbound on slip is a Layout A Option 1. This arrangement can be seen in **Figure 37** taken from the CD 122 Geometric design of grade separated junctions from DMRB.

Figure 37. Merge – Layout A Option 1 – Taper Merge



2.4.11 **Table 12** displays the actual flow data (vehicles) for the northbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 12. M23 Junction 11 Northbound on slip flow data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2371	1768	3408	2317	3488	2369	80	52
Slip Road	888	869	999	1171	960	1128	-39	-43

2.4.12 **Figure 38** show the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

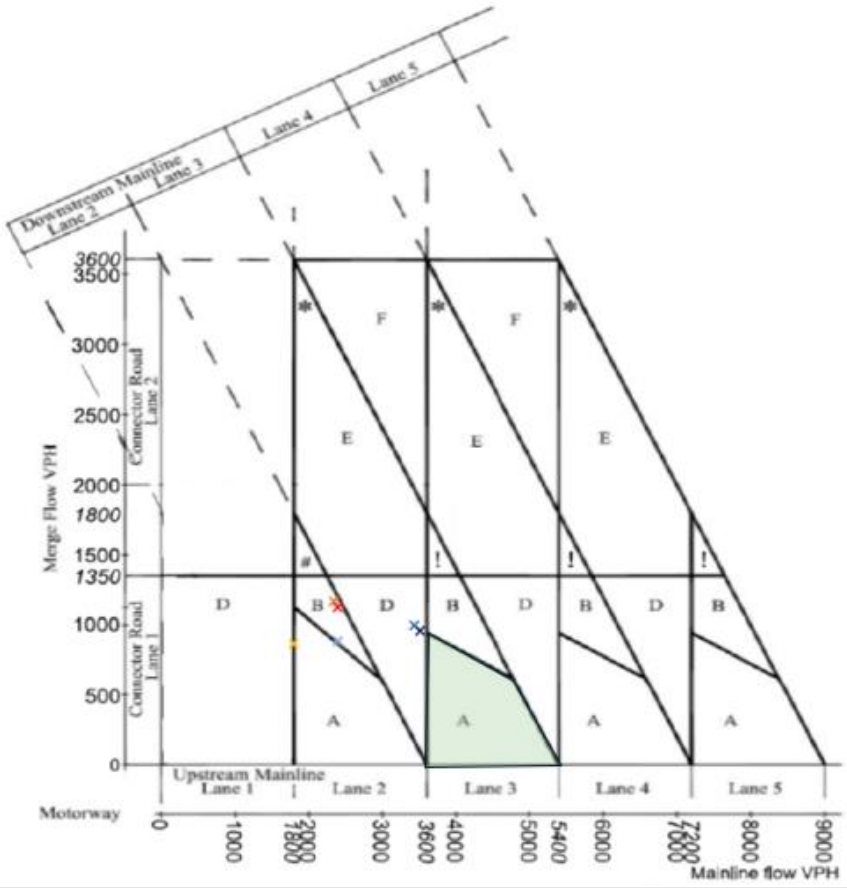
Figure 38. Northbound On Slip Merge Diagram

AM Peak

Year	mainline flow	merge flow
Base	2371	888
Ref	3408	999
6m2	3488	960

PM Peak

Year	mainline flow	merge flow
Base	1768	869
Ref	2317	1171
6m2	2369	1128



2019 Baseline

2.4.13 Both the AM and PM 2019 Baseline flows indicate a Type B layout merge is appropriate, and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.4.14 The Reference Case traffic flows indicate a Type B merge layout will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

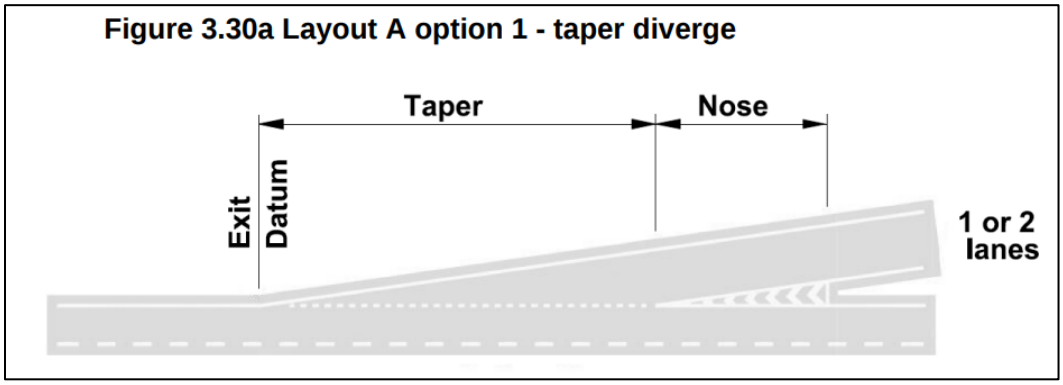
Scenario 6m2

2.4.15 The Scenario 6m2 also shows that the AM or PM flows can be accommodated by the existing layout, as the existing layout offers 3 lanes on the mainline.

Southbound Off Slip Diverge

2.4.16 The southbound off slip diverge is a Layout A option 1 and this arrangement can be seen in **Figure 39** from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 39. Diverge – Layout A Option 2 – Single Lane Auxiliary Diverge



2.4.17 **Table 13** displays the actual flow data (vehicles) for the southbound off slip diverge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2.

Table 13. M23 Junction 11 Southbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	1630	2717	2205	3231	2269	3190	64	-41
Slip Road	706	851	1149	995	1140	958	-9	-37

2.4.18 **Figure 40** show the plotted flow data onto DMRB CD 122 diverge graphs. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

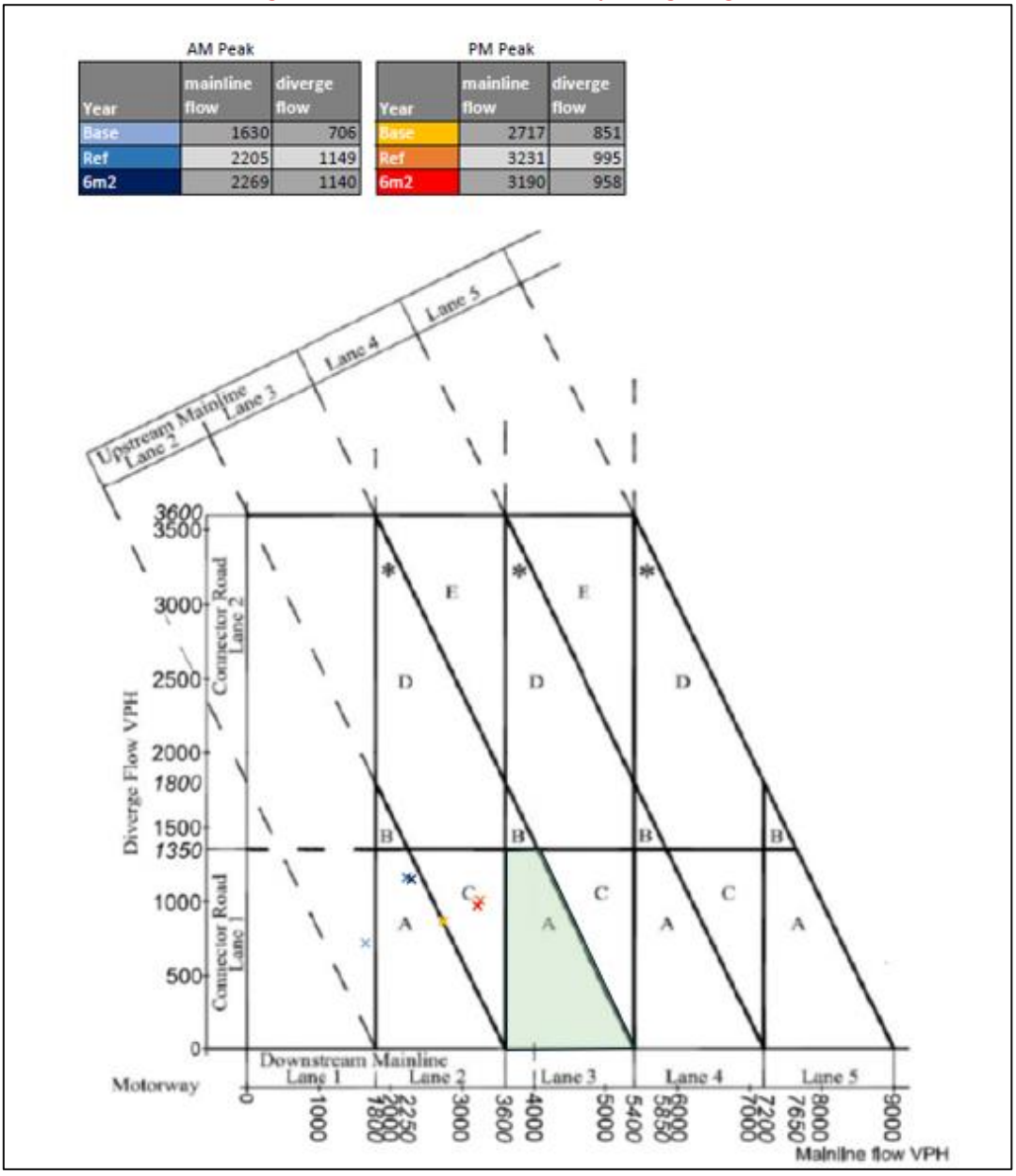
Figure 40. Southbound Off Slip Diverge Diagram

AM Peak

Year	mainline flow	diverge flow
Base	1630	706
Ref	2205	1149
6m2	2269	1140

PM Peak

Year	mainline flow	diverge flow
Base	2717	851
Ref	3231	995
6m2	3190	958



2019 Baseline

2.4.19 Both the AM and PM 2019 Baseline flows indicate a Type A layout diverge is appropriate and that the existing layout is more than adequate for the existing traffic flows.

2039 Reference Case

2.4.20 The Reference Case traffic flows indicate a Layout A diverge will continue to offer sufficient capacity for this scenario in both peaks. No change is required as there is capacity in both the existing mainline and diverge.

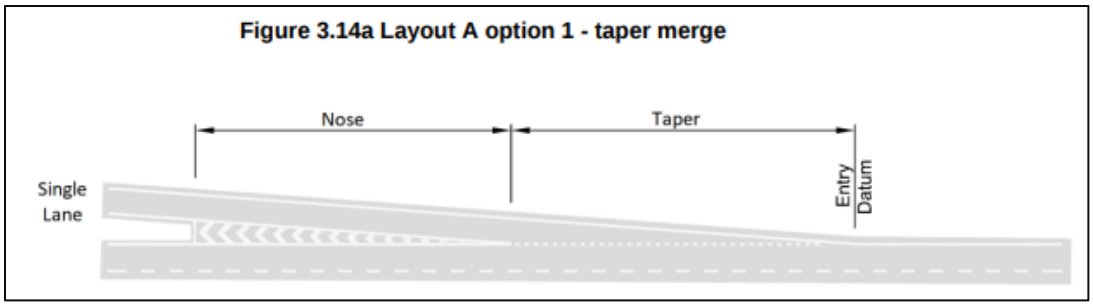
Scenario 6m2

2.4.21 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing Layout A diverge will continue to be the appropriate layout for the diverge in this scenario for both AM and PM peaks.

Southbound On Slip Merge

2.4.22 The northbound on slip is a Layout A Option 1. This arrangement can be seen in **Figure 41** taken from the CD 122 Geometric design of grade separated junctions from DMRB.

Figure 41. Merge – Layout A Option 1 – Taper Merge



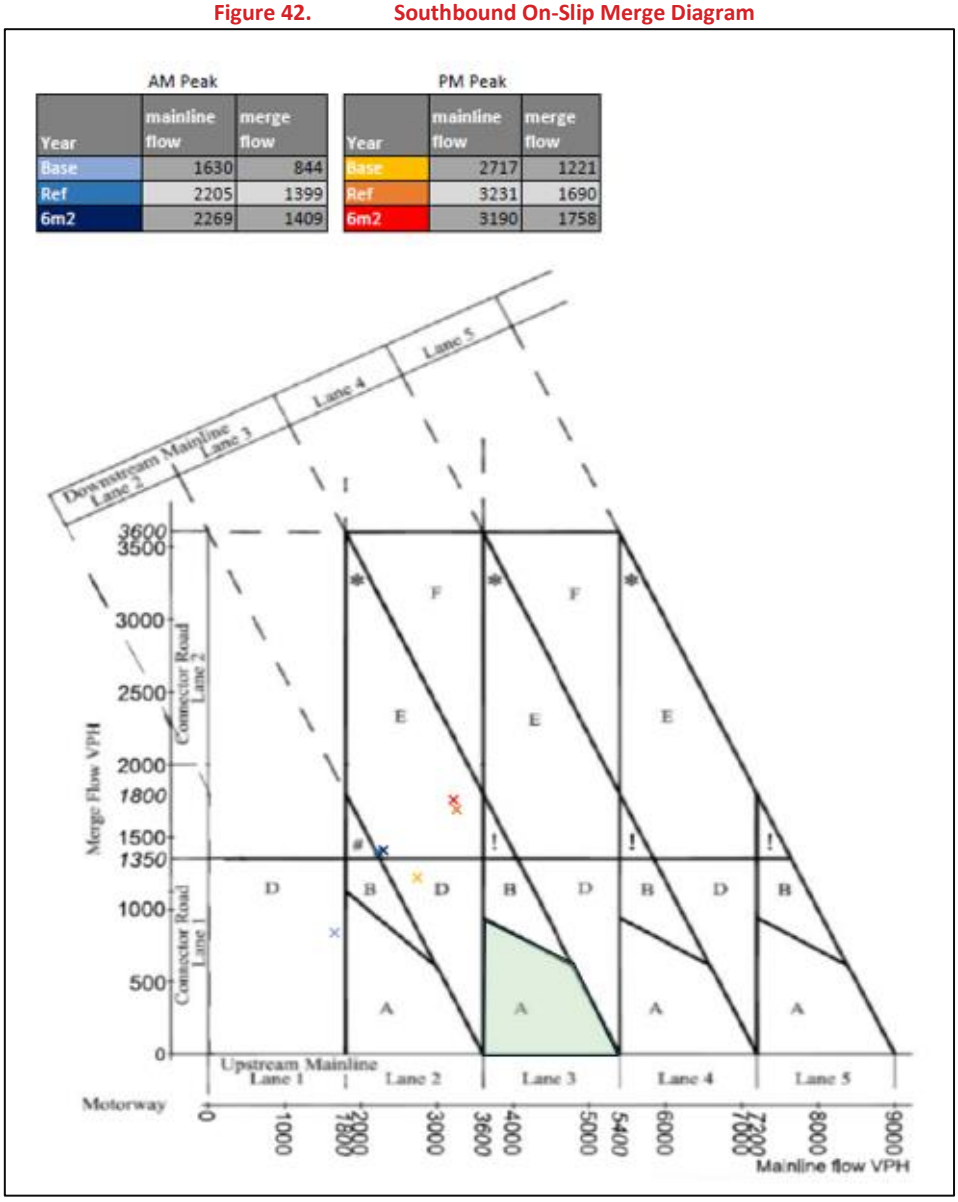
2.4.23 **Table 14** displays the actual flow data (vehicles) for the southbound on slip merge in the AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case and Scenario 6m2

Table 14. M23 Junction 11 Southbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	1630	2717	2205	3231	2269	3190	64	-41
Slip Road	844	1221	1399	1690	1409	1758	10	68

2.4.24 **Figure 42** shows the plotted flow data onto DMRB CD 122 merge graphs. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow/red crosses.

Figure 42. Southbound On-Slip Merge Diagram



2019 Baseline

2.4.25 The Baseline 2019 flows shows that the existing layout A with a three lane mainline is appropriate and that the existing layout is more than adequate for the existing traffic flows

2039 Reference Case

2.4.26 Within the Reference Case neither the AM or PM flow can be accommodated by the existing layout and require an upgrade to a layout E, either option 1 or 2 shown in **Figure 43** and **Figure 44** respectively.

Figure 43. Merge – Layout E Option 1 - lane gain with ghost island offside merge

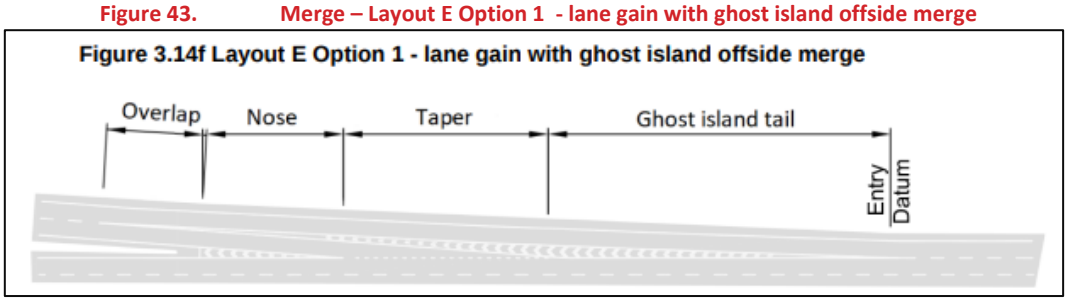
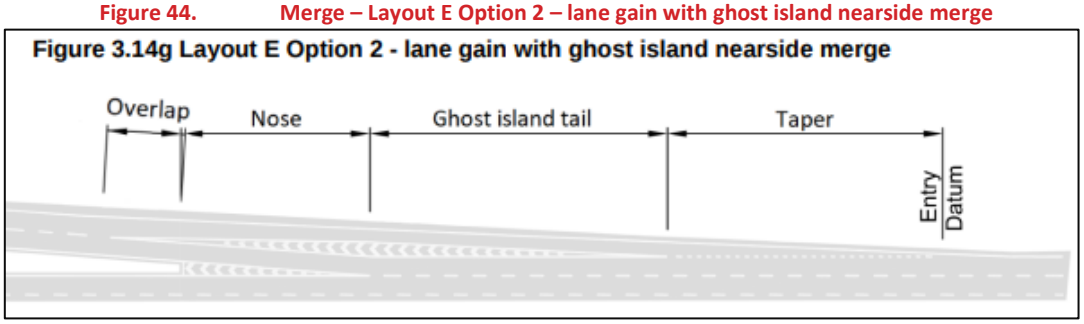


Figure 44. Merge – Layout E Option 2 – lane gain with ghost island nearside merge



Scenario 6m2

2.4.27 The Scenario 6m2 also shows that the AM or PM flows cannot be accommodated by the existing layout however it is noted that whilst traffic levels will increase further with District Plan allocation no further upgrade is required in comparison to the Reference Case.

2.4.28 Whilst an upgrade to Layout E is required, this requirement is not attributable to additional District Plan traffic.

2.5 A23 – B2114 Junction

2.5.1 The junction of the A23 and B2114 comprises of a southbound off-slip only. The A23 mainline has three lanes upstream and downstream in both directions at this junction.

2.5.2 The location of the A23 B2114 is shown below in **Figure 45**, with the aerial view shown in **Figure 46**.

Figure 45. Location of A23 B2114

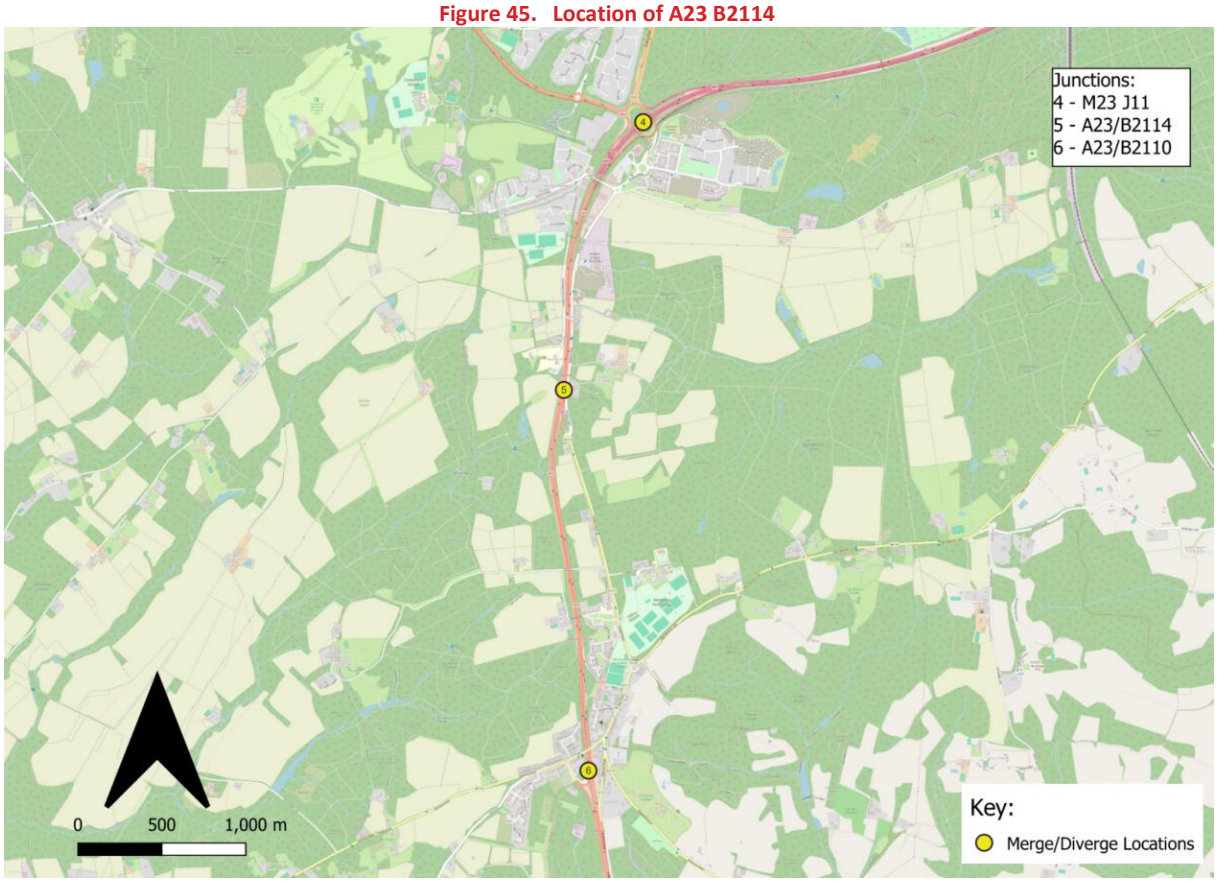
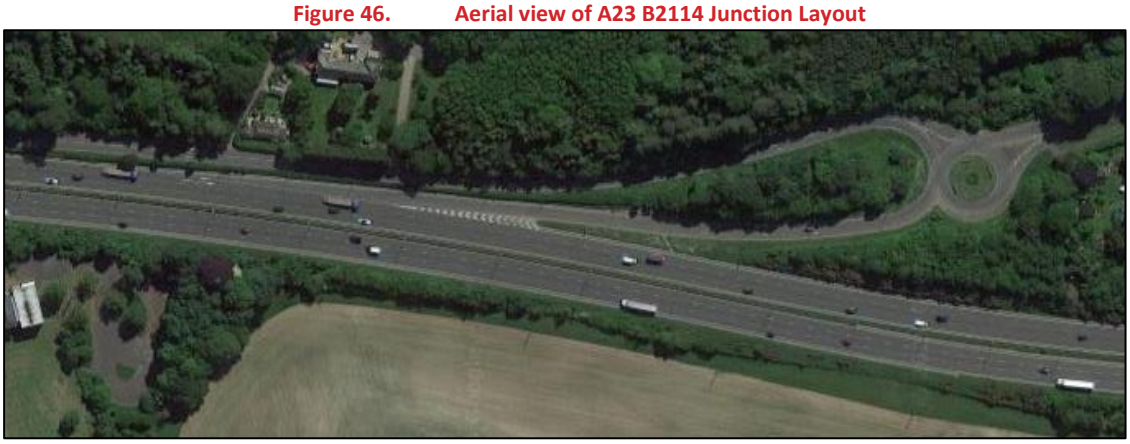


Figure 46. Aerial view of A23 B2114 Junction Layout



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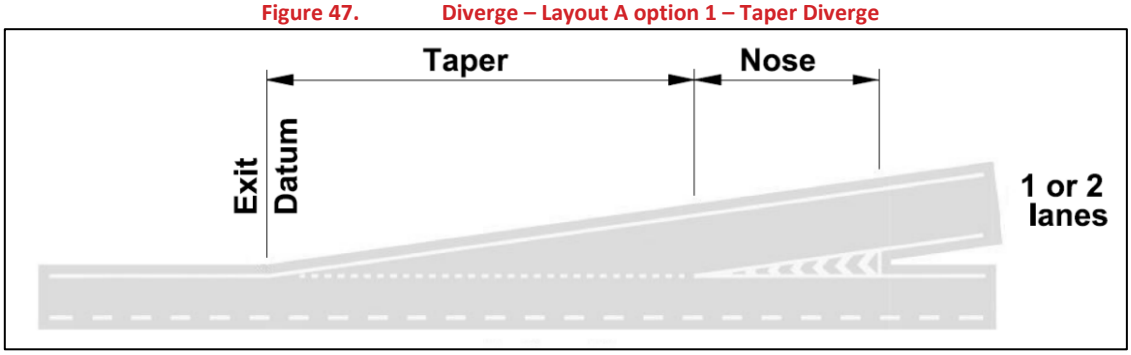
Southbound Off Slip Diverge:

2.5.3 The southbound off-slip is a type A option 1 taper diverge as can be seen in **Figure 47** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 47. Diverge – Layout A option 1 – Taper Diverge



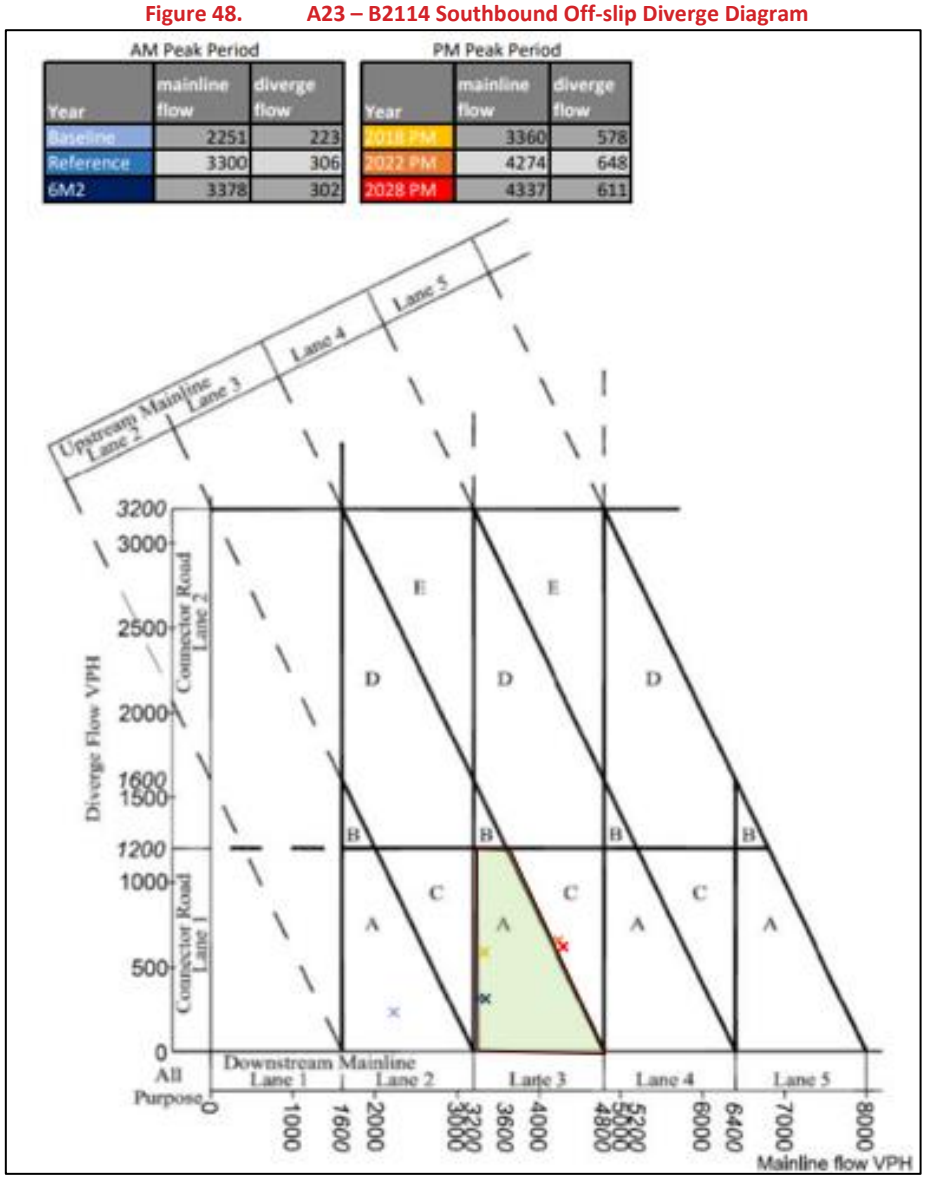
2.5.4 **Table 15** below displays the actual flow data (vehicles) for the southbound off slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 15. A23 – B2114 Southbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (downstream)	2251	3360	3300	4274	3378	4337	78	63
Slip Road	223	578	306	648	302	611	-4	-37

2.5.5 **Figure 48** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 48. A23 – B2114 Southbound Off-slip Diverge Diagram



2019 Baseline

2.5.6 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge is sufficient and that the existing layout is adequate for existing traffic flows.

2039 Reference Case

2.5.7 The AM Reference Case flows indicate a layout A taper diverge will continue to be sufficient for this scenario. However, traffic flows in the PM slightly exceed the capacity of a layout A taper and therefore a layout C option 1 lane drop diverge is required to accommodate the PM traffic flows.

Scenario 6M2

2.5.8 The Scenario 6M2 diverge flows are slightly lower than the Reference Case flows and in the AM period the existing layout A diverge continues to be appropriate. As with the reference

case, the PM flows indicate that a layout C lane-drop configuration will be required. However, this change in requirement is not triggered by the impacts of additional District Plan traffic as there is no change in requirement between Reference Case and Scenario 6M2.

2.6 A23 – B2110 Junction

2.6.1 The B2110 junction on the A23 comprises of three slip roads: the northbound off and on-slips and the southbound on-slip.

2.6.2 The A23 mainline at this junction has three lanes upstream and downstream in both directions. The location of the A23 B2110 is shown below in **Figure 49**, with the aerial view shown in **Figure 50**.

Figure 49. Location of A23 B2110

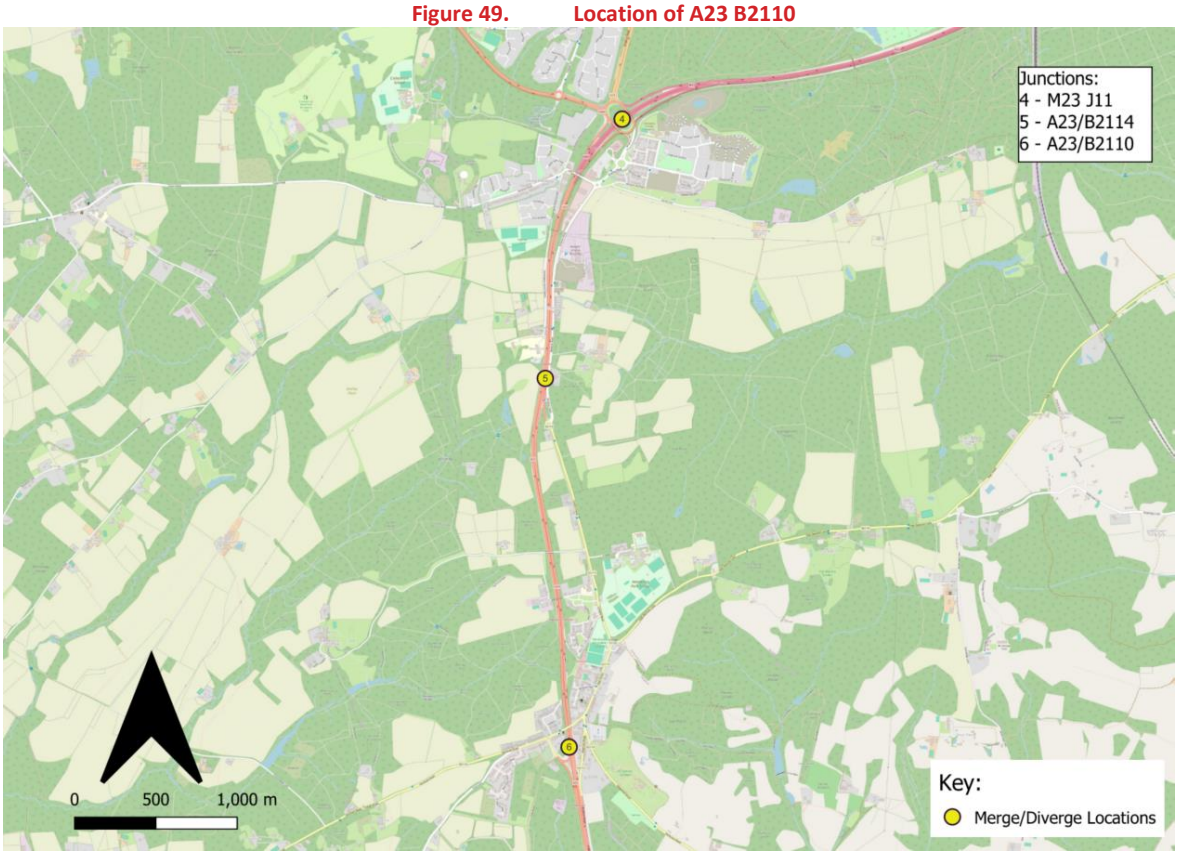


Figure 50. Aerial view of A23 B2110 Junction Layout

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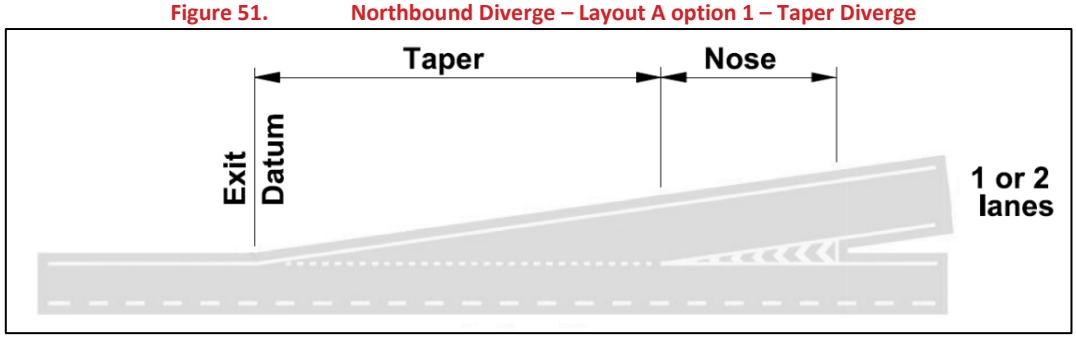
Northbound Off-slip Diverge:

2.6.3 The northbound off-slip is a type A option 1 taper diverge as can be seen in **Figure 51** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 51. Northbound Diverge – Layout A option 1 – Taper Diverge



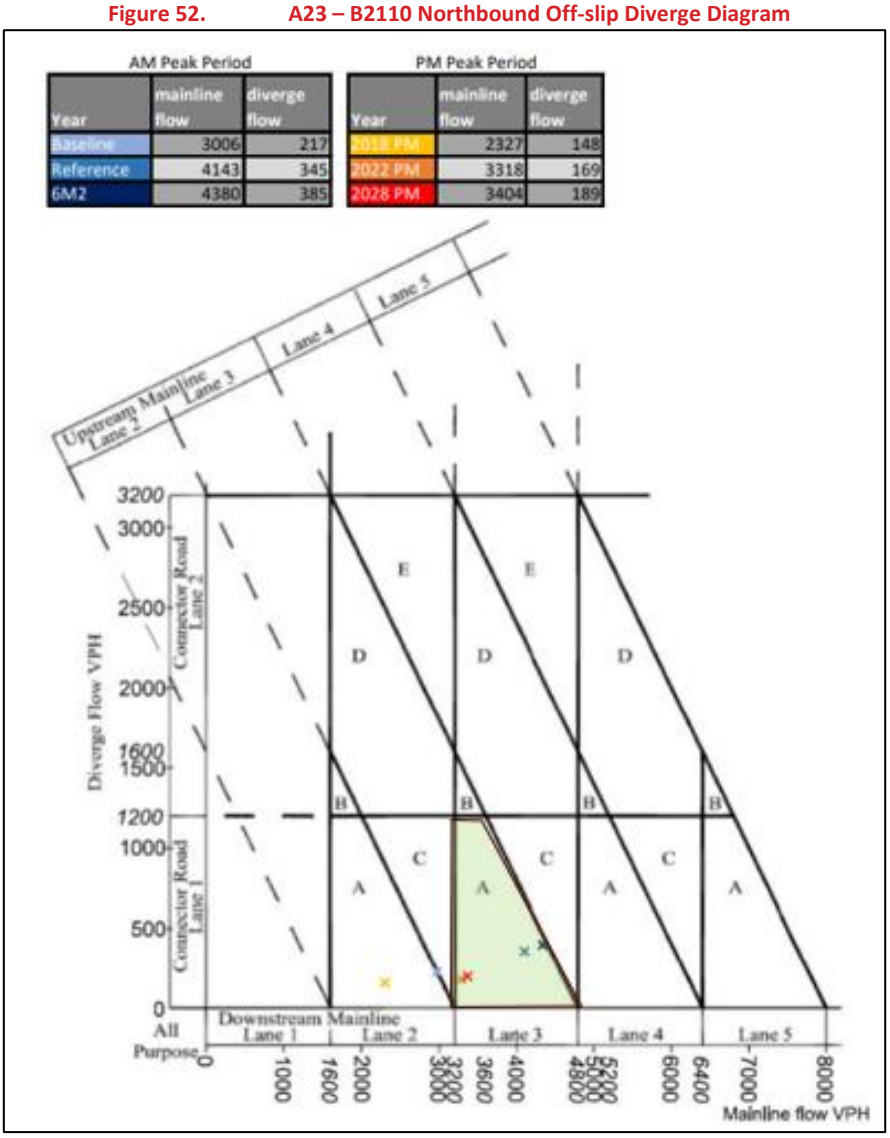
2.6.4 **Table 16** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 16. A23 – B2110 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3006	2327	4143	3318	4380	3404	237	86
Slip Road	217	148	345	169	385	189	40	20

2.6.5 **Figure 52** below shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 52. A23 – B2110 Northbound Off-slip Diverge Diagram



2019 Baseline

2.6.6 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.6.7 Similarly, both the AM and PM Reference Case flows indicate a layout A taper diverge will continue to be sufficient for this scenario.

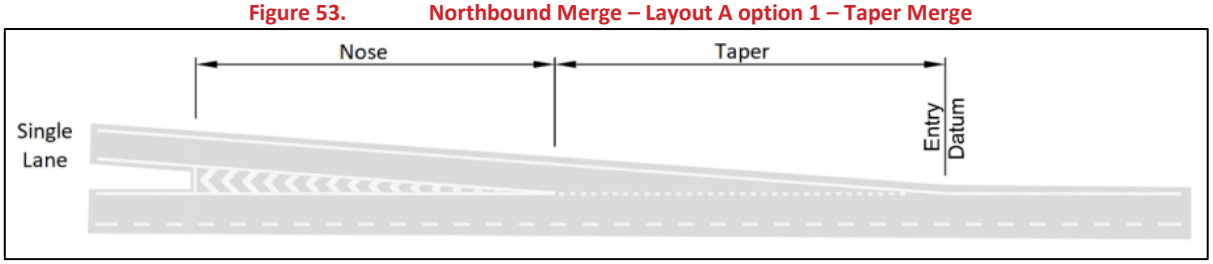
Scenario 6M2

2.6.8 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the diverge in this scenario.

Northbound On-slip Merge

2.6.9 The northbound on-slip is a type A option 1 taper merge as can be seen in **Figure 53** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 53. Northbound Merge – Layout A option 1 – Taper Merge



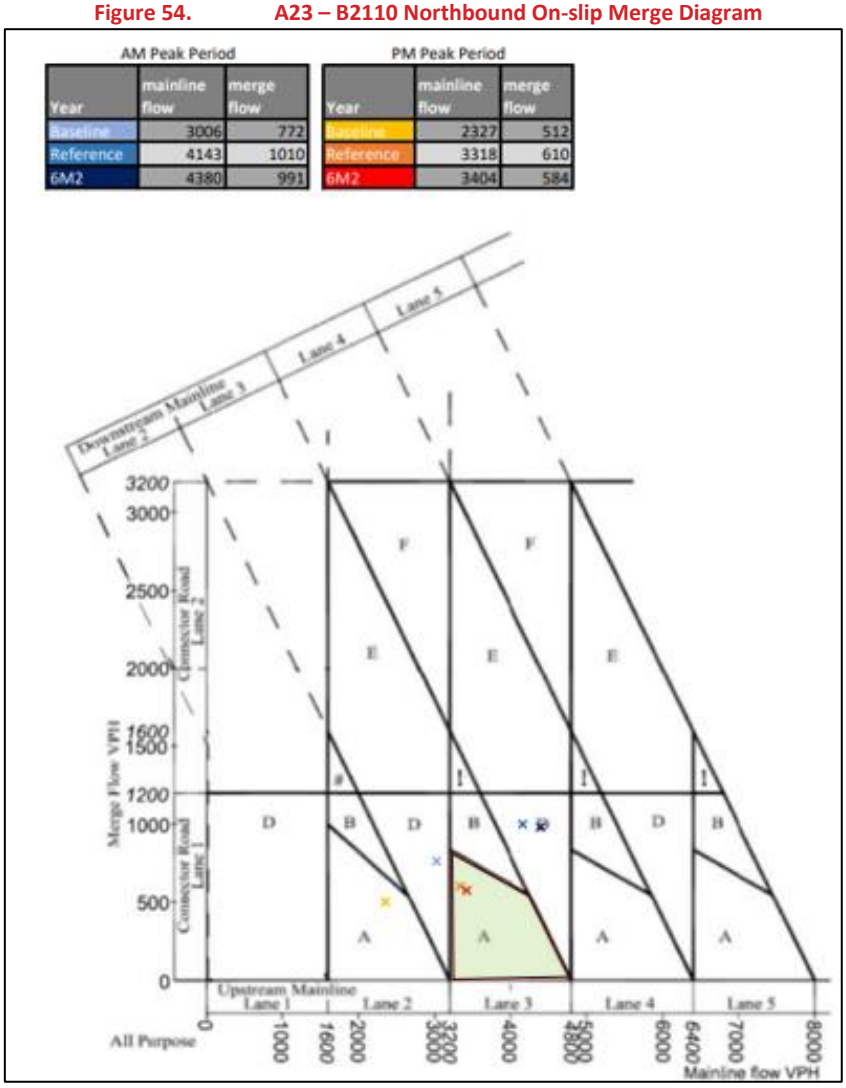
2.6.10 **Table 17** below displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 17. A23 – B2110 Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3006	2327	4143	3318	4380	3404	237	86
Slip Road	772	512	1010	610	991	584	-19	-26

2.6.11 **Figure 54** below shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 54. A23 – B2110 Northbound On-slip Merge Diagram



2019 Baseline

2.6.12 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.6.13 The PM Reference Case traffic levels can still be accommodated by the existing layout, but the AM flows indicate a requirement to upgrade to a layout D lane gain arrangement with an additional mainline lane being required downstream.

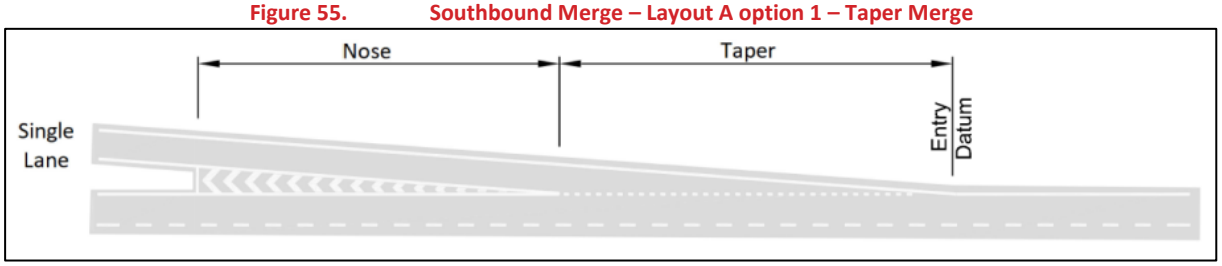
Scenario 6M2

2.6.14 Whilst traffic levels will increase further with District Plan allocations, this will not require a further upgrade in the merge arrangement for this junction in comparison to the 2039 Reference Case. The required upgrade to layout D lane gain is not attributable to additional District Plan traffic. This is due to there being no change in requirement between Reference Case and Scenario 6M2.

Southbound On-slip Merge

2.6.15 The southbound on-slip is a type A option 1 taper merge as can be seen in **Figure 55** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 55. Southbound Merge – Layout A option 1 – Taper Merge



2.6.16 **Table 18** below displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 18. A23 – B2110 Southbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Upstream)	2251	3360	3300	4274	3378	4337	78	63
Slip Road	289	185	302	267	324	275	22	8

2.6.17 **Figure 56** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

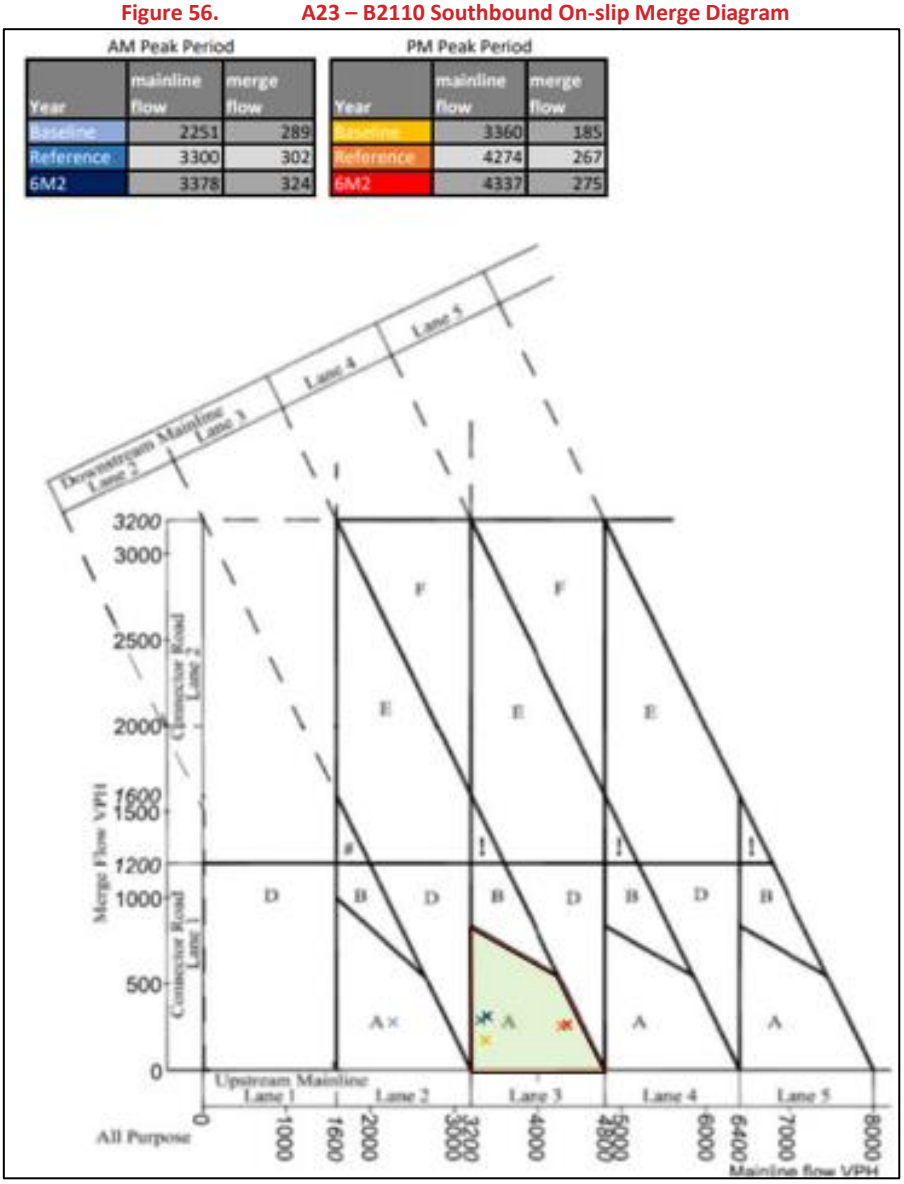
Figure 56. A23 – B2110 Southbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	2251	289
Reference	3300	302
6M2	3378	324

PM Peak Period

Year	mainline flow	merge flow
Baseline	3360	185
Reference	4274	267
6M2	4337	275



2019 Baseline

2.6.18 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.6.19 The AM and PM Reference Case flows indicate a layout A taper merge will continue to be sufficient for this scenario.

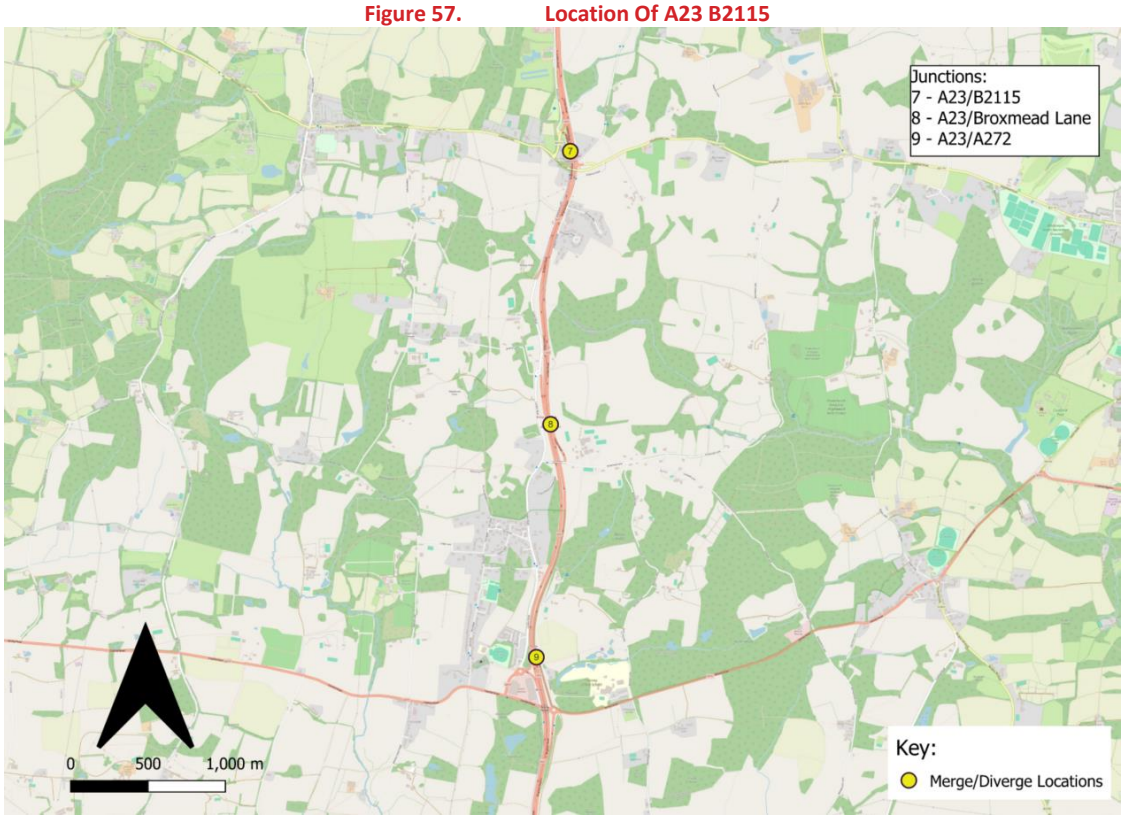
Scenario 6M2

2.6.20 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the merge in this scenario.

2.7 A23 – B2115 Junction

2.7.1 The B2115 junction on the A23 comprises of merge and diverge movements in both directions. The A23 mainline has three lanes upstream and downstream in both directions at this junction. The location of the A23 B2115 is shown below in **Figure 57.**

Figure 57. Location Of A23 B2115



2.7.2 The aerial view of the A23/B2115 junction northbound slips is shown in **Figure 58** and the southbound slips are shown in **Figure 59**.

Figure 58. Aerial view of A23 B2115 Junction Northbound Layout

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Figure 59. Aerial view of A23 B2115 Junction Southbound Layout

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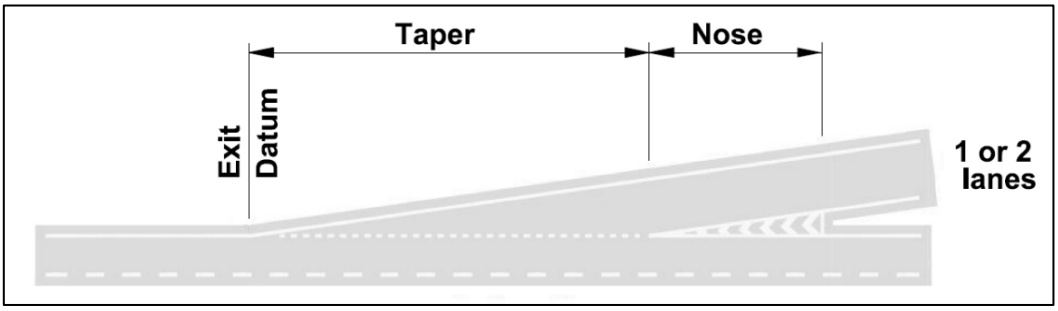
Northbound Off-slip Diverge:

2.7.3 The northbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 60** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 60. Northbound Diverge – Layout A option 1 – Taper Diverge



2.7.4 **Table 19** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 19. A23 – B2115 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2938	2280	4162	3276	4413	3374	251	98
Slip Road	234	116	292	136	308	160	16	24

2.7.5 **Figure 61** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

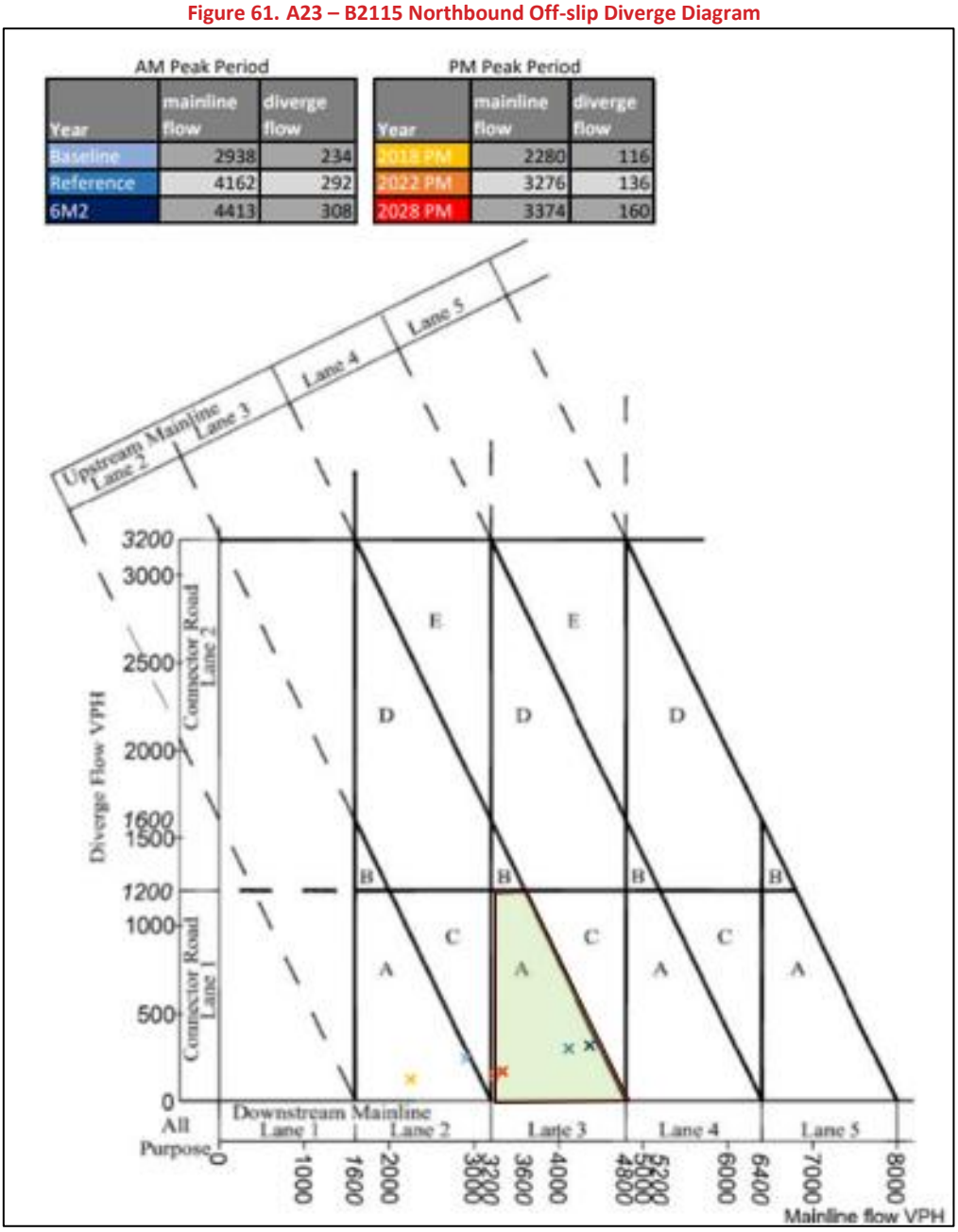
Figure 61. A23 – B2115 Northbound Off-slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	2938	234
Reference	4162	292
6M2	4413	308

PM Peak Period

Year	mainline flow	diverge flow
2019 PM	2280	116
2022 PM	3276	136
2028 PM	3374	160



2019 Baseline

2.7.6 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.7.7 Similarly, both the AM and PM Reference Case flows indicate a layout A taper diverge will continue to be sufficient for this scenario.

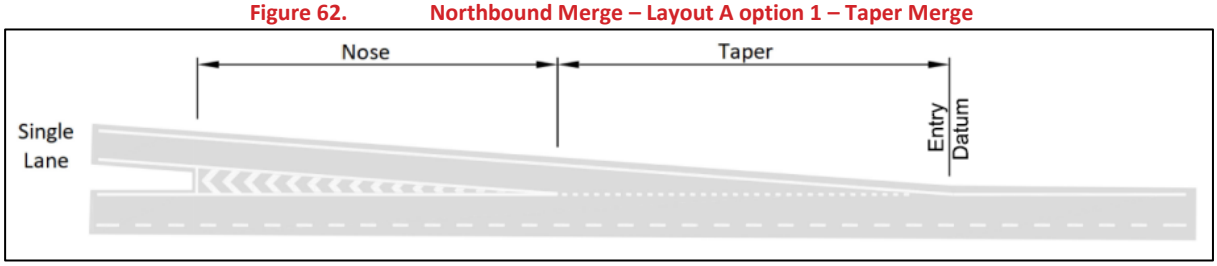
Scenario 6M2

2.7.8 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the diverge in this scenario.

Northbound On-slip Merge

2.7.9 The northbound on-slip is a type A option 1 taper merge as can be seen in **Figure 62** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 62. Northbound Merge – Layout A option 1 – Taper Merge



2.7.10 **Table 20** displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 20. A23 – B2115 Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2938	2280	4162	3276	4413	3374	251	98
Slip Road	284	195	325	211	351	219	26	8

2.7.11 **Figure 63** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

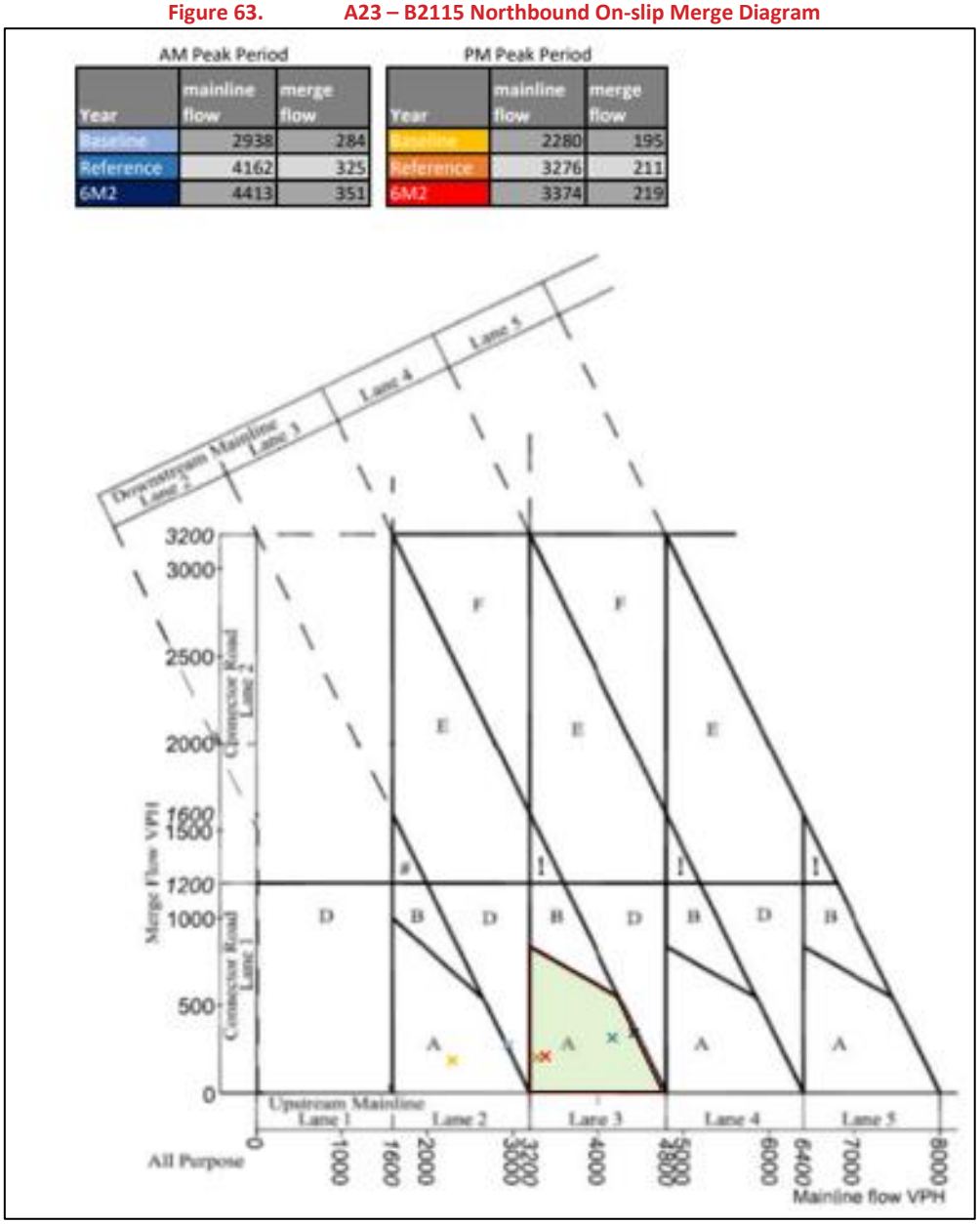
Figure 63. A23 – B2115 Northbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	2938	284
Reference	4162	325
6M2	4413	351

PM Peak Period

Year	mainline flow	merge flow
Baseline	2280	195
Reference	3276	211
6M2	3374	219



2019 Baseline

2.7.12 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.7.13 Similarly, both the AM and PM peak Reference Case flows indicate a layout A taper merge will continue to be sufficient for this scenario.

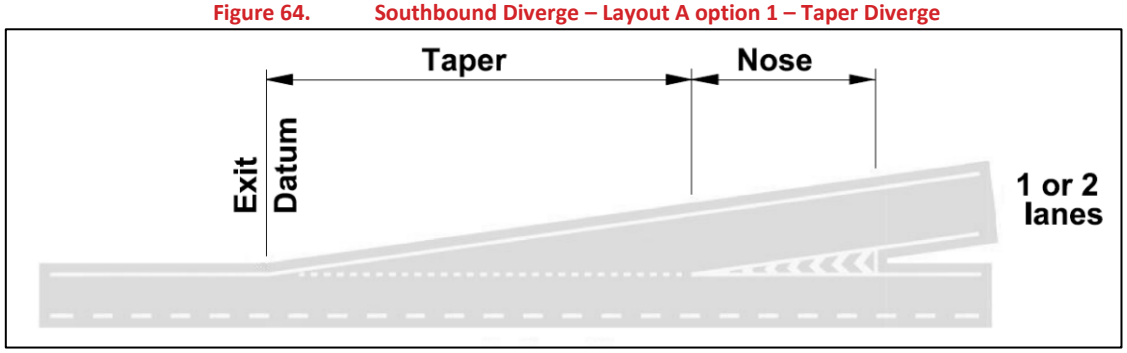
Scenario 6M2

2.7.14 Whilst there is a small increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the merge in this scenario.

Southbound Off-slip Diverge

2.7.15 The southbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 64** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 64. Southbound Diverge – Layout A option 1 – Taper Diverge



2.7.16 **Table 21** displays the actual flow data (vehicles) for the southbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 21. A23 – B2115 Southbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2-REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2231	3267	3265	4148	3368	4231	103	83
Slip Road	308	278	338	393	333	380	-5	-13

2.7.17 **Figure 65** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

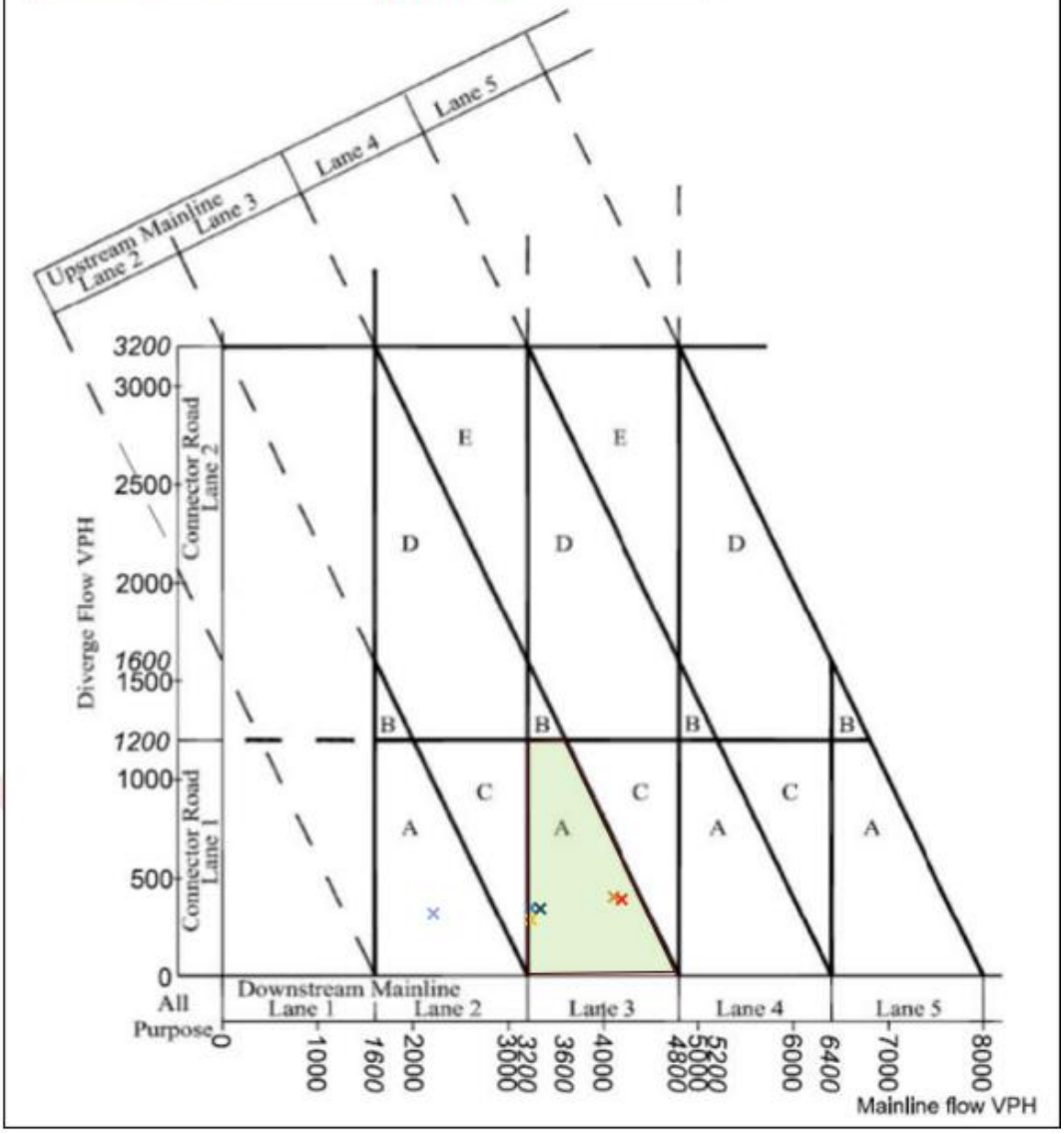
Figure 65. A23 – B2115 Southbound Off-slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	2231	308
Reference	3265	338
6M2	3368	333

PM Peak Period

Year	mainline flow	diverge flow
2018 PM	3267	278
2022 PM	4148	393
2028 PM	4231	380



2019 Baseline

2.7.18 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge is appropriate and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.7.19 The Reference Case traffic flows for both the AM and PM peak indicate a layout A taper diverge will continue to offer sufficient capacity for this scenario.

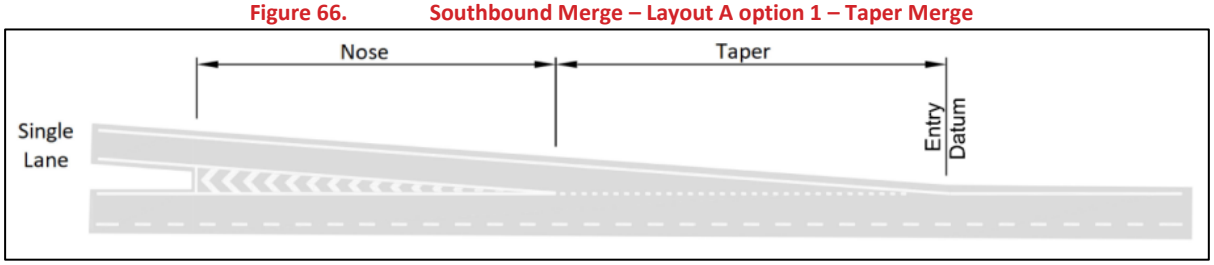
Scenario 6M2

2.7.20 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the diverge in this scenario.

Southbound On-slip Merge:

2.7.21 The southbound on-slip is a type A option 1 taper merge as can be seen in **Figure 66** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 66. Southbound Merge – Layout A option 1 – Taper Merge



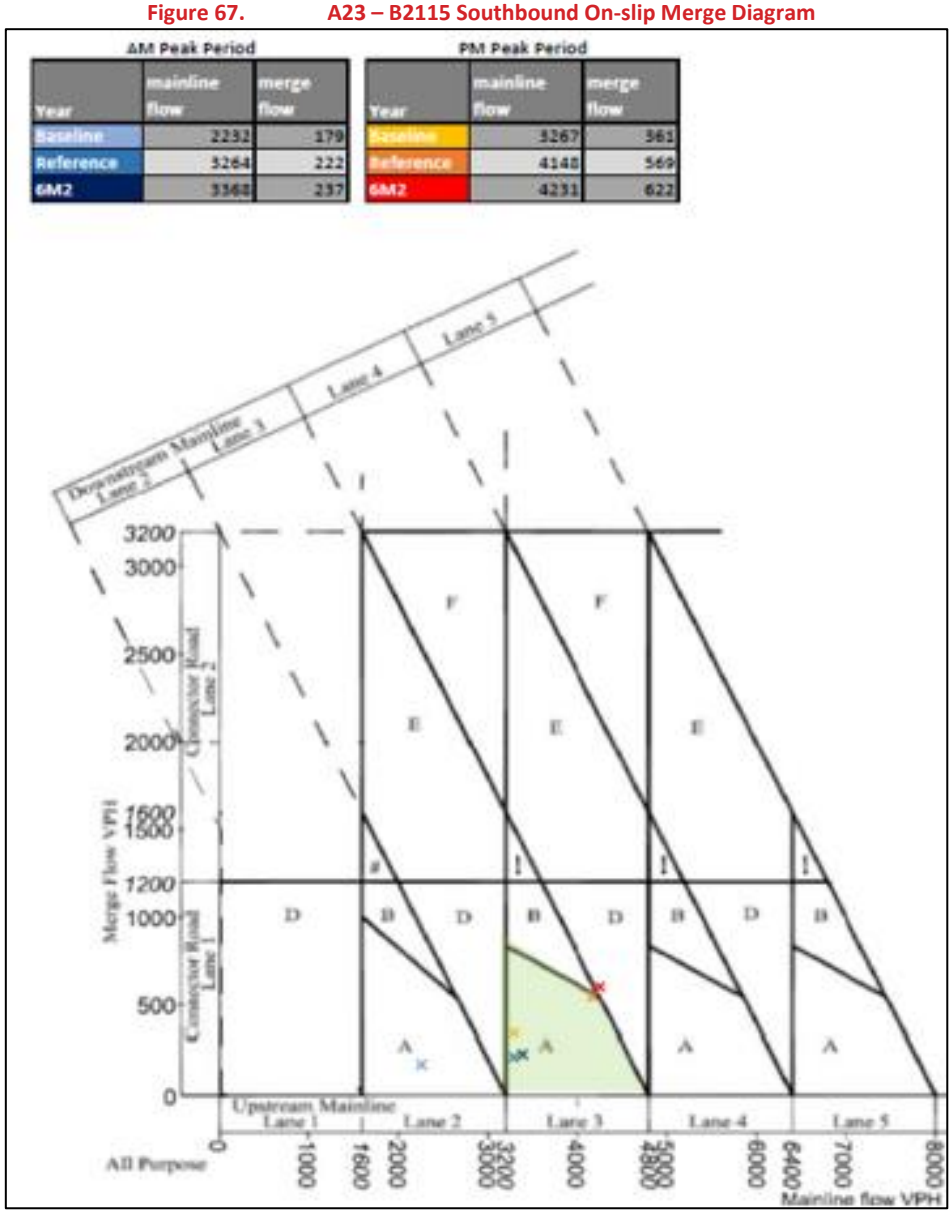
2.7.22 **Table 22** below displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 22. A23 – B2115 Southbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2232	3267	3264	4148	3368	4231	104	83
Slip Road	179	361	222	569	237	622	15	53

2.7.23 **Figure 67** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 67. A23 – B2115 Southbound On-slip Merge Diagram



2019 Baseline

2.7.24 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.7.25 The AM and PM Reference Case flows indicate a layout A taper merge will continue to be sufficient for this scenario. However, it is noted that if the forecasted merge flow is higher than anticipated the existing layout would no longer be appropriate.

Scenario 6M2

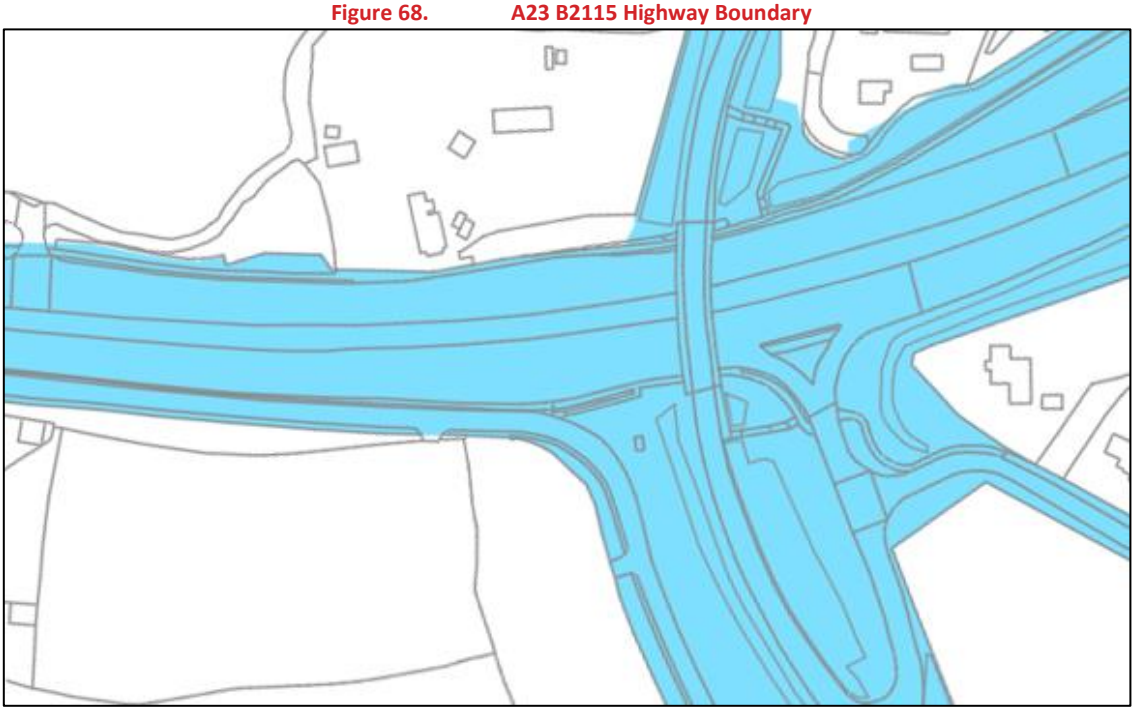
2.7.26 The PM flows indicate that a layout A taper merge with three mainline lanes is sufficient. The PM Scenario 6M2 flows indicate a type D lane gain merge is required as well as an additional lane on the downstream mainline. The PM scenario takes precedence in this scenario.

2.7.27 There is a requirement change between Reference Case and Scenario 6M2, where the requirement changes from type A with three mainline lanes to a type D with three lanes upstream and four lanes downstream. There is a need to investigate the feasibility for a layout upgrade at this location as a result of the small amount of traffic growth associated with the District Plan.

DMRB Assessment Upgrade Feasibility

2.7.28 The highway boundary at this location can be seen in blue on the **Figure 68** below. For the southbound on slip merge, there is available highway space. However this is taken up by Brighton Road, which limits any ability to upgrade the merge type or provide any additional lanes.

Figure 68. A23 B2115 Highway Boundary



2.7.29 Given the constraints with the available highway land and space, an upgrade to type D lane gain with an additional mainline lane is unfeasible. This space constraint also limits intermediate upgrades to type B or C (auxiliary lane and ghost island merges). Therefore, no further consideration for upgrade or design work has been undertaken.

2.7.30 It is noted that across both the merge and the intermain there is only an increase of 119 (3%) total vehicles in the AM and 136 (3%) total vehicles in the PM. We do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

2.8 A23-Broxmead lane Junction

2.8.1 The A23 junction with Broxmead Lane, to the north of Bolney, Haywards Heath comprises of three slip roads, the northbound off and on-slips and the southbound on-slip.

2.8.2 The A23 mainline at this junction has three lanes upstream and downstream in both directions. The location of the A23 Broxmead Lane is shown below in **Figure 69**, with the aerial views of the slip roads shown in **Figure 70Figure 70** and **Figure 71**.

Figure 69. Location of A23 Broxmead Lane Junction

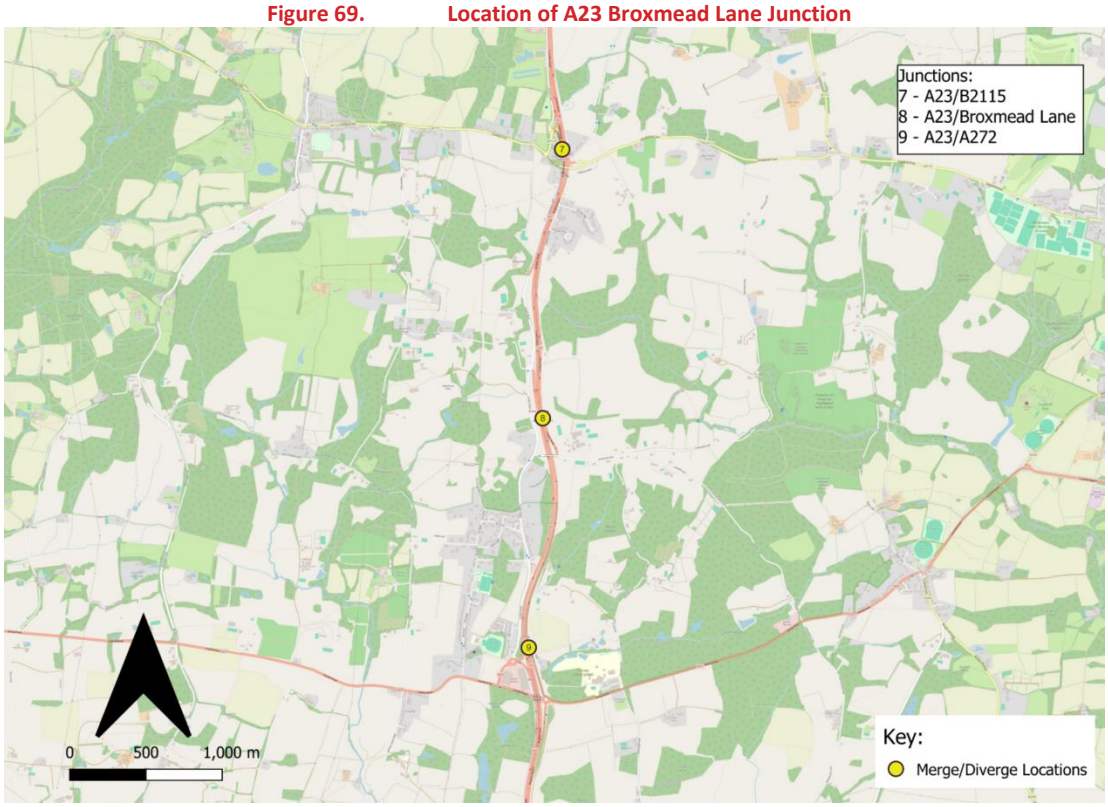
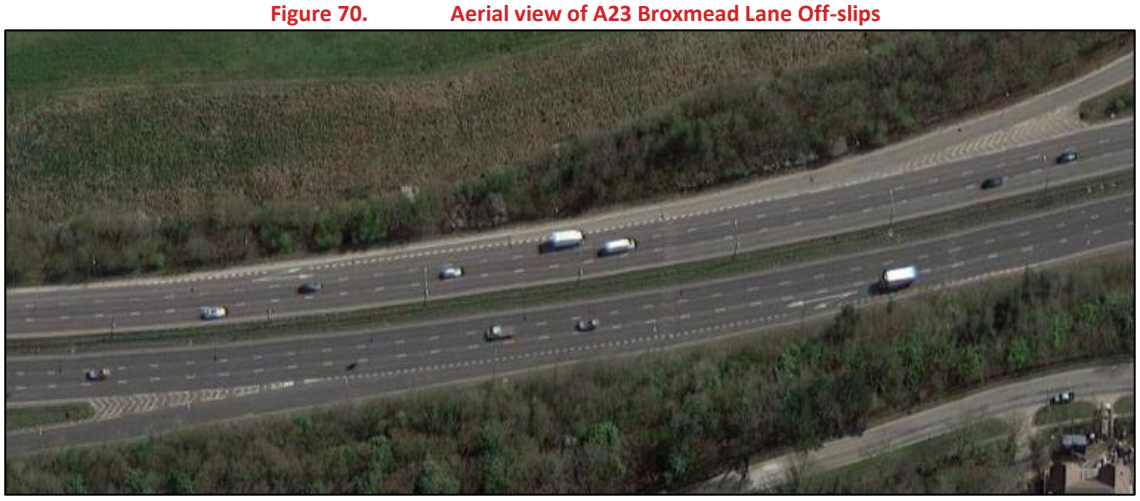


Figure 70. Aerial view of A23 Broxmead Lane Off-slips



© 2024 Maxar Technologies, Map data

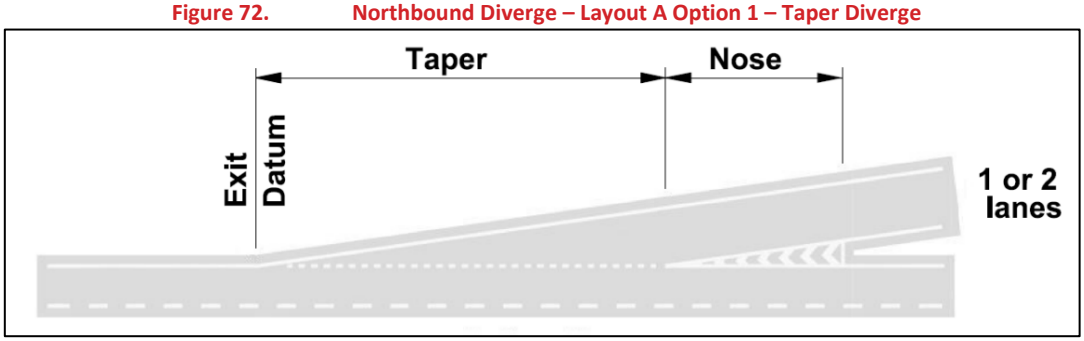
Figure 71. Aerial view of A23 Broxmead Lane Northbound On-slip

© 2024 Maxar Technologies, Map data

Northbound Off-slip Diverge

2.8.3 The Northbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 72** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 72. Northbound Diverge – Layout A Option 1 – Taper Diverge



2.8.4 **Table 23** displays the actual flow data (vehicles) for the mainline A23 in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 23. A23 – Broxmead Lane Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3173	2395	4454	3412	4721	3535	267	123
Slip Road	0	0	0	0	0	0	0	0

2.8.5 It should be noted that the Mid Sussex Strategic Highway Model does not include traffic flows for the northbound slip roads at this junction and thus these cannot be used for this assessment. The assessment has been based on A23 traffic flows only for the comparison between Baseline, Reference Case and Scenario 6m2 impacts on the mainline.

2.8.6 **Figure 73** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

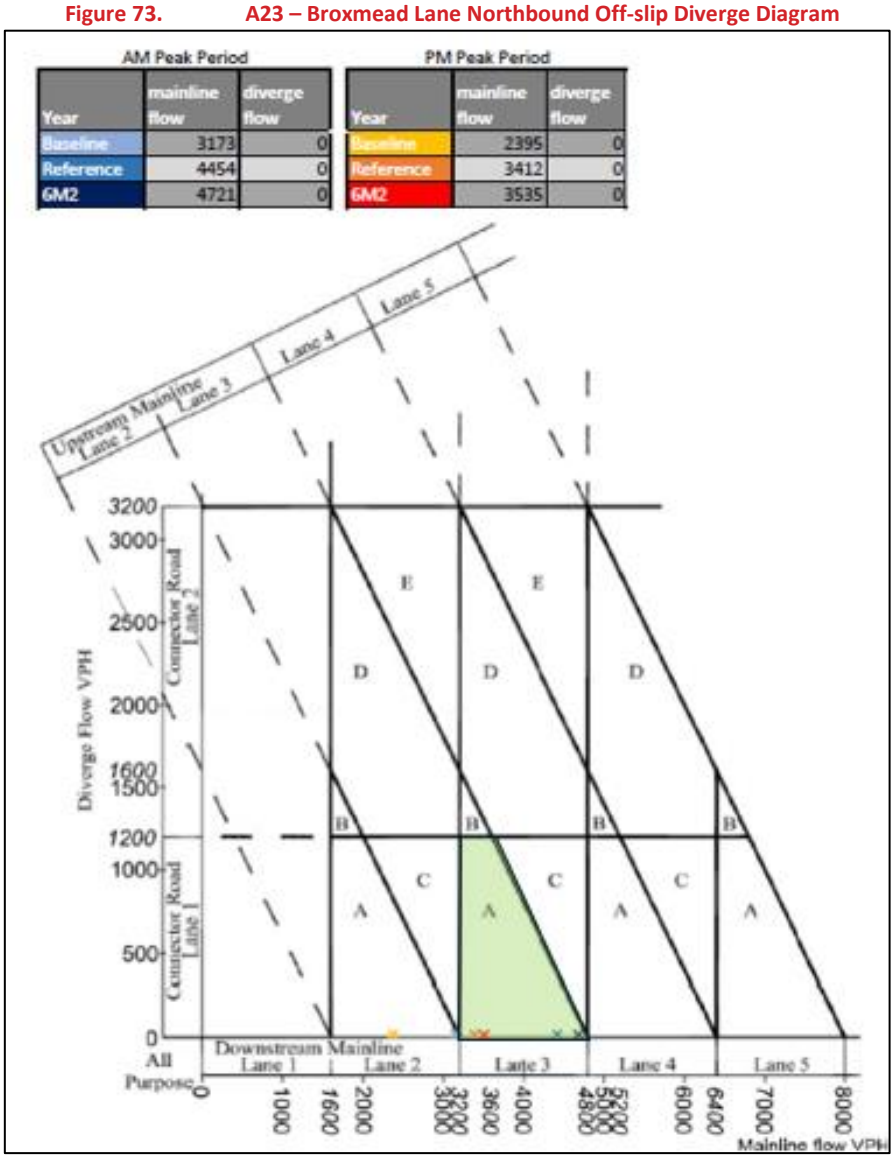
Figure 73. A23 – Broxmead Lane Northbound Off-slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	3173	0
Reference	4454	0
6M2	4721	0

PM Peak Period

Year	mainline flow	diverge flow
Baseline	2395	0
Reference	3412	0
6M2	3535	0



2019 Baseline:

2.8.7 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge with two lanes upstream and two lanes downstream is required for the existing traffic flows and thus the existing layout is appropriate.

2039 Reference Case

2.8.8 The Reference Case traffic flows indicate the existing layout A taper diverge is likely to continue to offer sufficient capacity for this scenario in both the AM and PM peaks. However, in the AM peak this will be dependent on the traffic flows on the off-slip being less than approximately 550 vehicles.

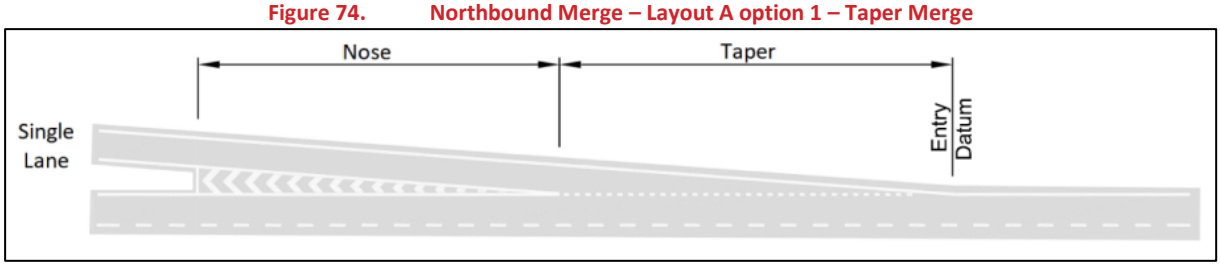
Scenario 6M2

2.8.9 In the 6M2 scenario, the mainline traffic flows indicate that the existing layout A diverge is likely to continue to be appropriate but again this is dependent on the slip road traffic flows for the AM peak. In this instance, slip road traffic flows of over approximately 100 vehicles may trigger the need for a layout change. However, given the forecast routing from District Plan growth this is not expected to materialize as a result of District Plan allocations and therefore no further investigation is considered necessary.

Northbound On-slip Merge

2.8.10 The northbound on-slip is a type A option 1 taper merge as can be seen in **Figure 74** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 74. Northbound Merge – Layout A option 1 – Taper Merge



2.8.11 **Table 24** below displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 24. A23 – Broxmead Lane Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	3173	2395	4454	3412	4721	3535	267	123
Slip Road	0	0	0	0	0	0	0	0

2.8.12 It should be noted that the Mid Sussex Strategic Highway Model does not include traffic flows for the northbound slip roads at this junction and thus these cannot be used for this assessment. The assessment has been based on A23 traffic flows only for the comparison between Baseline, Reference Case and Scenario 6m2 impacts.

2.8.13 **Figure 75** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

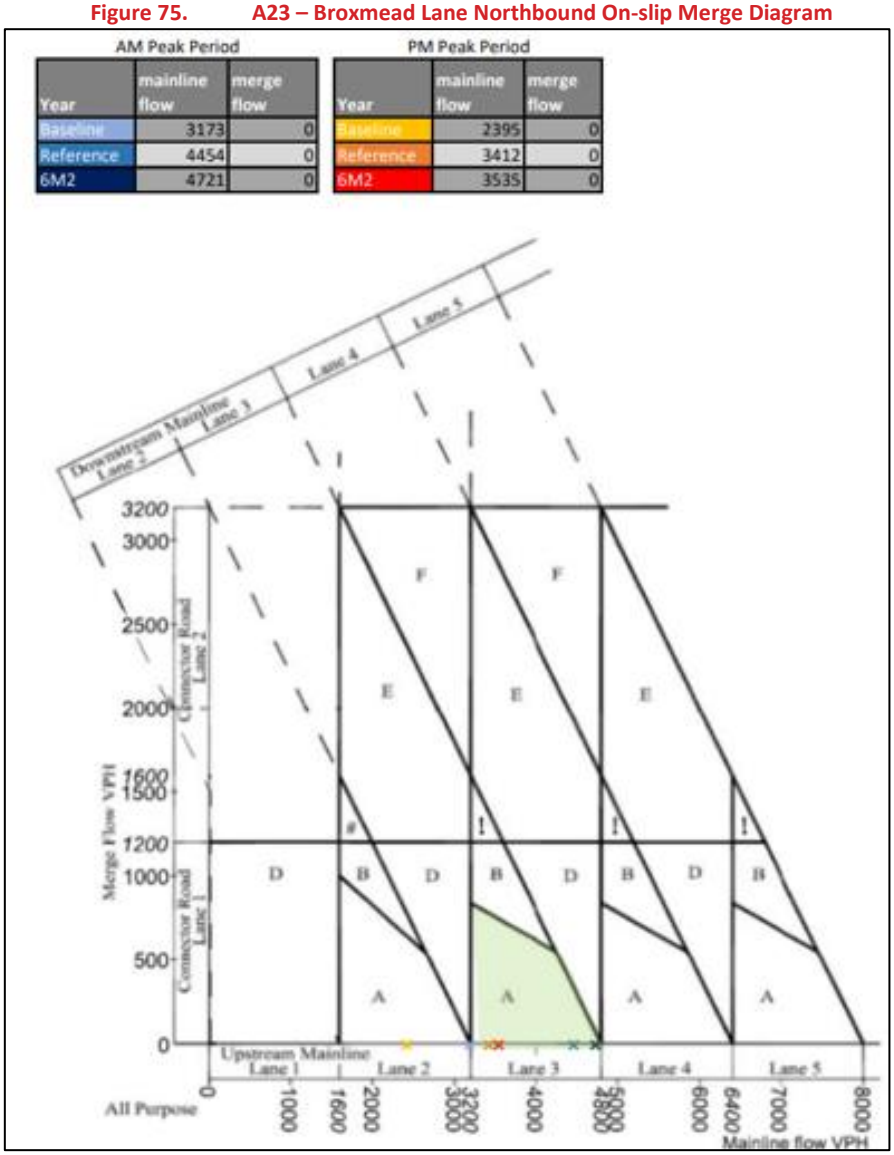
Figure 75. A23 – Broxmead Lane Northbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	3173	0
Reference	4454	0
6M2	4721	0

PM Peak Period

Year	mainline flow	merge flow
Baseline	2395	0
Reference	3412	0
6M2	3535	0



2019 Baseline:

2.8.14 Both the AM and PM Baseline 2019 flows shows a layout A taper merge with two upstream and downstream lanes would be sufficient to accommodate existing traffic. Thus, the existing layout A with three upstream and downstream lanes is more than adequate for existing traffic flows.

2039 Reference Case

2.8.15 The AM Reference Case flows indicate that the existing layout A taper merge will continue to be sufficient for this scenario. However, for the AM peak, if the slip road flows are more than approximately 300 vehicles, may trigger the need for a layout change.

Scenario 6M2

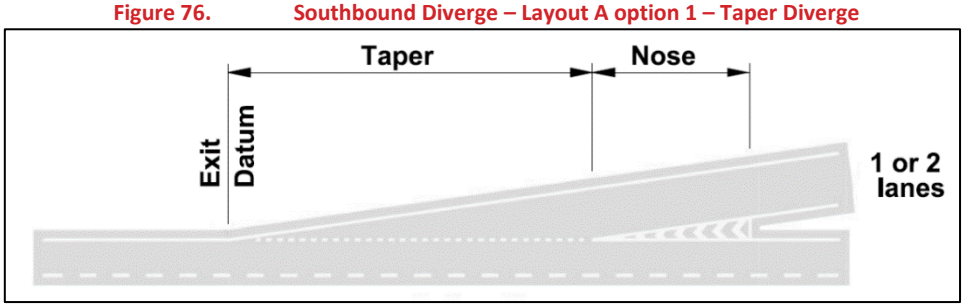
2.8.16 In the 6M2 scenario, the mainline traffic flows indicate that the existing layout A merge is likely to continue to be appropriate, but this will be dependent on the slip road traffic flows.

2.8.17 In this instance, slip road traffic flows in the AM peak of over approximately 100 vehicles may trigger the need for a layout change. However, given the forecast routing from District Plan growth this is not expected to materialize as a result of District Plan allocations and therefore no further investigation is considered necessary.

Southbound Off-slip Diverge

2.8.18 The southbound off-slip is also a layout A option 1 taper diverge as can be seen in **Figure 76** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 76. Southbound Diverge – Layout A option 1 – Taper Diverge



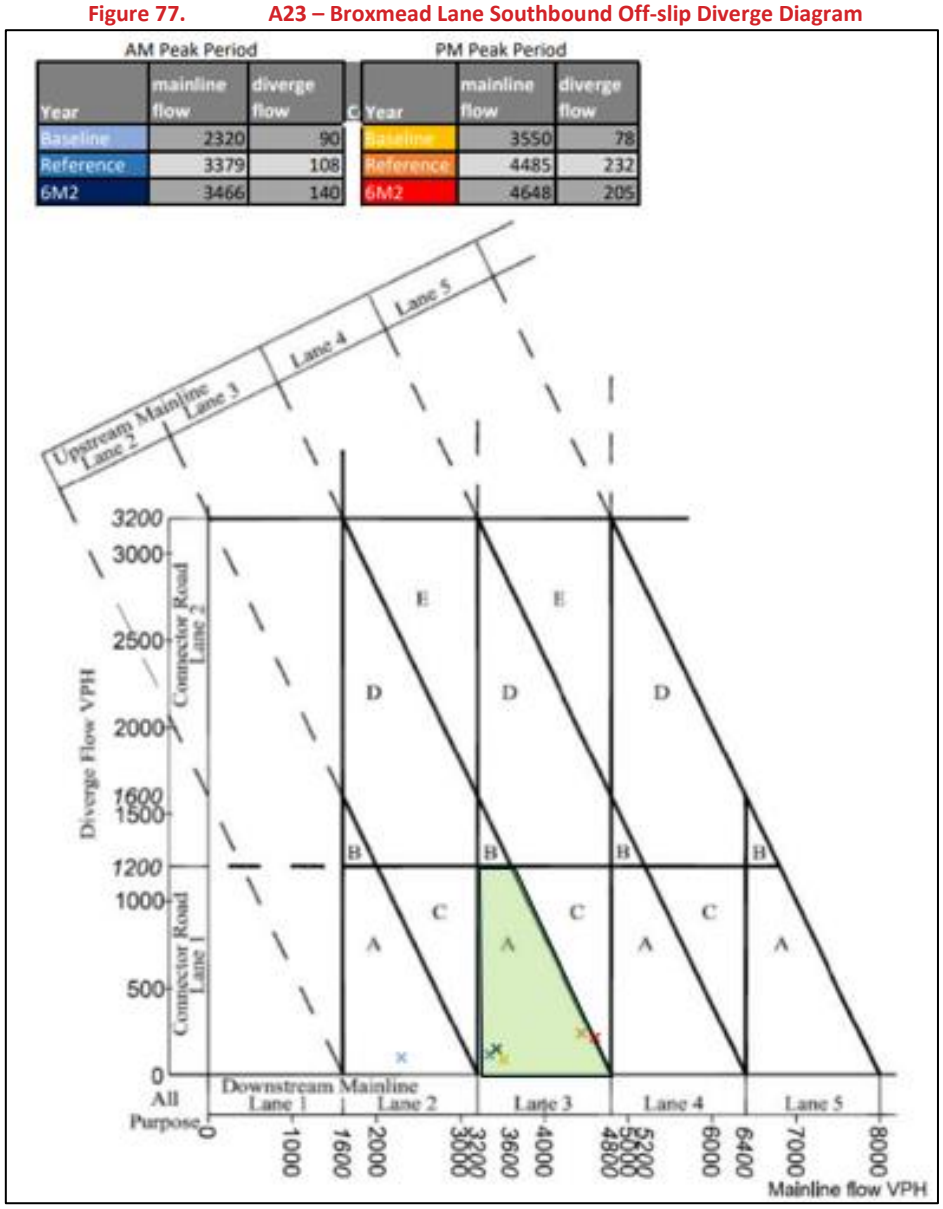
2.8.19 **Table 25** below displays the actual flow data (vehicles) for the southbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 25. A23 – Broxmead Lane Southbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Downstream)	2320	3550	3379	4485	3466	4648	87	163
Slip Road	90	78	108	232	140	205	32	-27

2.8.20 **Figure 77** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 77. A23 – Broxmead Lane Southbound Off-slip Diverge Diagram



2019 Baseline:

2.8.21 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge with three upstream and three downstream lanes is required in order to accommodate the higher PM flows. Thus, the existing layout is more than adequate for baseline traffic flows.

2039 Reference Case

2.8.22 The existing layout remains appropriate in the Reference Case for both the AM and PM peak, with the PM peak again having higher traffic flows.

Scenario 6M2

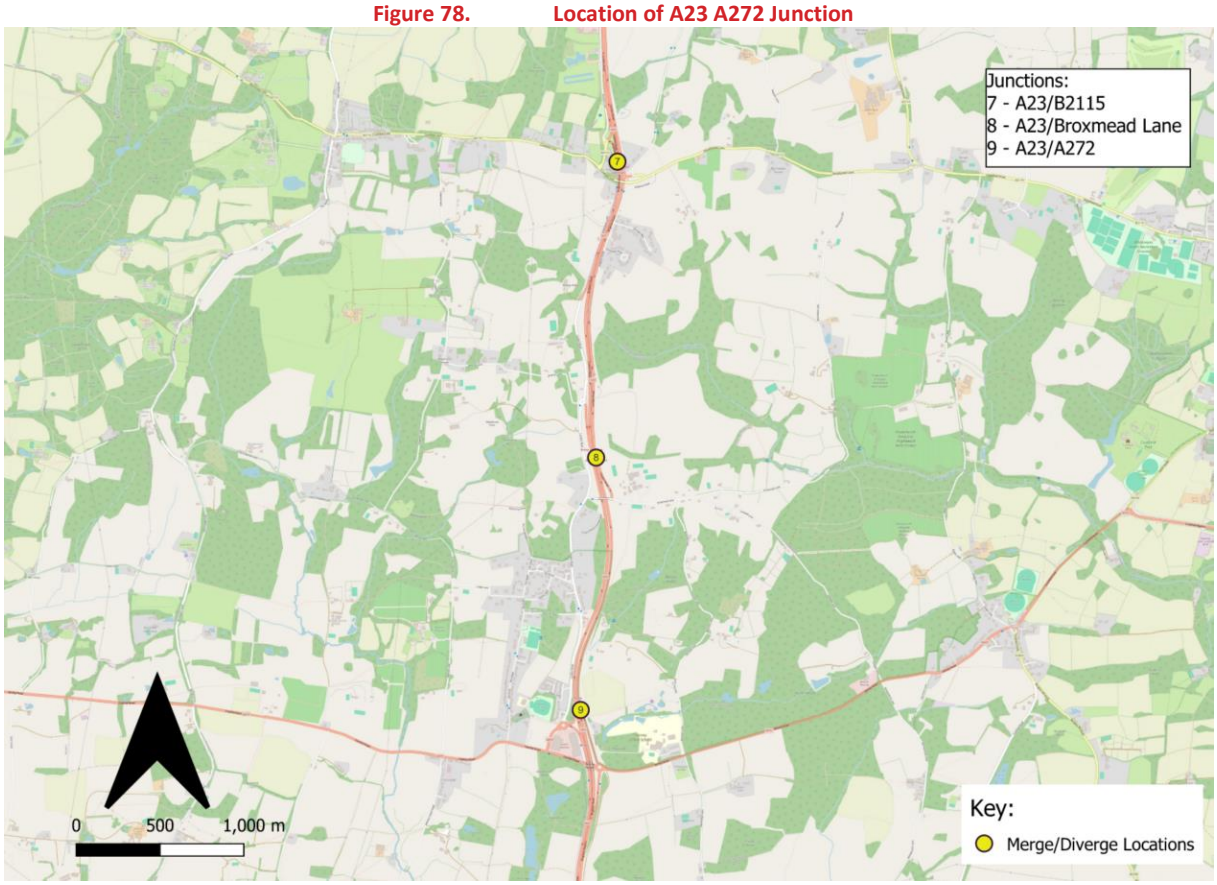
2.8.23 Again, the PM peak shows higher traffic flows in the PM peak, although slip road flows do decrease slightly in the 6m2 scenario. In this instance the existing layout A taper diverge will

continue to accommodate forecast 6m2 traffic levels. As there is no requirement change between Reference Case and Scenario 6M2, no further mitigation works have been considered.

2.9 A23-A272 Junction

2.9.1 The A272 junction on the A23 comprises of merge and diverge movements in both directions. The A23 mainline has three lanes upstream and downstream in both directions at this junction. The location of the A23 A272 junction is shown below in **Figure 78.**

Figure 78. Location of A23 A272 Junction



2.9.2 The aerial view of the A23/A272 junction northbound slips and southbound off-slip is shown in **Figure 79** and the southbound on-slip is shown in **Figure 80.**

Figure 79. Aerial View of A23 A272 Northbound Slips and Southbound Off-slip

Imagery ©2024 Maxar Technologies, Map data ©2024

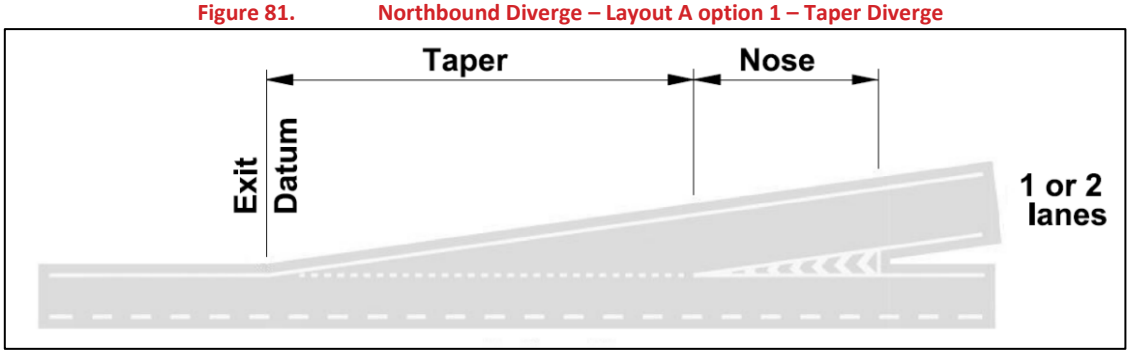
Figure 80. Aerial View of A23 A272 Southbound On-slip

Imagery ©2024 Maxar Technologies, Map data ©2024

Northbound Off-slip Diverge:

2.9.3 The northbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 81** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 81. Northbound Diverge – Layout A option 1 – Taper Diverge



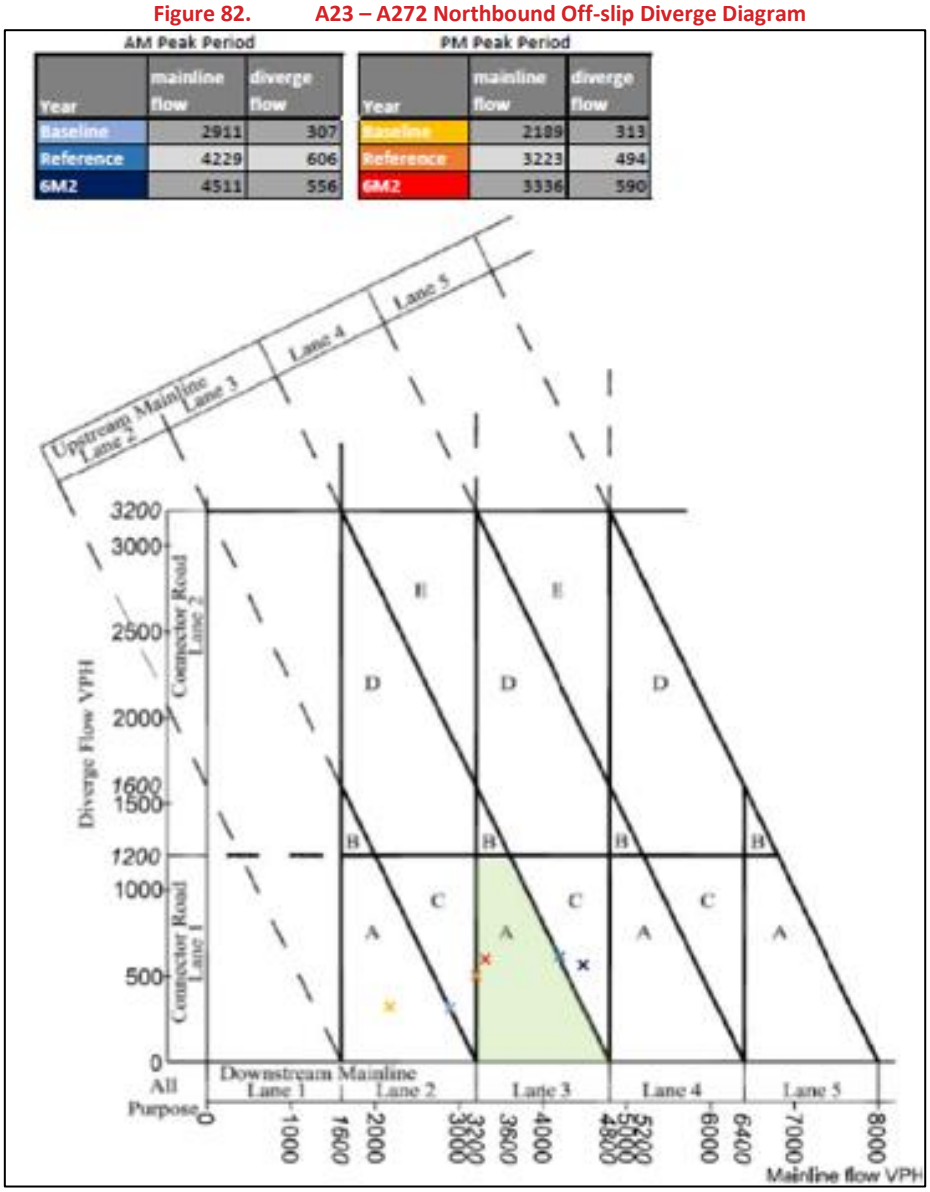
2.9.4 **Table 26** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 26. A23 – A272 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2-2039 REF CASE	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2911	2189	4229	3223	4511	3336	282	113
Slip Road	307	313	606	494	556	590	-50	96

2.9.5 **Figure 82** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 82. A23 – A272 Northbound Off-slip Diverge Diagram



2019 Baseline

2.9.6 The 2019 AM and PM Baseline flows indicate that the existing layout A taper diverge arrangement with three upstream and three downstream lanes is more than adequate for accommodating the existing baseline traffic flows.

2039 Reference Case

2.9.7 Similarly, the Reference Case traffic flows can also be accommodated using the existing layout.

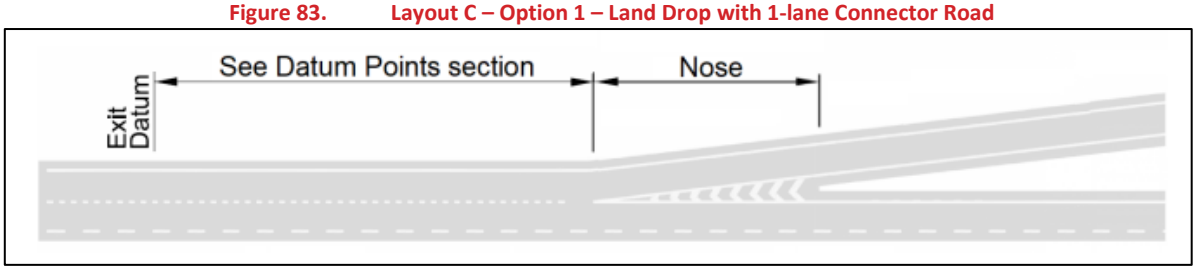
Scenario 6M2

2.9.8 Whilst PM traffic flows can be accommodated by the existing layout in the 6m2 scenario, the AM flows are forecast to increase to a level which will require a layout upgrade for the off slip to a layout C lane drop arrangement, with four lanes upstream and three lanes

downstream. This upgrade would require the construction of an additional lane on the mainline upstream of the diverge.

2.9.9 **Figure 83** shows the Layout of Type C, as taken from figure 3.30e from the DMRB.

Figure 83. Layout C – Option 1 – Land Drop with 1-lane Connector Road



2.9.10 The difference from the ref case to 6m2 is the additional lane upstream and the change from a taper diverge to a lane drop.

DMRB Assessment Upgrade Feasibility

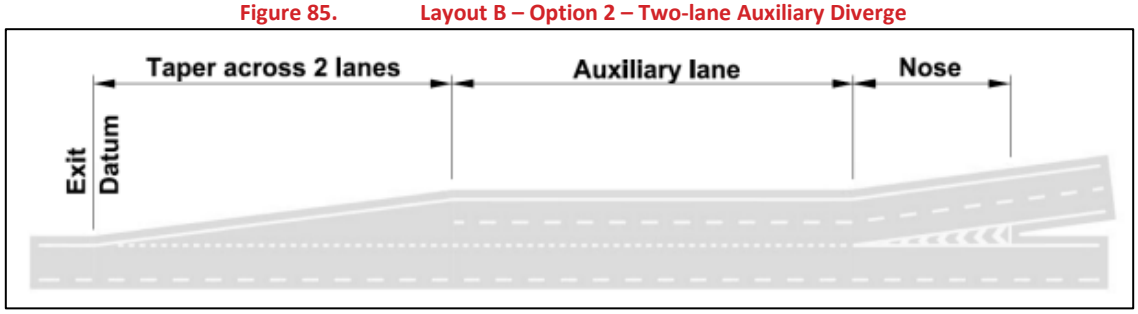
2.9.11 The A23 upstream of the diverge runs over an overpass structure (see **Figure 84** below) meaning the construction of an additional lane would require significant work and costs.

Figure 84. A23 A272 Northbound Off Slip Overpass

Image capture: Jul 2024 ©2024 Google

2.9.12 Annex (DMRB) states that a layout B auxiliary lane can be used instead of a layout C. **Figure 85** shows a Layout B two lane auxiliary diverge.

Figure 85. Layout B – Option 2 – Two-lane Auxiliary Diverge



2.9.13 Due to the overpass, an auxiliary lane would also not be feasible. Therefore, physical geometric improvement measures at this junction are not feasible and would not be taken forward.

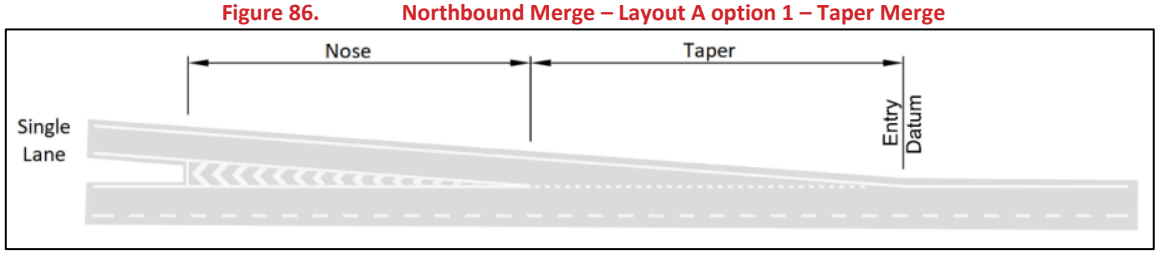
2.9.1 The importance of maintaining the safe and efficient operation of the SRN is recognized and consideration could be given to early warning to alert drivers of the imminent diverge after the overbridge and/or the likelihood of busy conditions during peak hours. Future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

2.9.2 Further detail on additional assessments to demonstrate that the District Plan impacts are not considered "severe" in terms of the definition set out within NPPF is provided in section 4.1.5-4.1.9 of this Report. Additionally, a COVID sensitivity test is presented in Chapter 3 which under the reduced traffic flow demand means a layout upgrade is not triggered at this diverge location.

Northbound On-slip Merge

2.9.3 The northbound on-slip is a type A option 1 taper merge as can be seen in **Figure 86** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 86. Northbound Merge – Layout A option 1 – Taper Merge



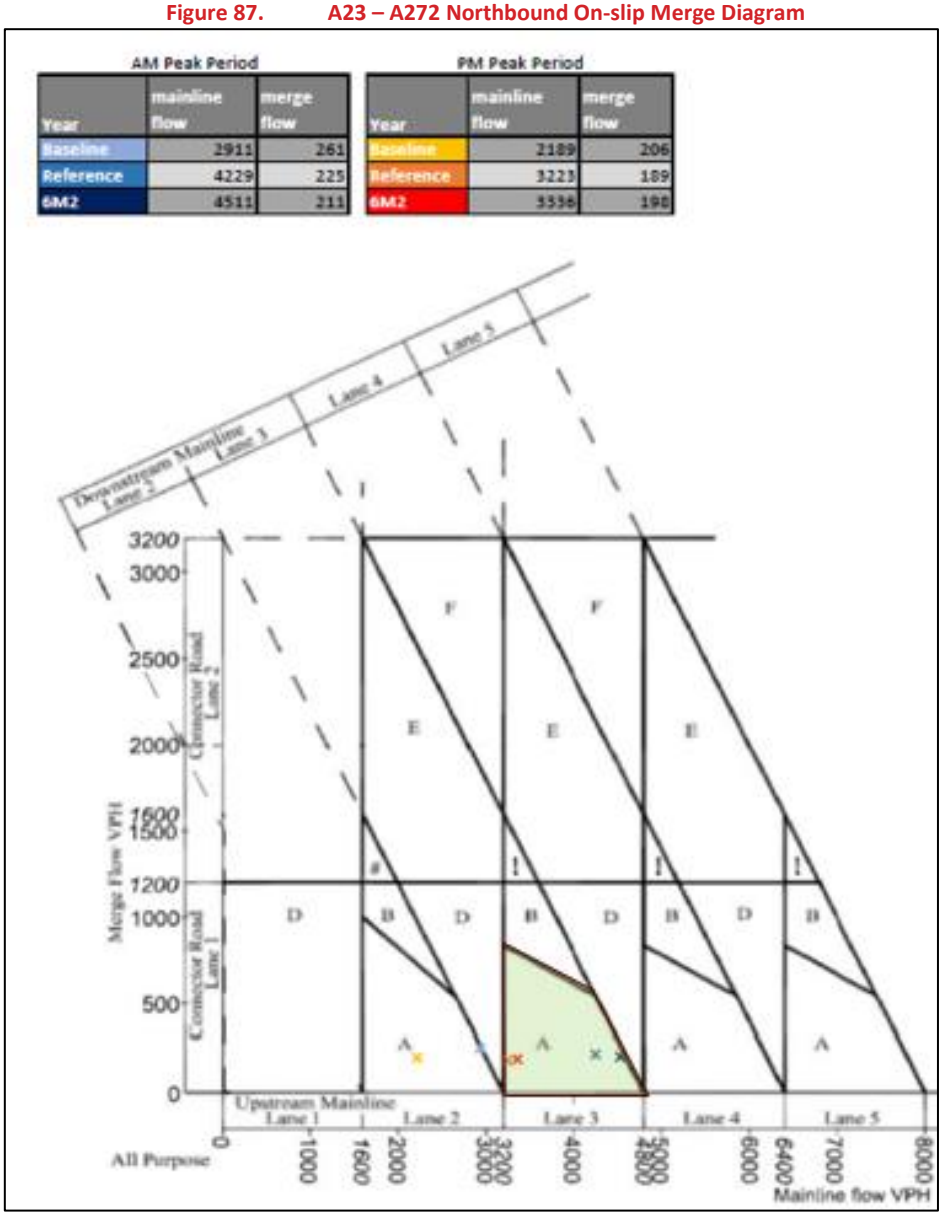
2.9.4 **Table 27** below table displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 27. A23 – A272 Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2911	2189	4229	3223	4511	3336	282	113
Slip Road	261	206	225	189	211	198	-14	9

2.9.5 **Figure 87** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 87. A23 – A272 Northbound On-slip Merge Diagram



2019 Baseline

2.9.6 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge with three lanes upstream and downstream is suitable and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.9.7 Similarly, both the AM and PM Reference Case flows indicate a layout A taper merge will continue to be sufficient.

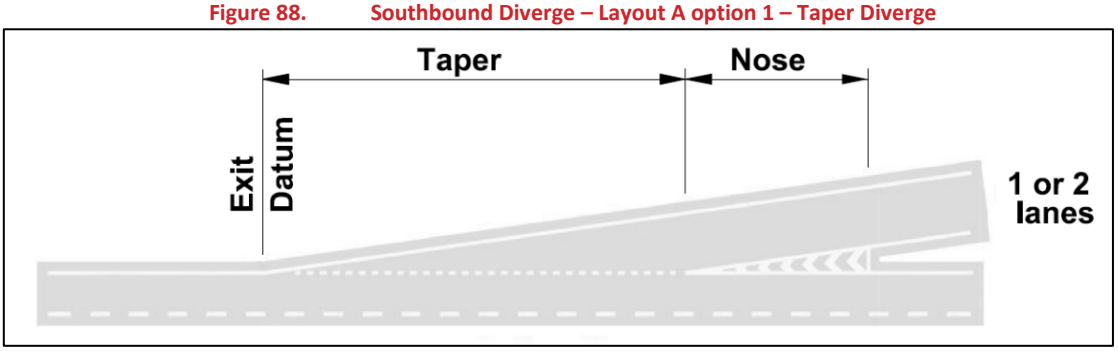
Scenario 6M2

2.9.8 Whilst there is a small increase in traffic associated with the District Plan allocations at this junction, the existing layout A taper will continue to be the appropriate layout for the merge in this scenario.

Southbound Off-slip Diverge

2.9.9 The southbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 88** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 88. Southbound Diverge – Layout A option 1 – Taper Diverge



2.9.10 **Table 28** displays the actual flow data (vehicles) for the southbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 28. A23 A272 Southbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2086	3212	3112	4143	3176	4241	64	98
Slip Road	235	339	266	342	289	406	23	64

2.9.11 **Figure 89** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

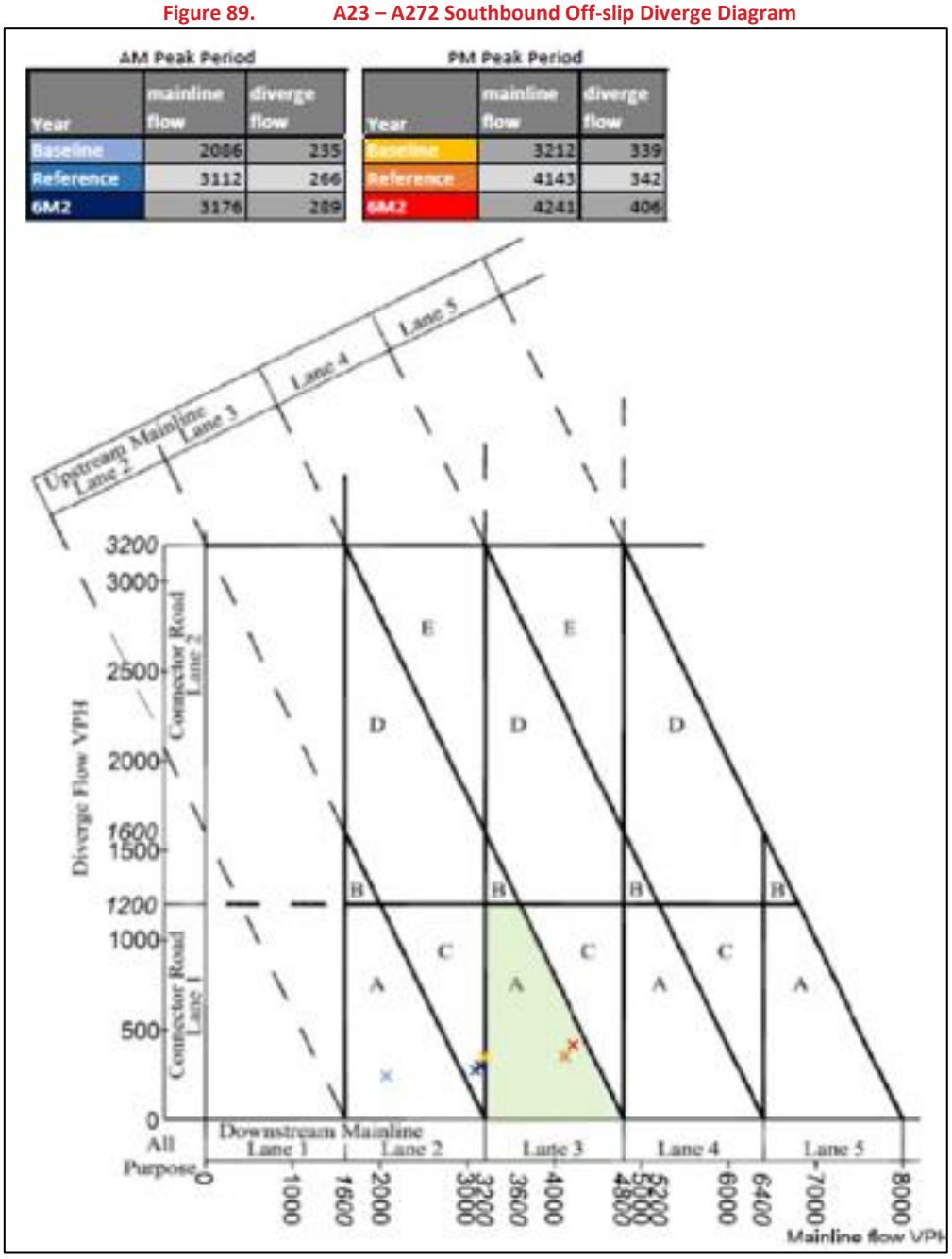
Figure 89. A23 – A272 Southbound Off-slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	2086	235
Reference	3112	266
6M2	3176	289

PM Peak Period

Year	mainline flow	diverge flow
Baseline	3212	339
Reference	4143	342
6M2	4241	406



2019 Baseline

2.9.12 Both the AM and PM Baseline 2019 flows indicate a layout A taper diverge is appropriate and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.9.13 The Reference Case traffic flows for both the AM and PM peak indicates a layout A taper diverge will continue to offer sufficient capacity for this scenario.

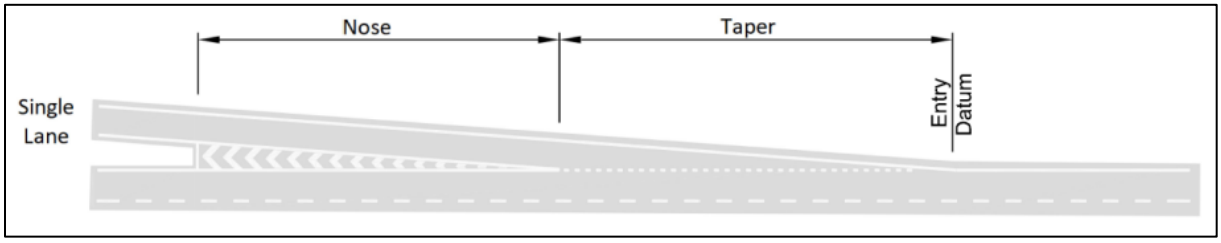
Scenario 6M2

2.9.14 Whilst there is an increase in traffic associated with the District Plan allocations at this junction, particularly in the PM peak, the existing layout A taper diverge will continue to be the appropriate layout for the diverge in this scenario.

Southbound On-slip Merge:

2.9.15 The southbound on-slip is a type A option 1 taper merge as can be seen in **Figure 90** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 90. Southbound Merge – Layout A option 1 – Taper Merge



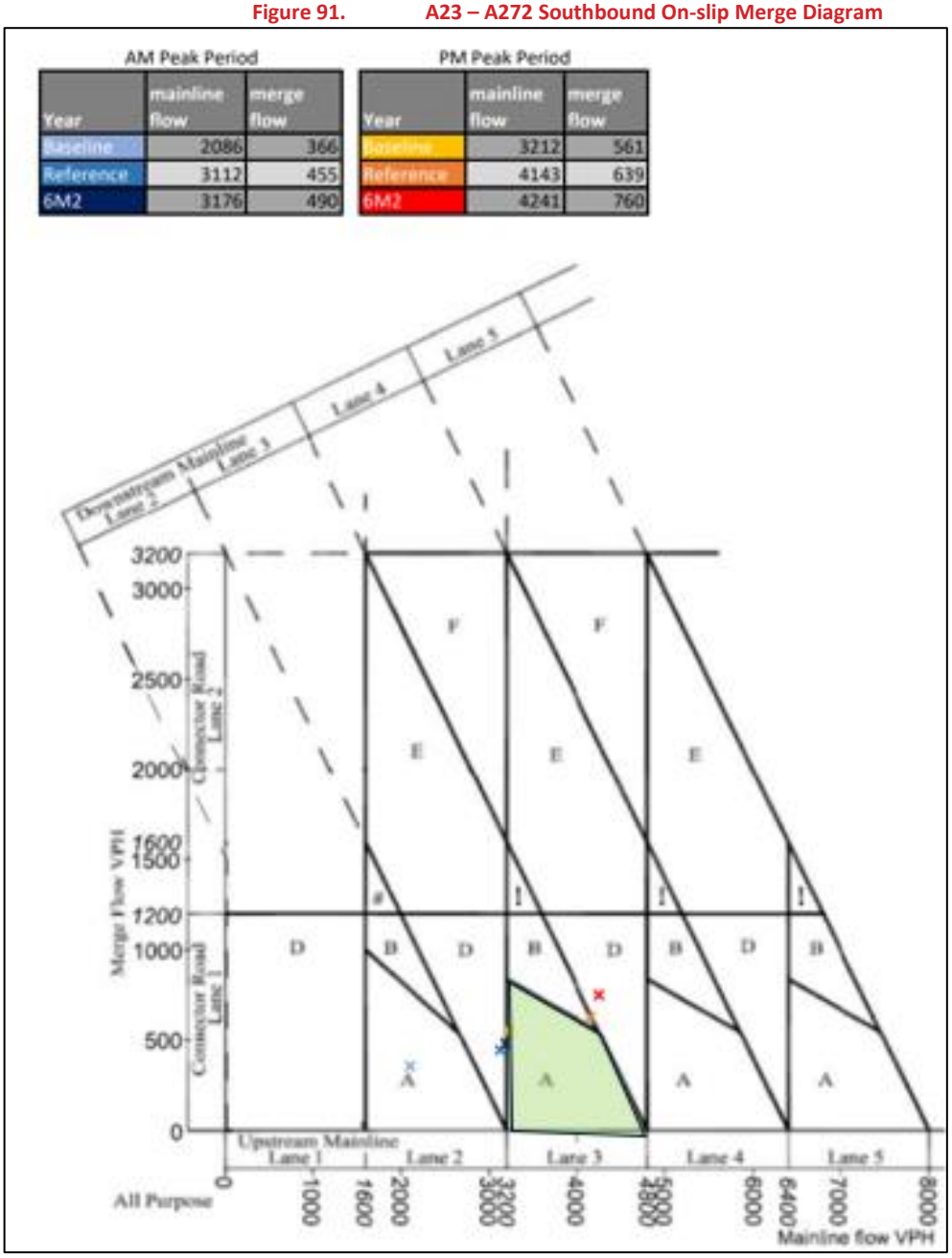
2.9.16 **Table 29** below displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 29. A23 A272 Southbound On-Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2086	3212	3112	4143	3176	4241	64	98
Slip Road	366	561	455	693	490	760	35	67

2.9.17 **Figure 91** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 91. A23 – A272 Southbound On-slip Merge Diagram



2019 Baseline

2.9.18 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge with three lanes upstream and downstream is suitable and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.9.19 The forecast increases in traffic in the Reference Case PM peak are sufficient to trigger a requirement for an upgrade to the merging arrangement for the southbound merge, and a layout B parallel merge will be required in this scenario.

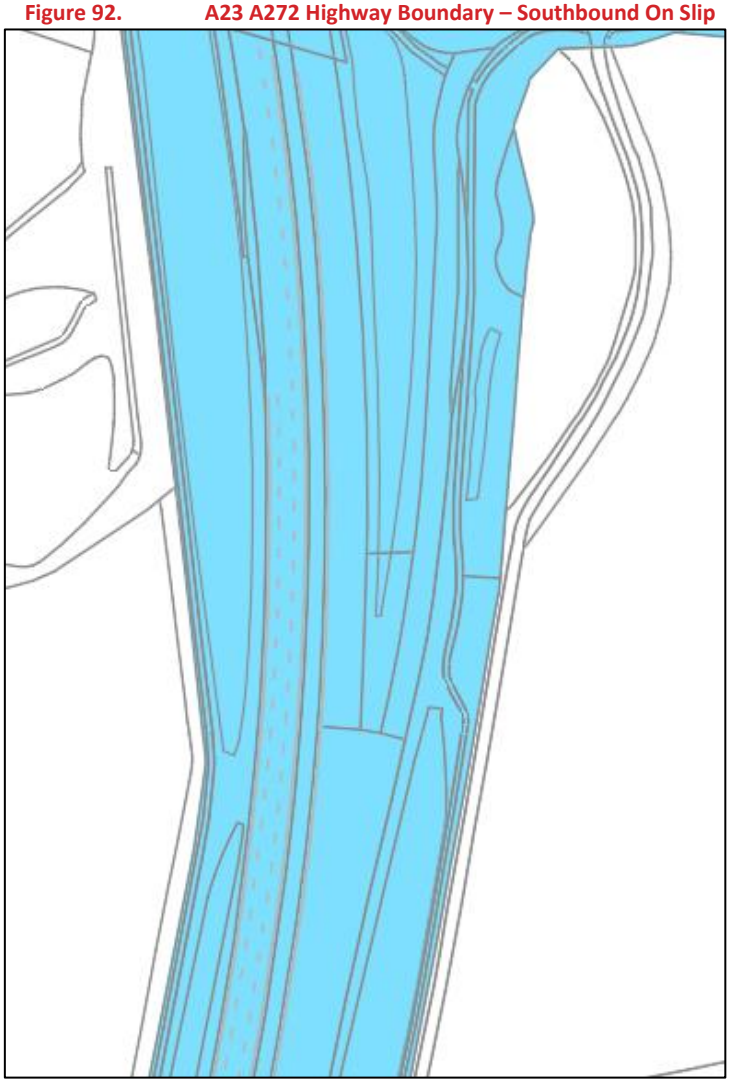
Scenario 6M2

2.9.20 The increase in traffic growth in the 6m2 scenario are sufficient to trigger a further upgrade requirement at the southbound merge. In the PM scenario a layout D lane gain arrangement will be required with three upstream lanes and four downstream lanes.

DMRB Assessment Upgrade Feasibility

2.9.21 The highway boundary at this location can be seen in blue on **Figure 92** below. For the southbound on slip there is a significant amount of available highway boundary space.

Figure 92. A23 A272 Highway Boundary – Southbound On Slip



2.9.22 However, the upgrade would require the construction of an additional mainline lane on the A23 downstream of the merge. Taking the A23 up to four lanes south of this junction. This would require significant works and costs. Due to this it would be unfeasible to provide the full layout D and additional lane, therefore an intermediate measure has been considered.

2.9.23 Within the Annex to CD122 it is stated that where no lane gains are to be introduced, the CD122 layout can be substituted as described by – Layout B can be used instead of Layout D.

2.9.24 As a layout B is what is required in the Reference Case, there would be no further change between Reference Case and Scenario 6M2. As requested during further discussions with National Highways, additional assessments have been undertaken at this junction to further investigate the potential deliverability of a physical mitigation scheme. The outcomes of the assessments and the suggested intervention are discussed at section 4.1.10- 4.1.14, with a proposed Type B parallel merge drawing of the southbound merge mitigation shown in **Figure 141**.

2.10 A23 – A2300 Junction

2.10.1 The A2300 junction on the A23 comprises of merge and diverge movements in both directions. In the northbound direction, the A23 mainline has two lanes upstream and three lanes downstream, whilst the southbound direction has three lanes upstream and downstream. The location of the A23 A2300 junction is shown below in **Figure 93.**

Figure 93. Location of A23 A2300

2.10.2 Aerial views of the A23/A2300 junction slip roads are shown in **Figure 94**, **Figure 95** and **Figure 96**.

Figure 94. Aerial view of A23 A2300 Northbound Merge Layout

© 2024 Maxar Technologies, Map data

Figure 95. Aerial view of A23 A2300 Southbound Diverge Layout

© 2024 Maxar Technologies, Map data

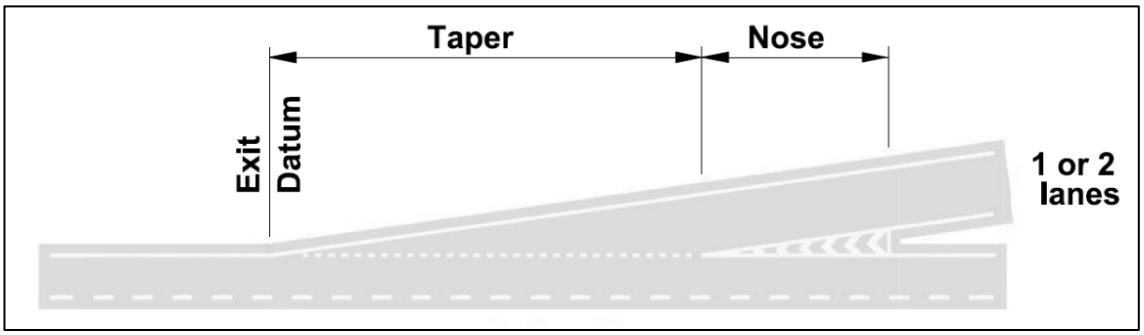
Figure 96. Aerial View of A23 A2300 Northbound Diverge and Southbound Merge Layouts

© 2024 Maxar Technologies, Map data

Northbound Off-slip Diverge

2.10.3 The northbound off-slip is a layout A option 1 taper diverge as can be seen in **Figure 97** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 97. Northbound Diverge – Layout A option 1 – Taper Diverge



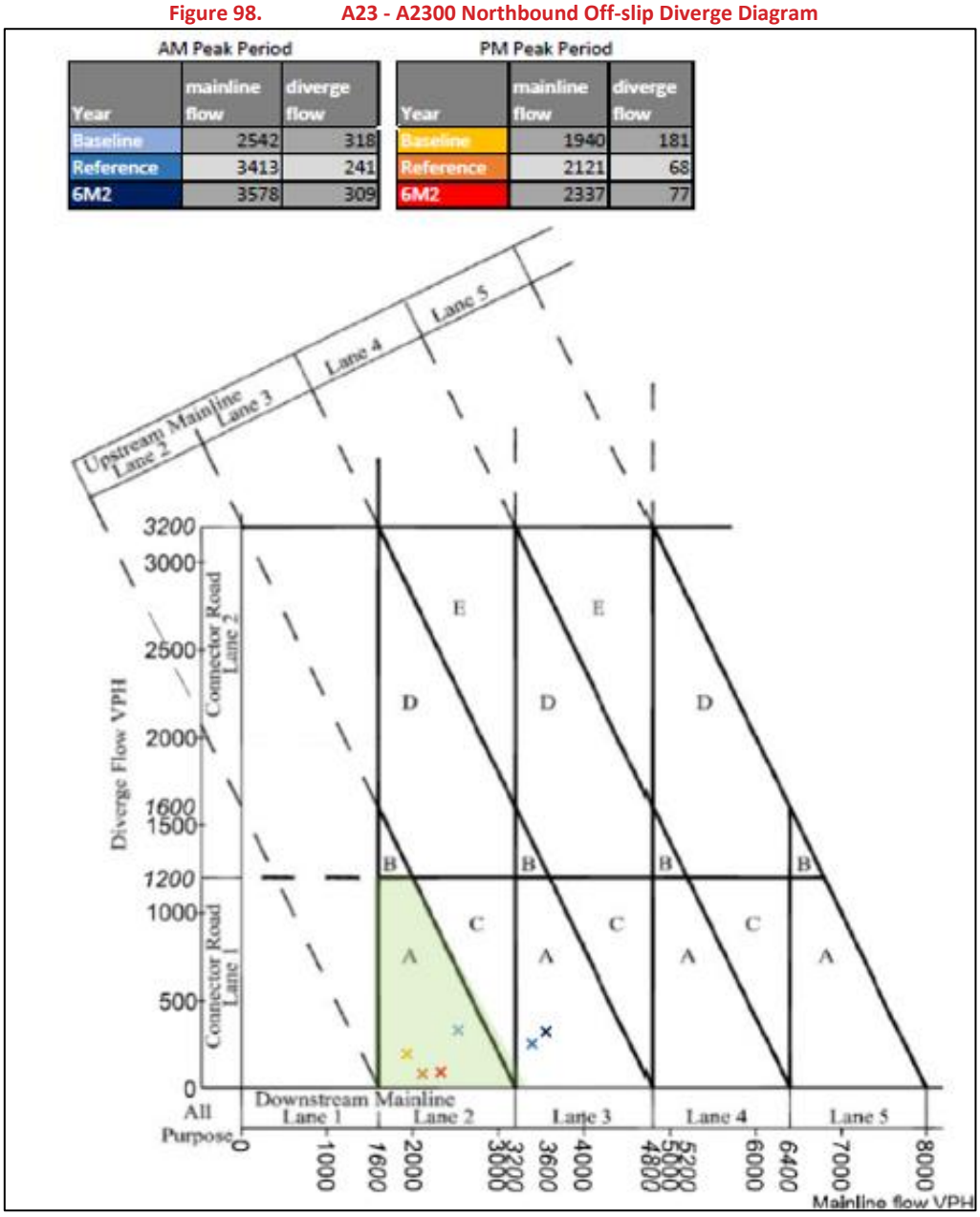
2.10.4 **Table 30** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 30. A23 – A2300 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2542	1940	3413	2121	3578	2337	165	216
Slip Road	318	181	241	68	309	77	68	9

2.10.5 **Figure 98** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 98. A23 - A2300 Northbound Off-slip Diverge Diagram



2019 Baseline

2.10.6 Both the AM and PM Baseline 2019 flows indicate the layout A taper diverge with two lanes upstream and downstream is sufficient and that the existing layout is suitable for existing traffic flows.

2039 Reference Case

2.10.7 For the Reference Case, whilst PM flows can be accommodated by the existing layout, increases in AM mainline traffic flows indicate that a layout A taper diverge will continue to be appropriate but the layout should be upgraded to have three lanes upstream and downstream.

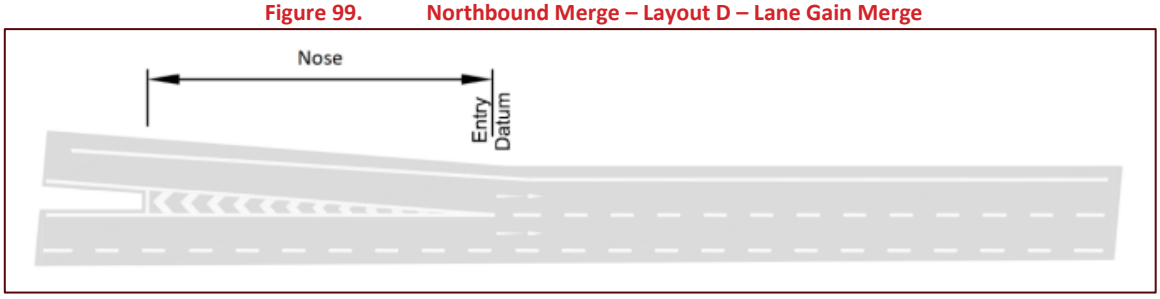
Scenario 6M2

2.10.8 Whilst there is a minor increase in traffic associated with the District Plan allocations at this junction, this will not require a further upgrade in the diverge arrangement. Whilst an upgrade to layout A option 1 with three lanes upstream and downstream is required, this requirement is not attributable to additional District Plan traffic as it is also required in the 2039 reference case.

Northbound On-slip Merge

2.10.9 The northbound on-slip is a layout D lane gain merge as can be seen in **Figure 99** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 99. Northbound Merge – Layout D – Lane Gain Merge



2.10.10 **Table 31** below displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 31. A23 – A2300 Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2542	1940	3413	2121	3578	2337	165	216
Slip Road	677	561	1422	1595	1489	1588	67	-7

2.10.11 **Figure 100** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

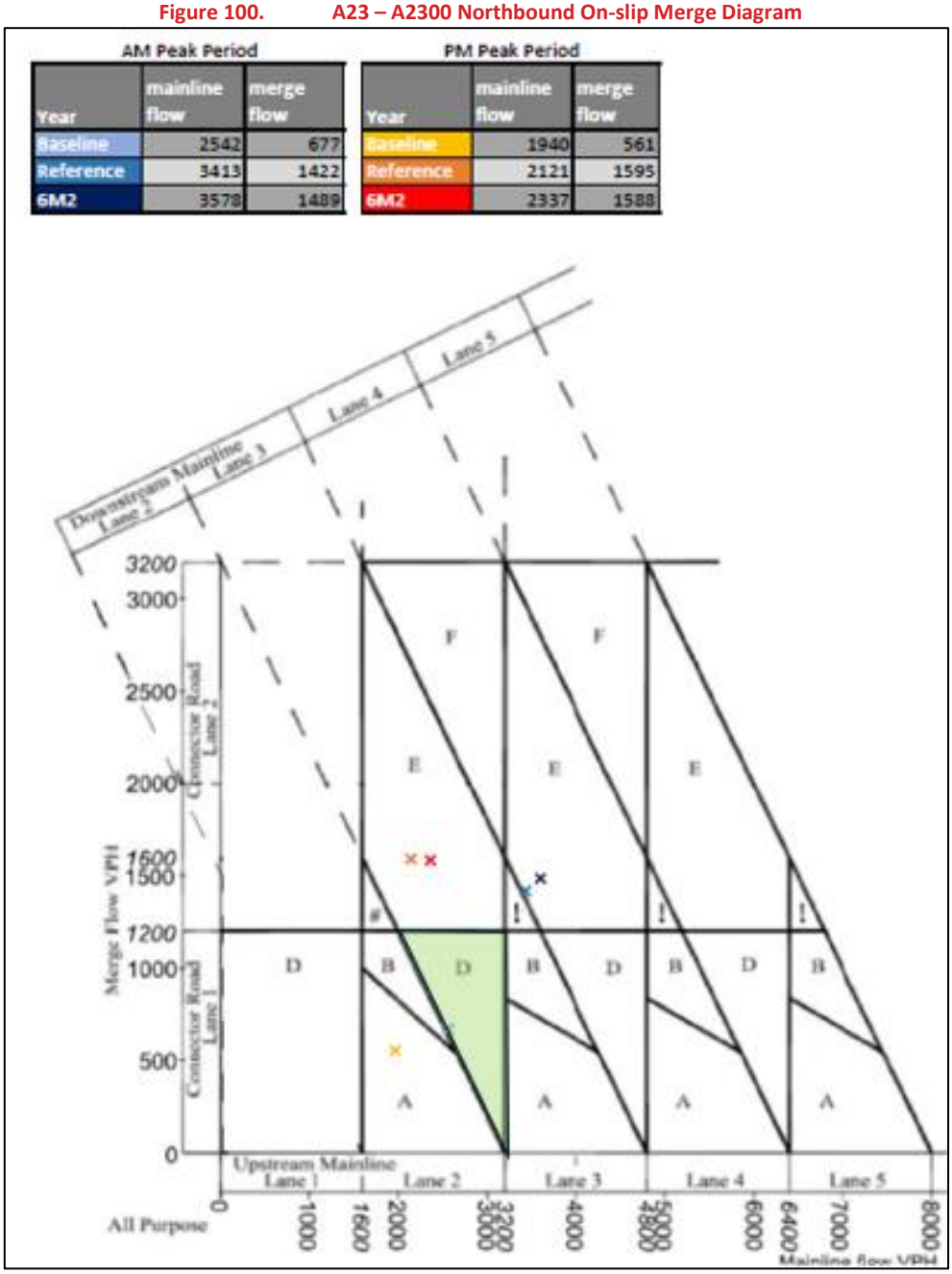
Figure 100. A23 – A2300 Northbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	2542	677
Reference	3413	1422
6M2	3578	1489

PM Peak Period

Year	mainline flow	merge flow
Baseline	1940	561
Reference	2121	1595
6M2	2337	1588



2019 Baseline

2.10.12 Both the AM and PM 2019 Baseline flows show that the existing layout D lane gain is suitable for existing traffic flows, particularly during the busier AM period.

2039 Reference Case

2.10.13 It is forecast that there will be increases in intermain traffic flows in the 2039 Reference Case which will require an upgrade to Layout E – lane gain with ghost island merge. In order to accommodate the heavier AM traffic flows, this layout will require three upstream and four downstream lanes.

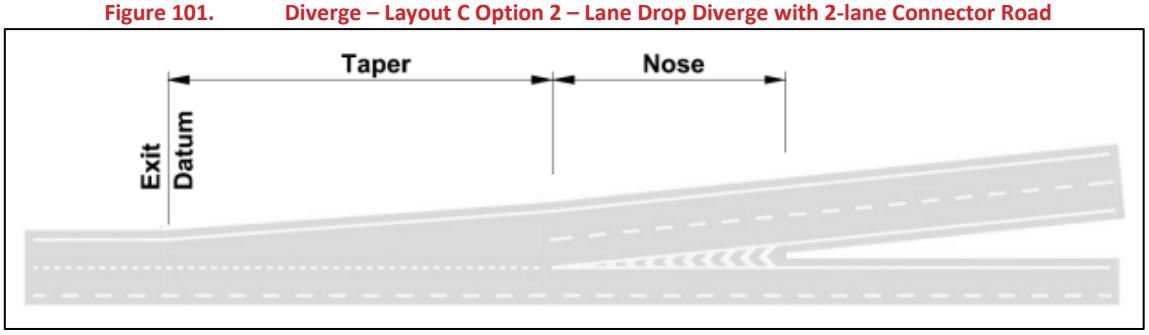
Scenario 6M2

2.10.14 Whilst traffic levels will increase further with District Plan allocations, this will not require a further upgrade in the merge arrangement for this junction in comparison to the 2039 reference case. Whilst an upgrade to layout E lane gain with ghost island merge is required, this requirement is not attributable to additional District Plan traffic.

Southbound Off-slip Diverge

2.10.15 The southbound off-slip is a layout C option 2 lane drop diverge with a 2-lane connector road, as can be seen in **Figure 101Figure 101** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 101. Diverge – Layout C Option 2 – Lane Drop Diverge with 2-lane Connector Road



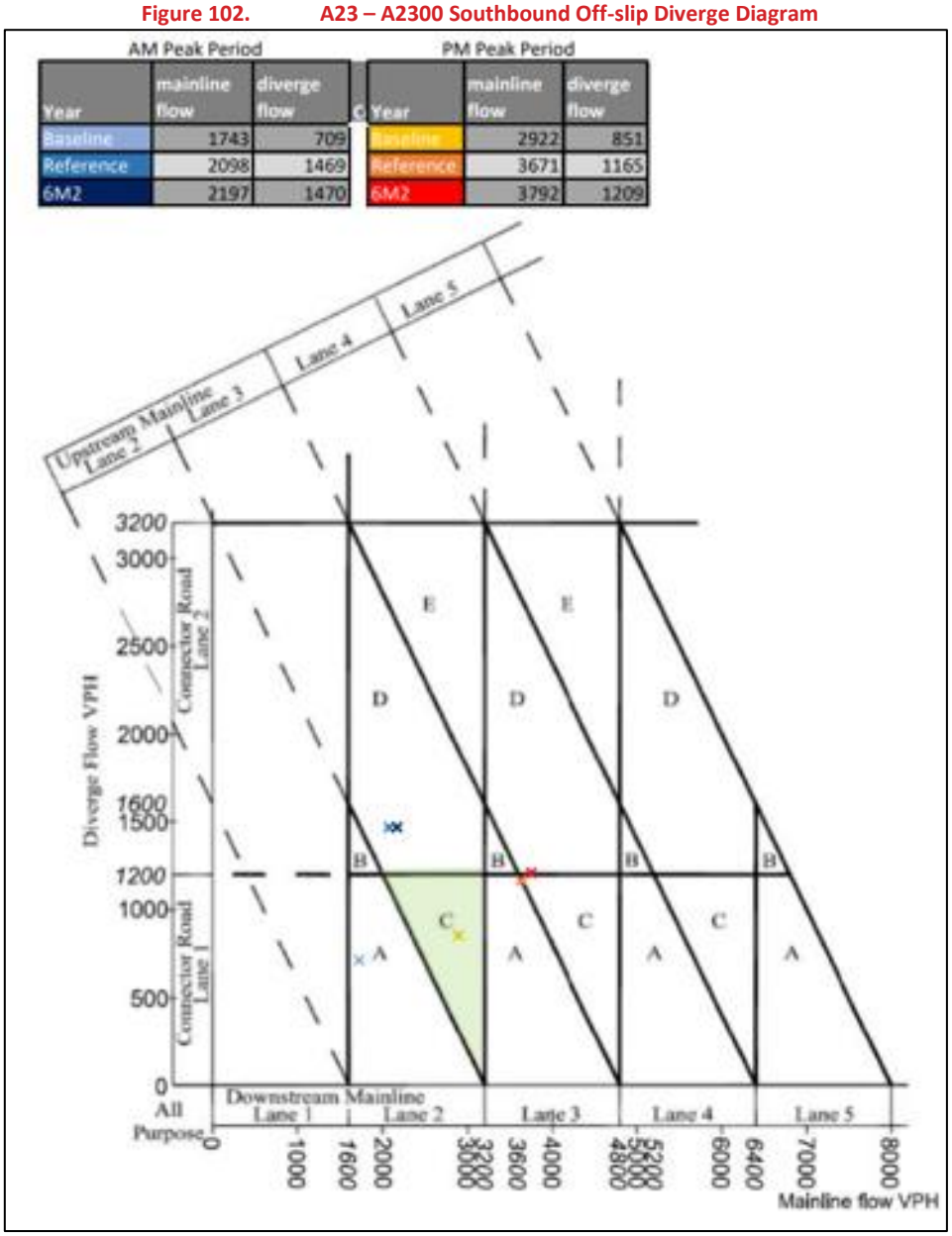
2.10.16 **Table 32** below displays the actual flow data (vehicles) for the southbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2

Table 32. .A23 – A2300 Southbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	1743	2922	2098	3671	2197	3792	99	121
Slip Road	709	851	1469	1165	1470	1209	1	44

2.10.17 **Figure 102** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 102. A23 – A2300 Southbound Off-slip Diverge Diagram



2019 Baseline

2.10.18 Both the AM and PM Baseline 2019 flows indicate the existing layout option 2 lane drop diverge with three lanes upstream and two lanes downstream is appropriate for existing traffic flows.

2039 Reference Case

2.10.19 The AM flows in the Reference Case require an upgrade to a layout type D from an existing type of C requiring no additional mainline lanes. However, the PM flows require a change to a layout A with an additional downstream lane being required. However, noting that the PM flows are very close to the boundary, and any increase in mainline or slip road flow would

require a further change to a layout C or D depending on the level of increase, requiring an additional upstream mainline lane to be constructed.

2.10.20 Taking a combination of the AM and PM flows to obtain a worst case scenario, would however place the requirement in type D with three lanes downstream and four lanes upstream.

Scenario 6M2

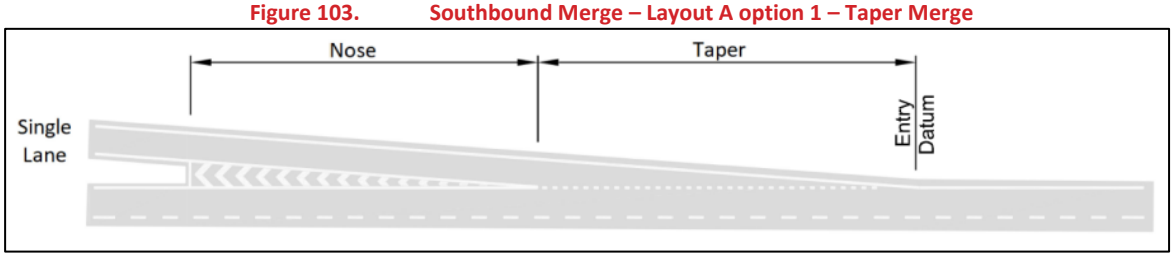
2.10.21 The AM flows within scenario 6M2 require an upgrade to a layout D with two lanes downstream and three lanes upstream, as was the requirement in the Reference Case. However, the PM flows require a layout type D with three lanes downstream and four lanes upstream, an additional lane both upstream and downstream from the existing provision.

2.10.22 This does therefore show a change between Reference Case and Scenario 6M2 in the PM peak. However, by taking a combination of AM and PM flows from the Reference Case and Scenario 6M2, to obtain worst cases for both scenarios, they both require the same type D layout with three lanes downstream and four lanes upstream. Therefore, requirement for slip road diverge and mainline lane upgrades is a result of an increase from Baseline to Reference Case, rather than an increase due to development traffic in Scenario 6M2. Therefore no further mitigation has been considered.

Southbound On-slip Merge

2.10.23 The southbound on-slip is a type A option 1 taper merge as can be seen in **Figure 103** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 103. Southbound Merge – Layout A option 1 – Taper Merge



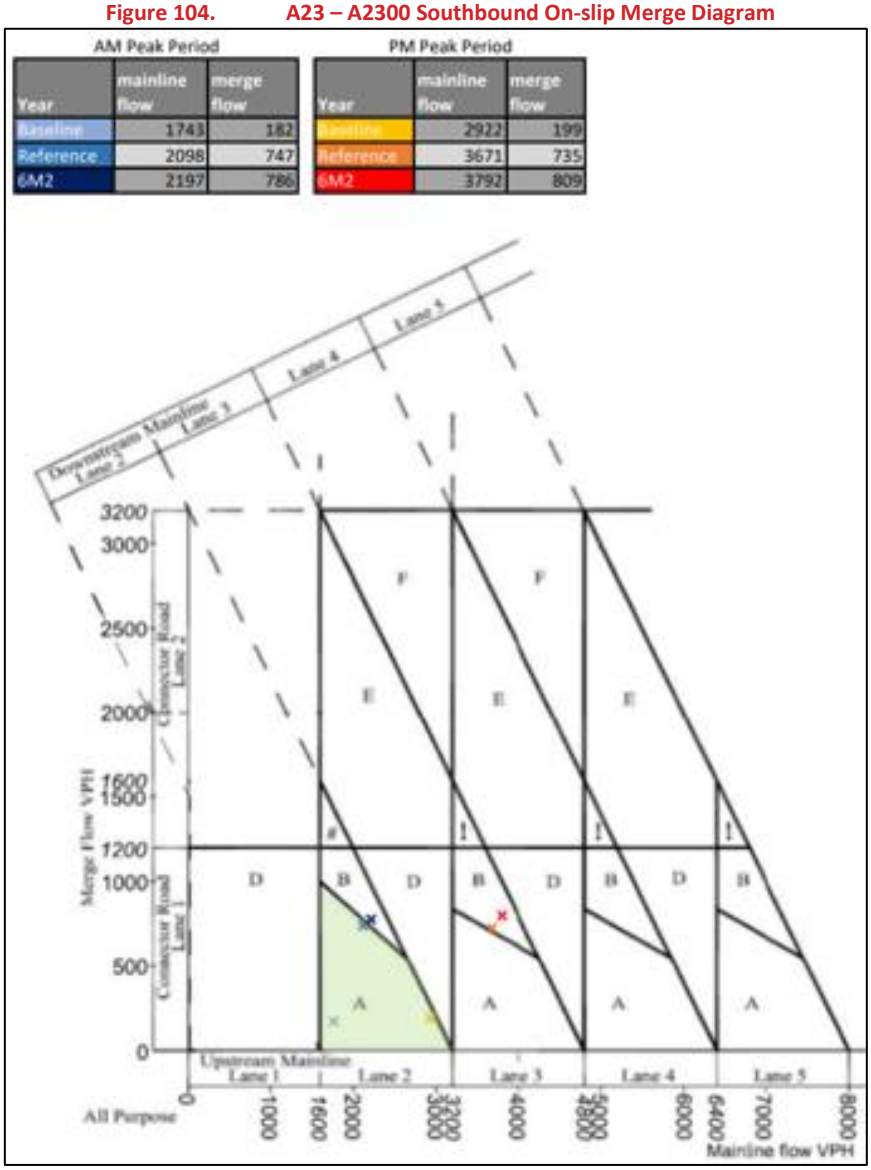
2.10.24 **Table 33** below displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 33. A23 – A2300 Southbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	1743	2922	2098	3671	2197	3792	99	121
Slip Road	182	199	747	735	786	809	39	74

2.10.25 **Figure 104** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 104. A23 – A2300 Southbound On-slip Merge Diagram



2019 Baseline

2.10.26 Both the AM and PM Baseline 2019 flows indicate a layout A taper merge is appropriate and that the existing layout is suitable for carrying for existing traffic flows.

2039 Reference Case

2.10.27 Traffic flows for the AM peak show that the layout type A taper merge with two lanes on the mainline is sufficient. The PM peak flows show that the type B is required for the slip road type, however the mainline requires an upgrade to three lanes in both the upstream and downstream. The PM flows in this case take precedence.

Scenario 6M2

2.10.28 Whilst traffic levels will increase further with District Plan allocations, this will not require a further upgrade in the merge arrangement for this junction in comparison to the 2039 Reference Case. Whilst an upgrade to a layout B parallel merge with an additional mainline lane is required, this requirement is not attributable to additional District Plan traffic.

2.11 A23 – B2118 Junction

2.11.1 The B2118 junction on the A23 includes two slip roads: the northbound on slip and the southbound off slip.

2.11.2 The A23 mainline at this junction has two lanes upstream and downstream in both directions. The location of the A23 B2118 is shown below in **Figure 105,** with the aerial view shown in **Figure 106.**

Figure 105. Location of A23 B2118

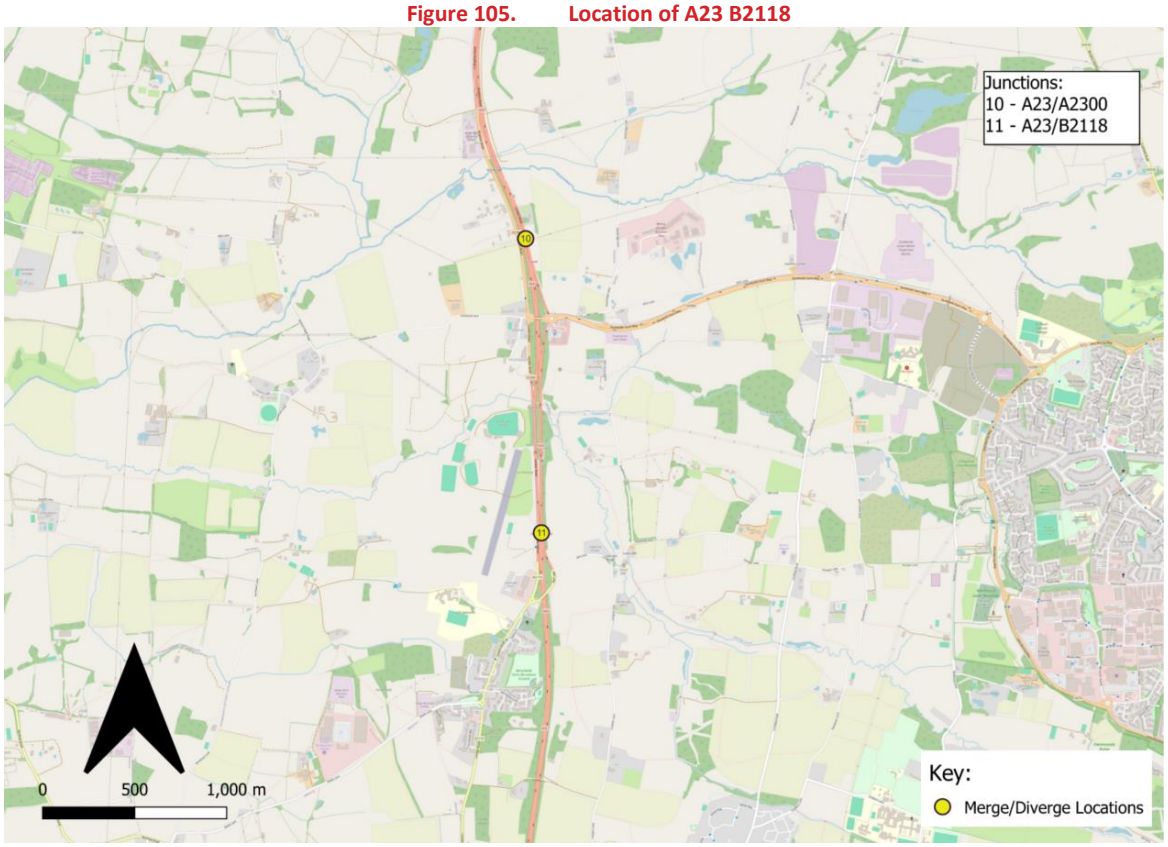
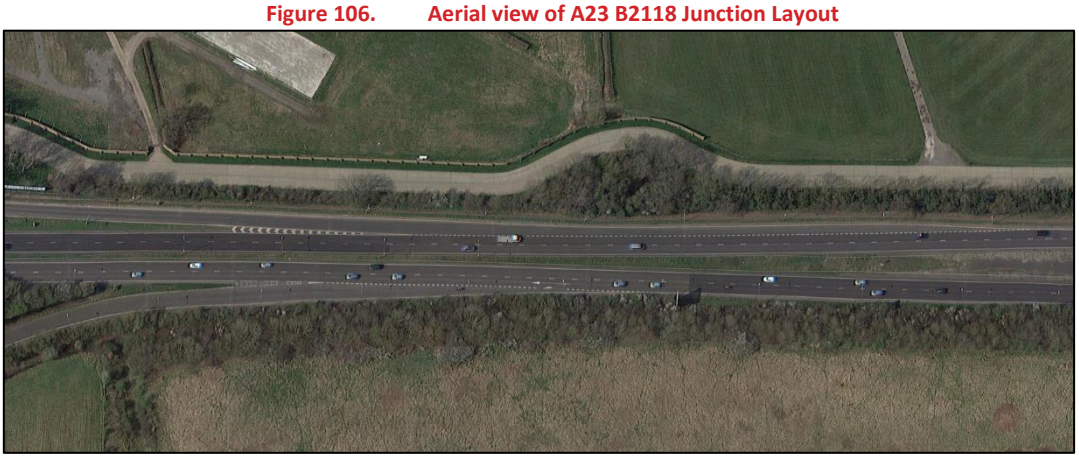


Figure 106. Aerial view of A23 B2118 Junction Layout

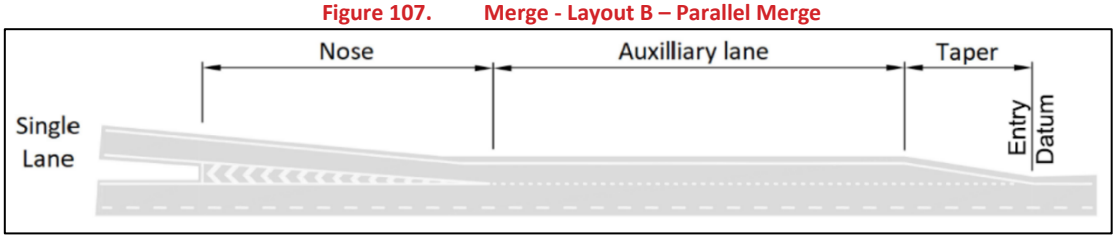


Imagery © 2024 Maxar Technologies, Map Data ©2024

Northbound On Slip Merge

2.11.3 The northbound on slip is a type B parallel merge / auxiliary lane and this arrangement taken from CD 122 Geometric design of grade separated junctions from DMRB can be seen in **Figure 107**.

Figure 107. Merge - Layout B – Parallel Merge



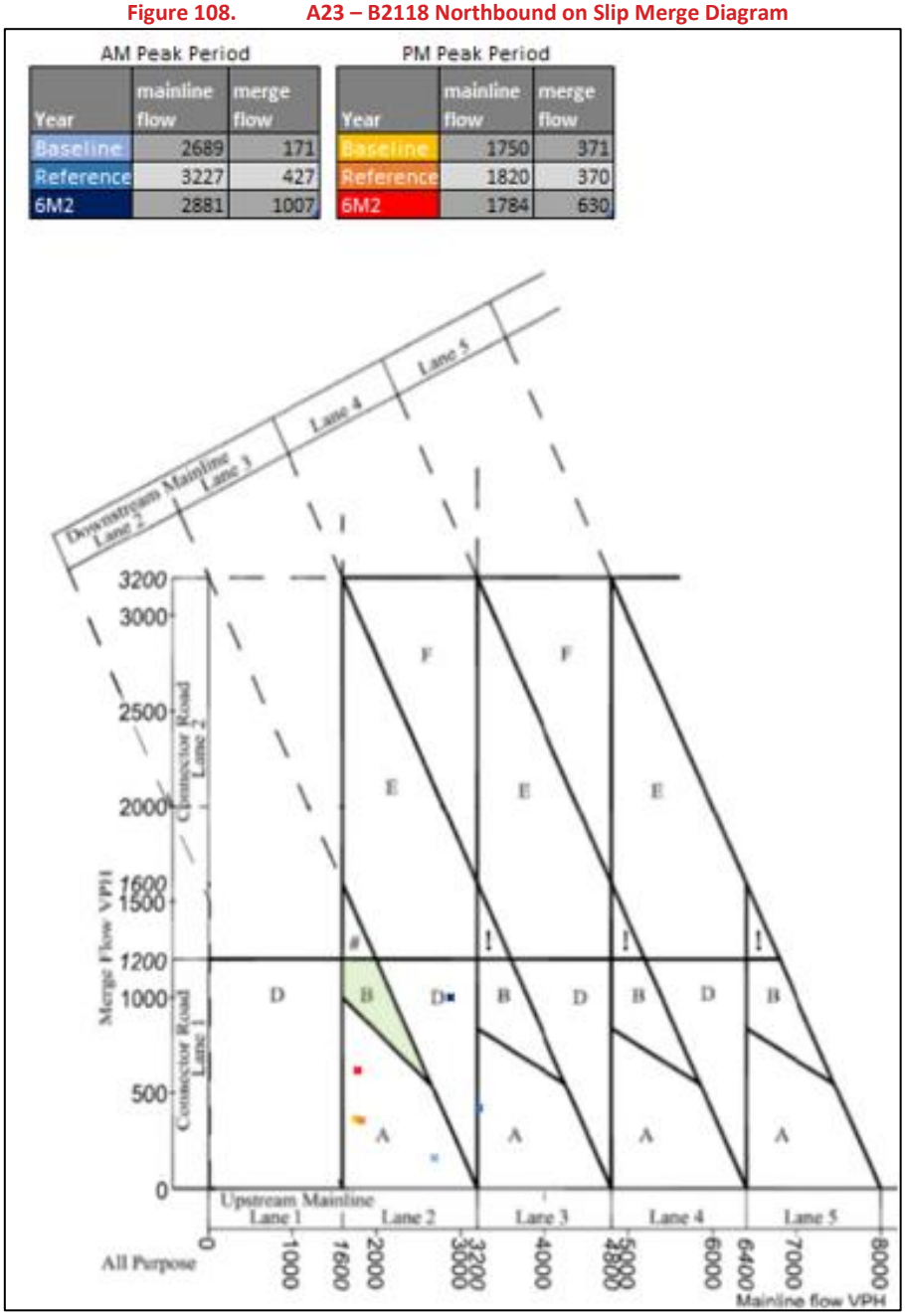
2.11.4 **Table 34** below displays the actual flow data (vehicles) for the northbound on slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 34. A23 – B2118 Northbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Upstream)	2689	1750	3227	1820	2881	1784	-346	-36
Slip Road	171	371	427	370	1007	630	580	260

2.11.5 **Figure 108** shows the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 108. A23 – B2118 Northbound on Slip Merge Diagram



2019 Baseline

2.11.6 Both the AM and PM Baseline 2019 flows indicates a layout A taper merge is sufficient. The existing provision of type B parallel merge is a higher provision than required and therefore the existing layout is suitable.

2039 Reference Case

2.11.7 The AM Reference Case flows indicate a layout A taper merge is sufficient, however there is a requirement for three lanes on both the upstream and downstream mainline which is an increase of the existing two lanes upstream and downstream. Whilst the PM peak requires a

layout A with two lanes upstream and downstream, the AM scenario will take precedence. Therefore, the flows indicate that the mainline should be upgraded with a third lane in order to accommodate the increased mainline flows.

Scenario 6M2

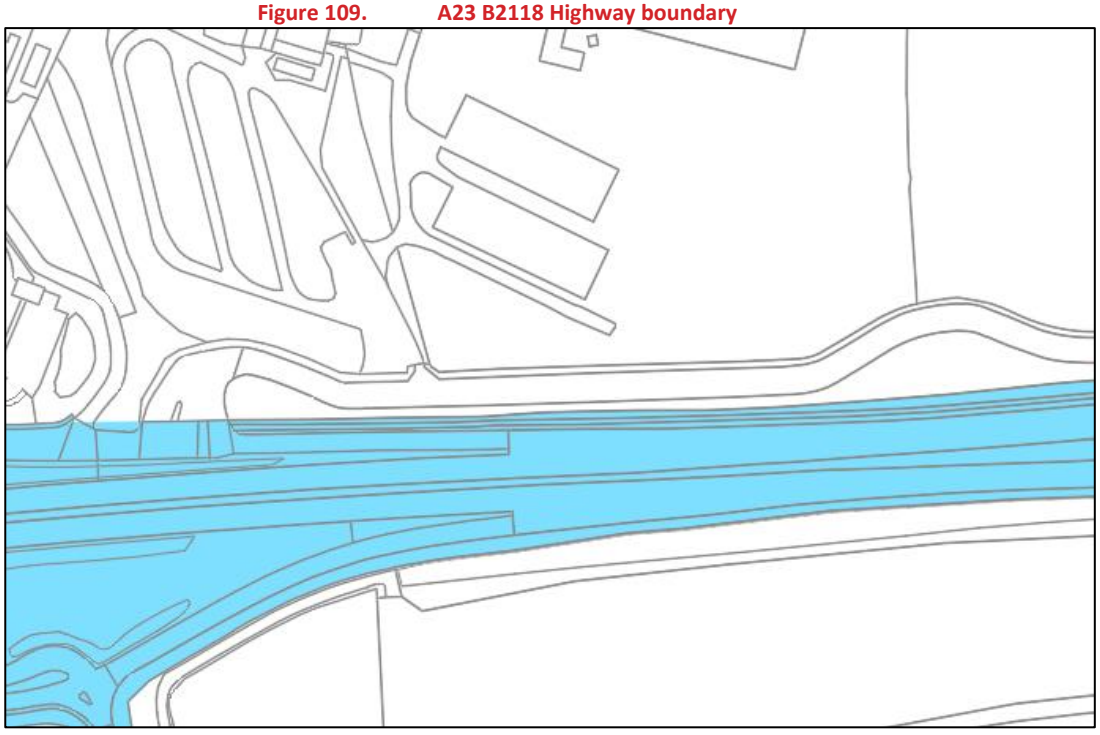
2.11.8 The AM Scenario 6M2 flows indicates a type D lane gain merge is required. This layout requires an additional downstream lane to be constructed in addition to the upgrade in merge type. The PM flows indicate that the existing layout is appropriate, however the AM will take precedent in this scenario.

2.11.9 There is a requirement change between Reference Case and Scenario 6M2, where the requirement changes from type A with three mainline lanes to a type D with two lanes upstream and three lanes downstream. Therefore, there is a need to investigate the feasibility for a layout upgrade at this location as a result of traffic growth associated with the District Plan.

DMRB Assessment Upgrade Feasibility

2.11.10 The highway boundary at this location can be seen in blue on the **Figure 109** below. For the northbound on slip there is limited available highway boundary space beyond the edge of the existing slip road, equating to approximately 5m in width.

Figure 109. A23 B2118 Highway boundary



2.11.11 Given the constraints with available highway boundary land, it would be challenging to provide the deliverable solution of an additional mainline lane and change to a type D lane gain arrangement. Additionally, there would also be significant costs associated with these works given the length over which the lane gain would be required.

2.11.12 Furthermore, approximately 420m north of the slip road merge point, there is a pedestrian footbridge near the edge of carriageway (see **Figure 110** below), this further restricts the ability to construct an additional mainline lane as a proportionate, deliverable solution.

Figure 110. Pedestrian Bridge North of Slip Road

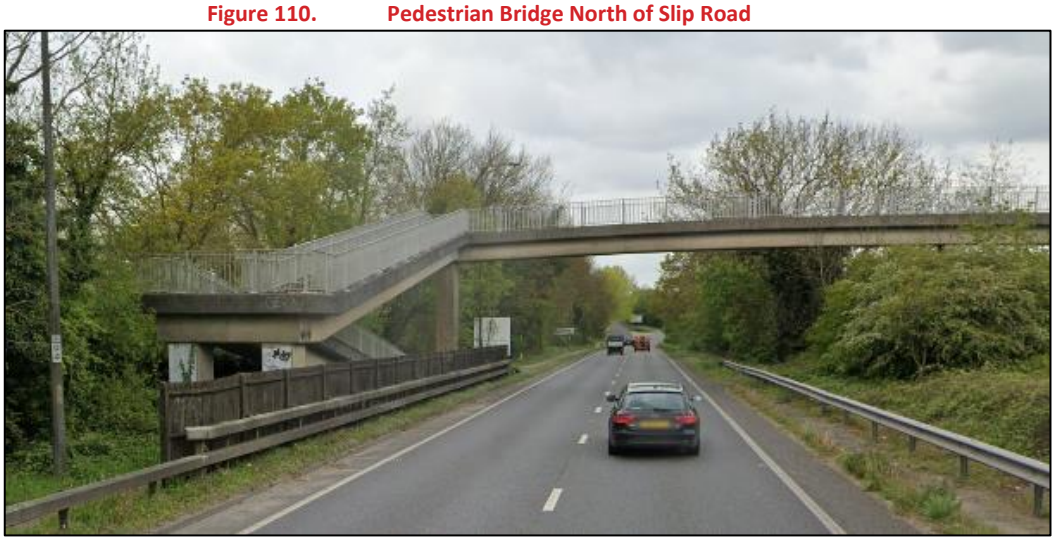


Image capture Aug 2024 © 2024 Google

2.11.13 Due to the constraints identified above, it is unfeasible to provide the full layout D upgrade, therefore an intermediate measure has been considered. Within the Annex to CD122 it is stated that a layout type B can be provided instead of a type D, however as the existing provision is already a layout B, it is proposed that the merge is upgraded to a layout C.

2.11.14 At this merge point, a Type C ghost island merge is feasible due to the existing space provided by the auxiliary lane. Further to this, the ghost island and first merge lane could be provided on the inside of the existing slip road avoiding the need for significant highway space from the existing edge of slip road which in turn will maintain the current merge.

2.11.15 **Figure 111** to **Figure 113** below show the existing layout B; required layout D; and suggested ghost island layout C.

Figure 111. Layout B – parallel merge

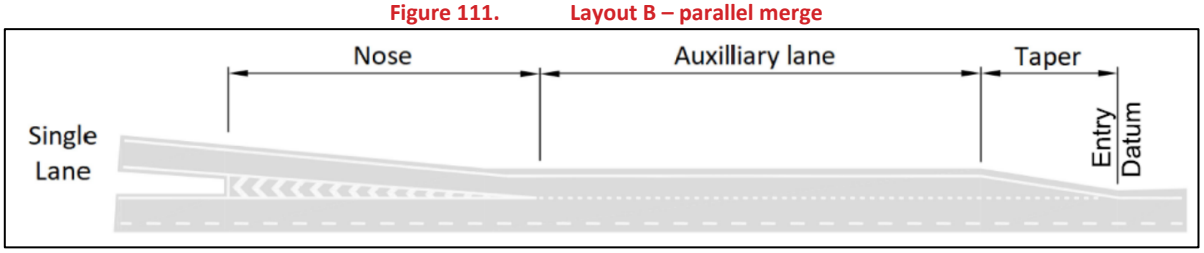


Figure 112. Layout D – lane gain

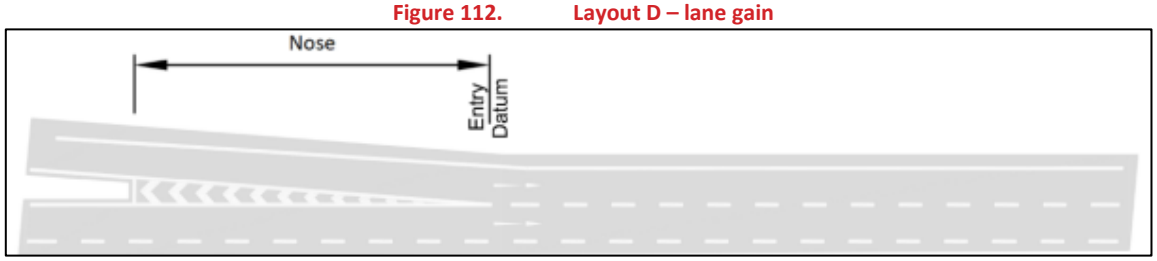
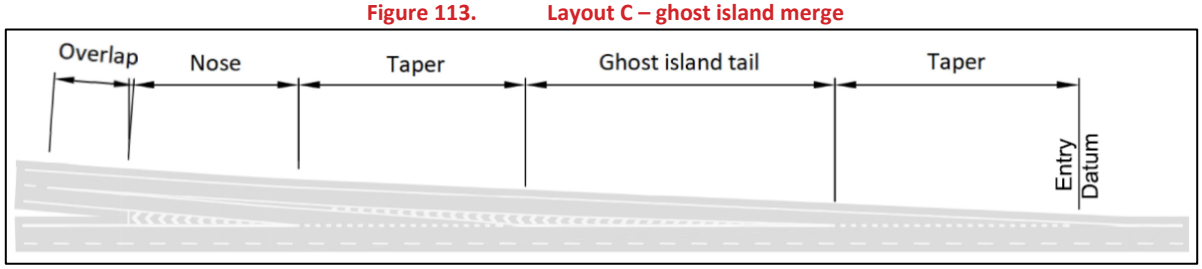


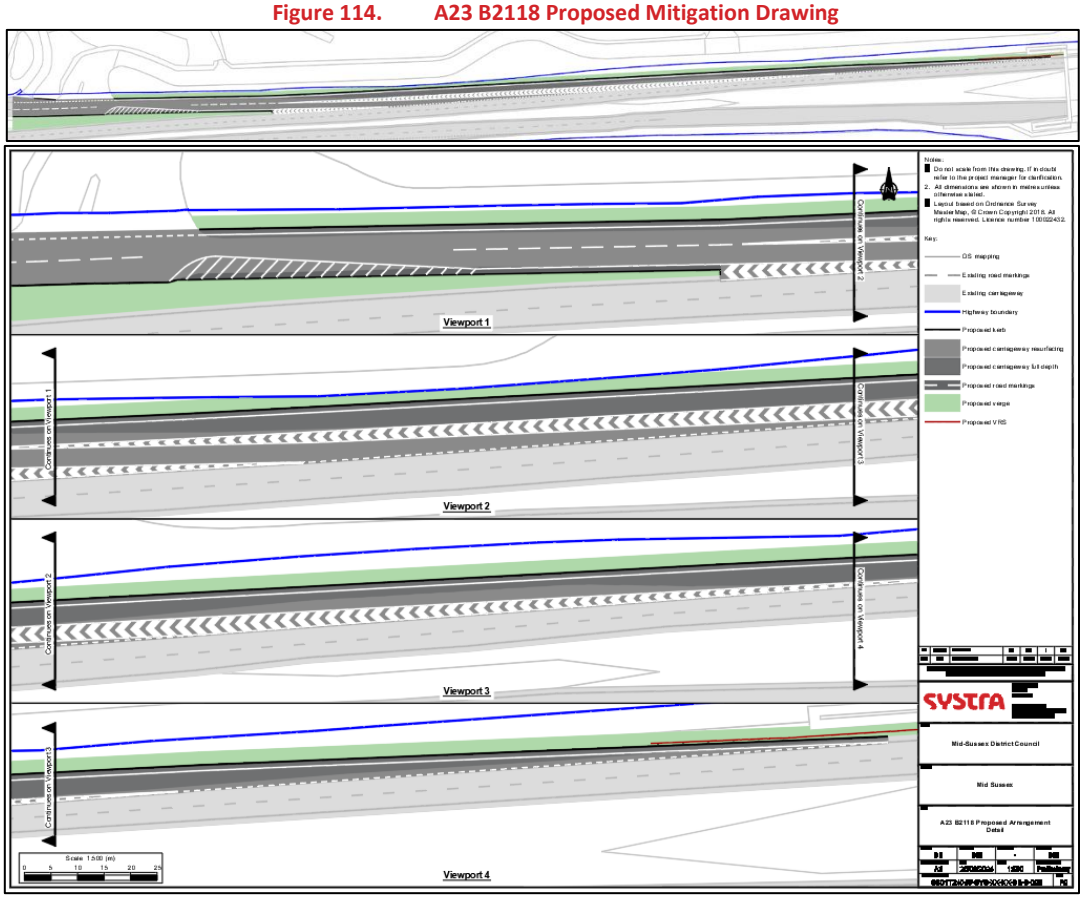
Figure 113. Layout C – ghost island merge



2.11.16 The provision of an improvement to a layout C has been taken forward for further feasibility testing and design development for the northbound on slip of the A23-B2118 junction.

2.11.17 The general arrangement sketch of the proposed design is shown in **Figure 114** below as well as in **Appendix A**.

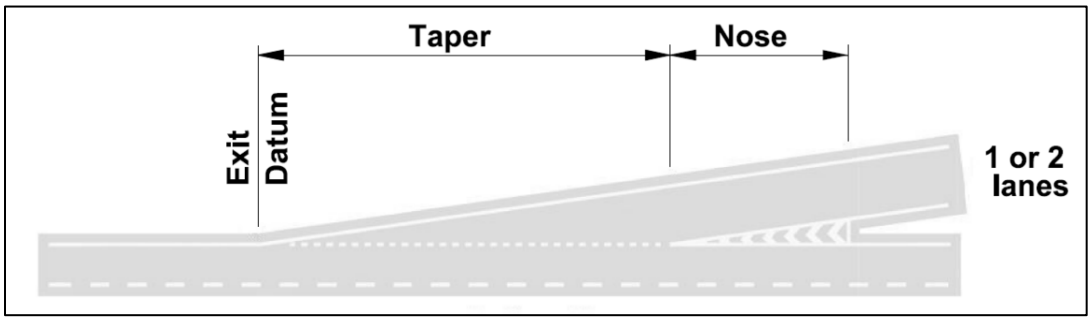
Figure 114. A23 B2118 Proposed Mitigation Drawing



Southbound Off Slip Diverge

2.11.18 The southbound off slip is a type A option 1 taper diverge. This arrangement can be seen in **Figure 115** below taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 115. Diverge – Layout A Option 1 – Taper Diverge



2.11.19 **Table 35** below displays the actual flow data (vehicles) for the northbound on slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6M2.

Table 35. A23 – B2118 Southbound Off Slip Flow Data

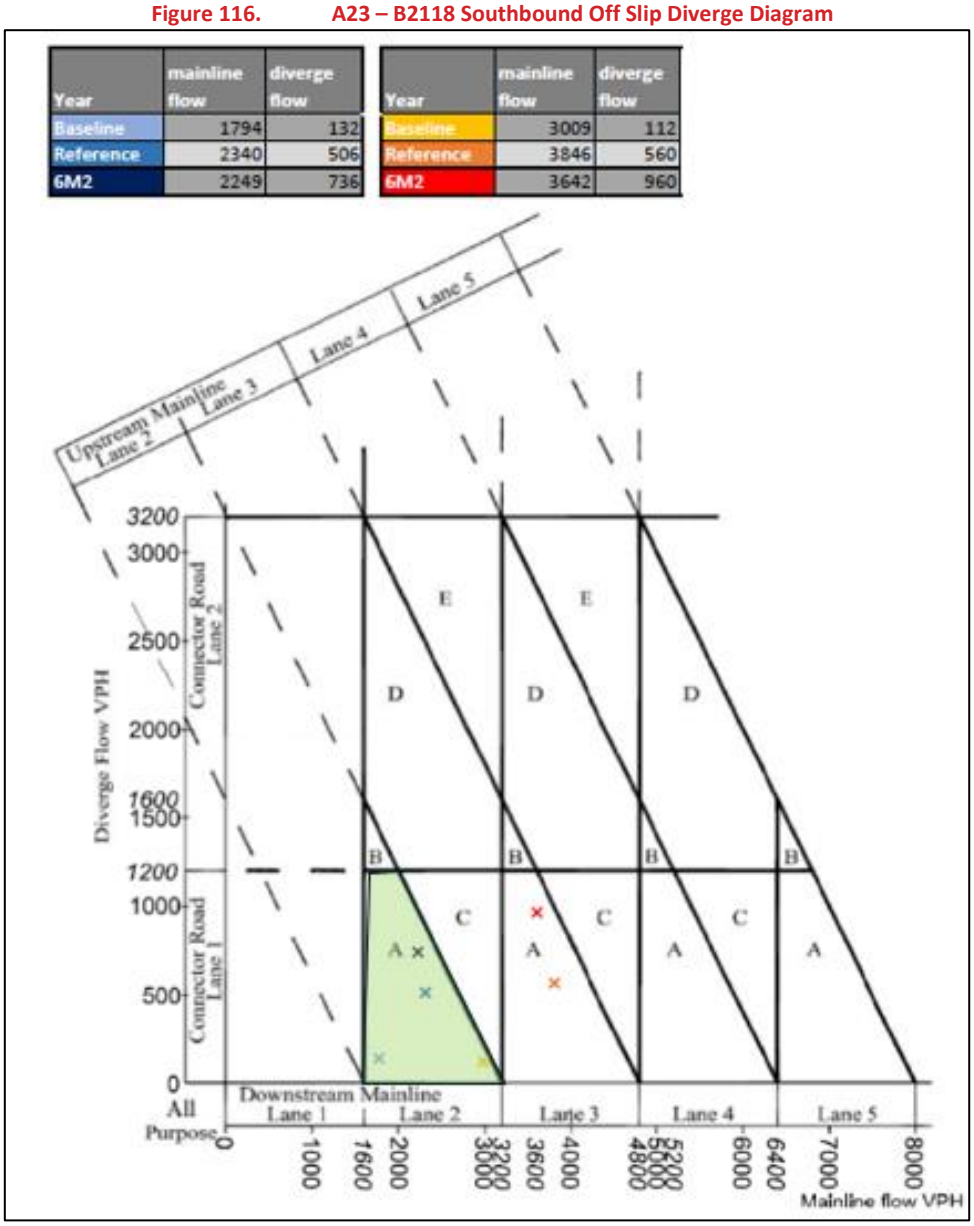
	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2-REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Downstream)	1794	3009	2340	3846	2249	3642	-91	-204
Slip Road	132	112	506	560	736	960	230	400

2.11.20 **Figure 116** shows the plotted data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 116. A23 – B2118 Southbound Off Slip Diverge Diagram

Year	mainline flow	diverge flow
Baseline	1794	132
Reference	2340	506
6M2	2249	736

Year	mainline flow	diverge flow
Baseline	3009	112
Reference	3846	560
6M2	3642	960



2019 Baseline

2.11.21 Both the AM and PM Baseline 2019 flows indicate the existing layout A taper diverge with two mainline lanes upstream and downstream is sufficient for the mainline and slip road flows.

2039 Reference Case

2.11.22 The AM Reference Case flows indicate a layout A taper diverge is sufficient, however the PM flows indicate a layout A taper diverge with three lanes on both the upstream and downstream mainline is required. Therefore, the flows indicate that the mainline should be upgraded to have a third lane both upstream and downstream to accommodate the increased mainline flows.

Scenario 6M2

2.11.23 The AM Scenario 6M2 flows shows that the existing type A diverge with two mainline lanes is still sufficient. However, the PM flows indicates that a taper A diverge is required but there is a requirement for three mainline lanes both upstream and downstream.

2.11.24 The requirement for both Reference Case and the 6m2 Scenario are the same, therefore the requirement for the upgrade is a result of the increase from Baseline to Reference Case, not from a result of development traffic in Scenario 6M2. Therefore, no further mitigation has been considered.

2.12 A23-B2117

2.12.1 The B2117 junction on the A23 includes two slip roads: the northbound off slip and southbound on slip.

2.12.2 The A23 mainline at this junction has two lanes upstream and downstream in both directions. The location of the A23 B2117 is shown below in **Figure 117**, with an aerial view shown in **Figure 118.**

Figure 117. Location of A23 B2117

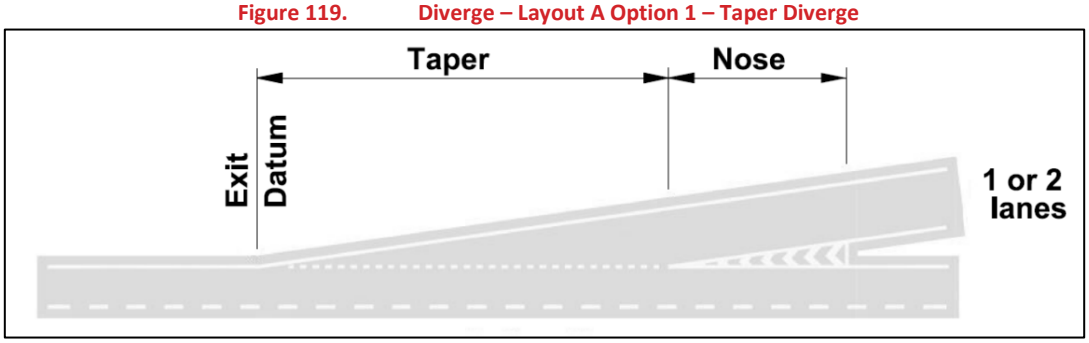
Figure 118. Aerial view of A23 B2117 Junction Layout

Imagery © 2024 Maxar Technologies, Map Data ©2024

Northbound Off Slip Diverge:

2.12.3 The northbound off slip is a type A option 1 taper diverge as seen in **Figure 119.**

Figure 119. Diverge – Layout A Option 1 – Taper Diverge



2.12.4 **Table 36** below displays the actual flow data (vehicles) for the northbound on slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6M2.

Table 36. A23 – B2117 Northbound Off Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Downstream)	2689	1751	3227	1819	2881	1784	-346	-35
Slip Road	252	211	393	495	512	669	119	174

2.12.5 Figure 120 shows the plotted flow data onto DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow crosses.

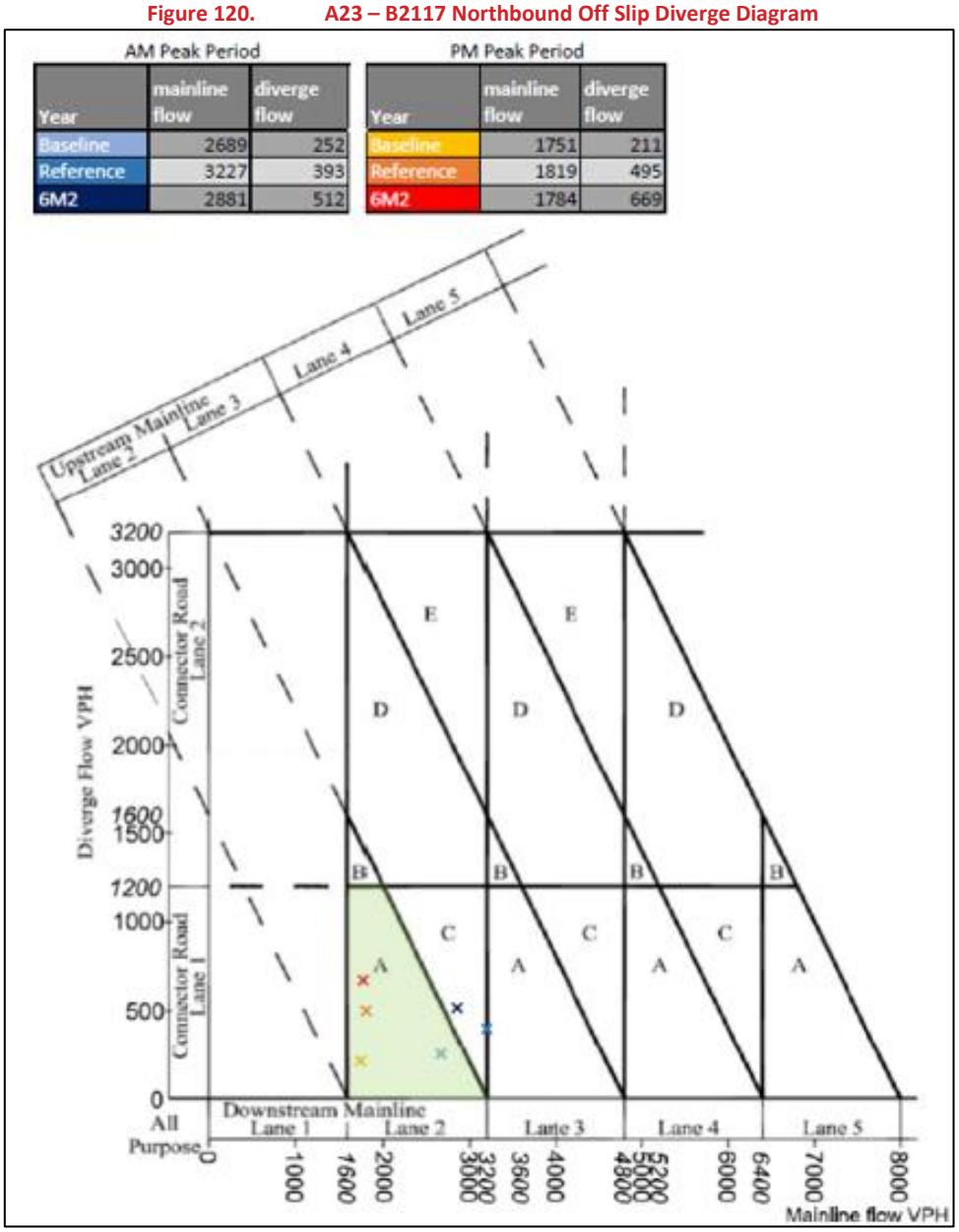
Figure 120. A23 – B2117 Northbound Off Slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	2689	252
Reference	3227	393
6M2	2881	512

PM Peak Period

Year	mainline flow	diverge flow
Baseline	1751	211
Reference	1819	495
6M2	1784	669



2019 Baseline

2.12.6 Both the AM and PM 2019 Baseline flows indicate a layout A taper diverge with two mainline lanes downstream and upstream is sufficient.

2039 Reference Case

2.12.7 The 2039 Reference Case PM flows indicate a layout A taper diverge is sufficient, however the AM flows indicate a layout C is required with two mainline lanes downstream and three lanes upstream. Therefore, requiring an additional third lane to be constructed upstream.

Scenario 6M2

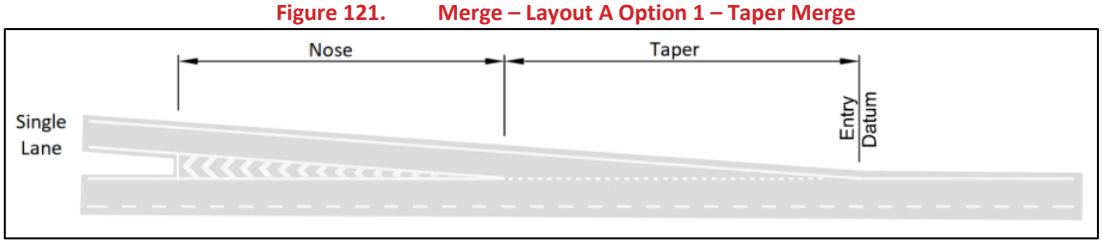
2.12.8 The PM Scenario 6M2 flows indicates a type A taper diverge is sufficient, however the AM flows also require a type C diverge with an additional lane on the upstream from two lanes to three.

2.12.9 However, the requirement for both the 2039 Reference Case and 6m2 Scenario are the same, therefore the requirement for upgrade is a result of the increase from the Baseline to the 2039 Reference Case and not a result of the District Plan. Therefore, no further mitigation has been considered.

Southbound On Slip Merge

2.12.10 The southbound on slip is a type A option 1 taper merge and the arrangement is shown in **Figure 121.**

Figure 121. Merge – Layout A Option 1 – Taper Merge



2.12.11 **Table 37** below displays the actual flow data (vehicles) for the southbound on slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6M2.

Table 37. A23 – B2117 Southbound On Slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Upstream)	1795	3009	2339	3846	2250	3642	-89	-204
Slip Road	390	278	520	189	843	386	323	197

2.12.12 **Figure 122** shows the plotted flow data onto DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow crosses.

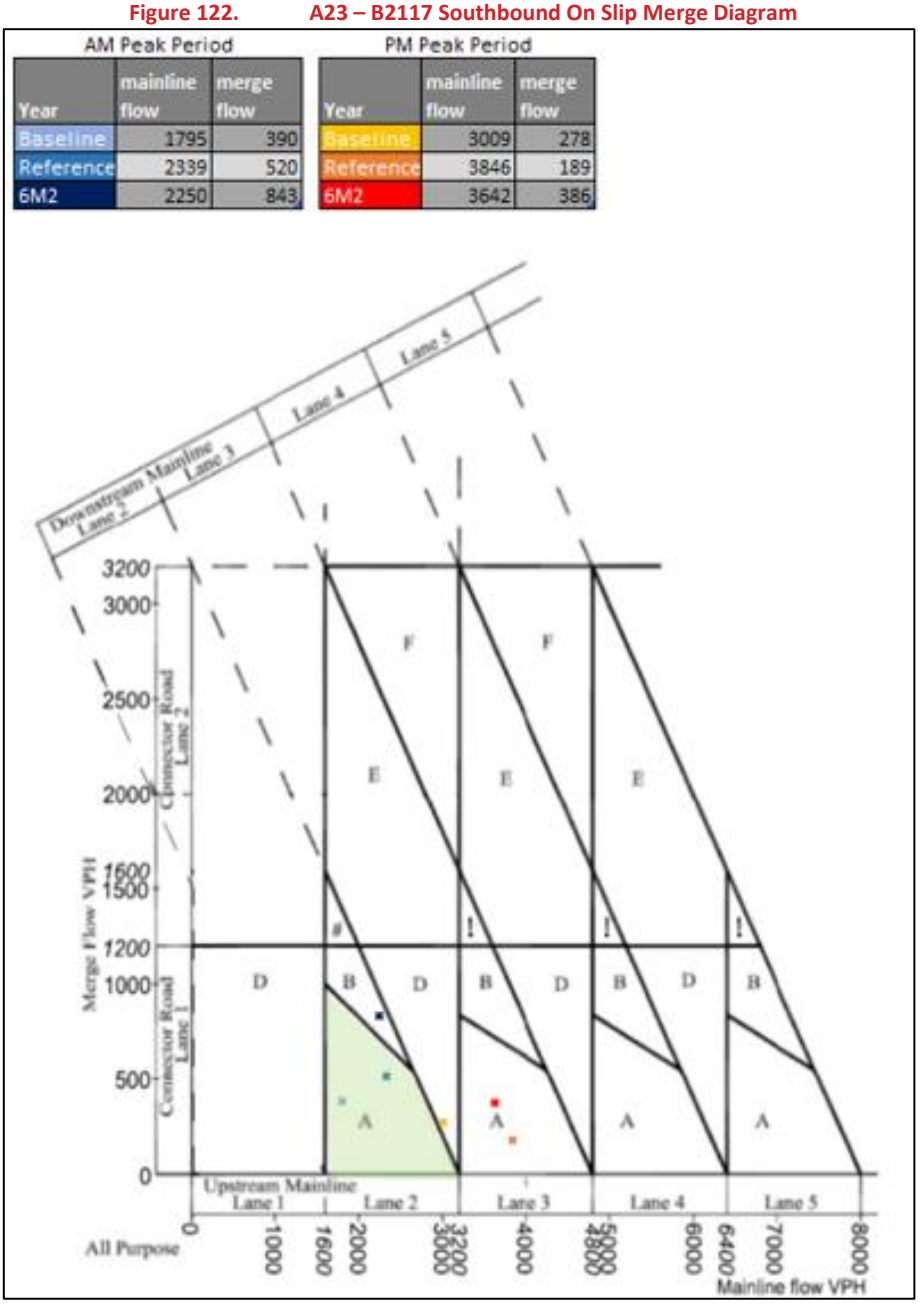
Figure 122. A23 – B2117 Southbound On Slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	1795	390
Reference	2339	520
6M2	2250	843

PM Peak Period

Year	mainline flow	merge flow
Baseline	3009	278
Reference	3846	189
6M2	3642	386



2019 Baseline

2.12.13 The AM Baseline 2019 flows indicates that a layout A taper merge with two mainline lanes downstream and upstream is sufficient as per the existing layout. However, the PM flows indicate a layout D lane gain with two lanes upstream and three lanes downstream is required, suggesting that the existing layout and lane allowance is not sufficient.

2039 Reference Case

2.12.14 The AM Reference Case flows indicate a layout A taper merge is sufficient, however the PM flows indicate a layout A is required with three mainline lanes upstream and three lanes downstream. Therefore, requiring an additional third lane to be constructed on the mainline.

Scenario 6M2

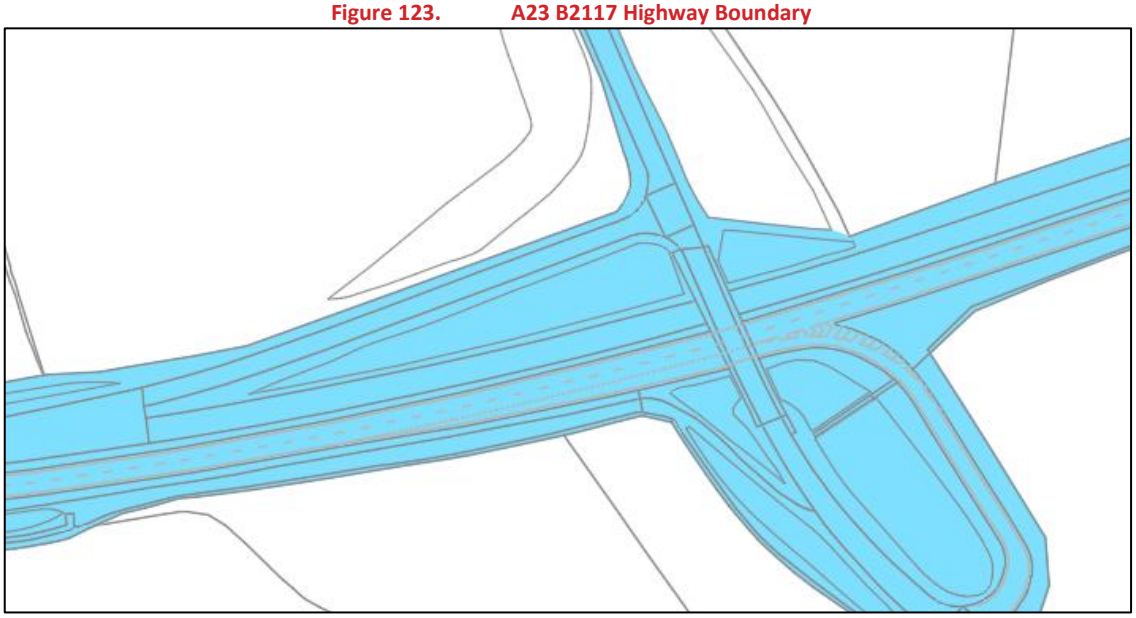
2.12.15 The AM Scenario 6M2 flows indicate a type B parallel merge is required, however the PM flows indicate a layout A with three mainline lanes upstream and three lanes downstream. Therefore, requiring an additional third lane to be constructed on the mainline.

2.12.16 As there is a change required between the 2039 Reference Case and Scenario 6M2, the potential for deliverability of a layout B parallel merge with a third lane has been considered.

DMRB Assessment Upgrade Feasibility

2.12.17 The highway boundary at this location can be seen in blue on **Figure 123** below. For the southbound on slip there is approximately 6m width of highway space available for potential upgrades.

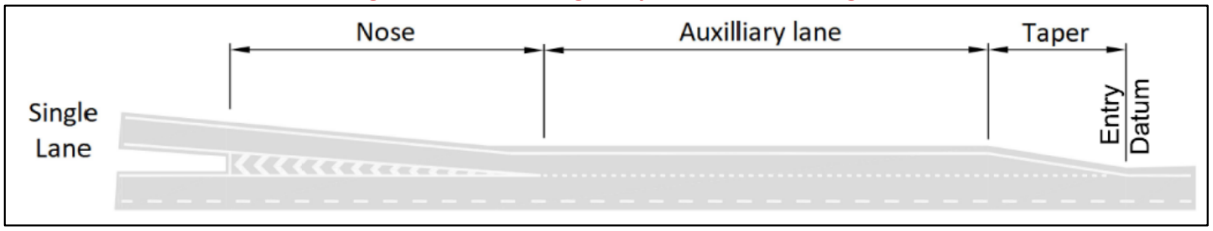
Figure 123. A23 B2117 Highway Boundary



2.12.18 However, providing a third lane would involve significant costs and works and would likely require land outside of the available highway boundary. Despite this, there is still sufficient space in order to provide an upgrade to a layout B parallel merge from the existing type A taper merge.

2.12.19 **Figure 124** below shows the proposed layout B parallel merge.

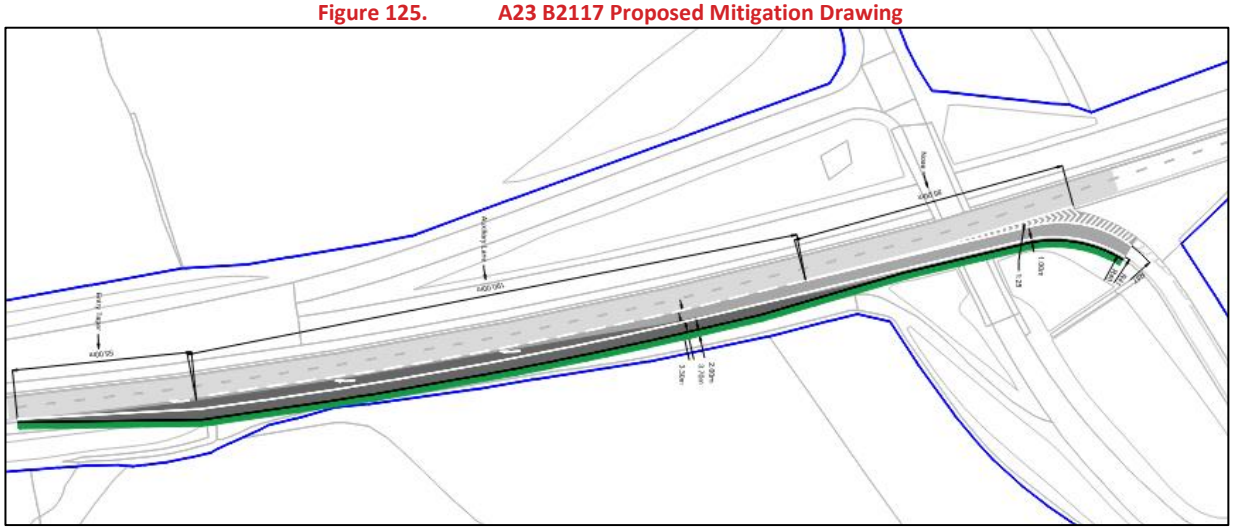
Figure 124. Merge - Layout B – Parallel Merge



2.12.20 The provision of an improvement to a layout B has been taken forward for further feasibility testing and design development for the southbound on slip for the A23-B2117 junction.

2.12.21 The general arrangement sketch of the proposed design is shown in **Figure 125** below:

Figure 125. A23 B2117 Proposed Mitigation Drawing



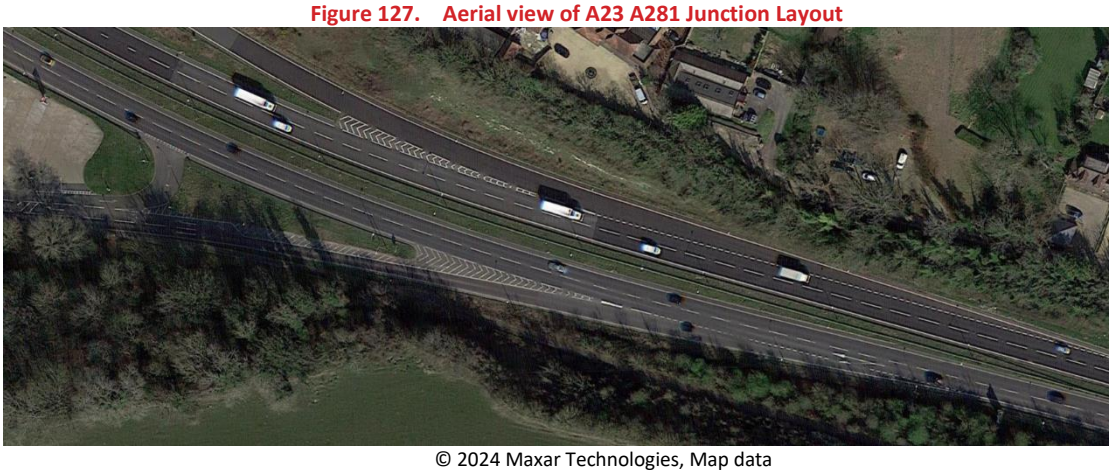
2.13 A23 – A281

2.13.1 The A281 junction on the A23 comprises of three slip roads, the northbound off and on-slips and the southbound on-slip.

2.13.2 The A23 mainline at this junction has two lanes upstream and downstream in both directions. The location of the A23 A281 is shown below in **Figure 126,** with the aerial view shown in **Figure 127.**

Figure 126. Location of A23 A281

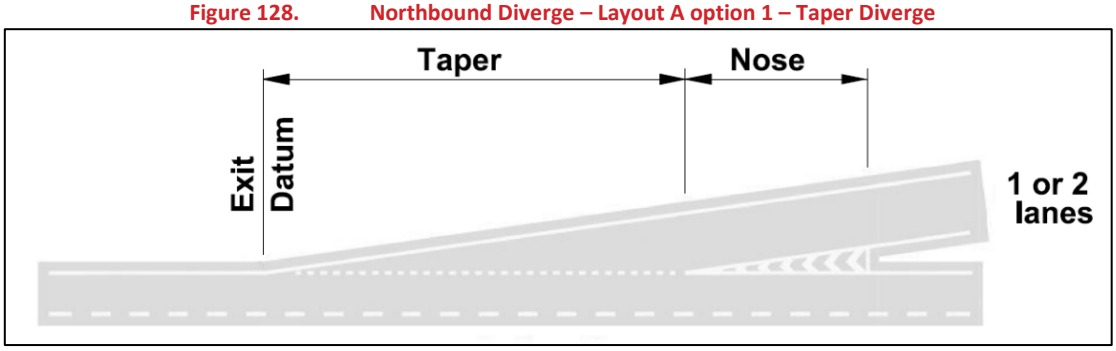
Figure 127. Aerial view of A23 A281 Junction Layout



Northbound Off slip Diverge

2.13.3 The northbound off-slip is a type A option 1 taper diverge as can be seen in **Figure 128** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 128. Northbound Diverge – Layout A option 1 – Taper Diverge



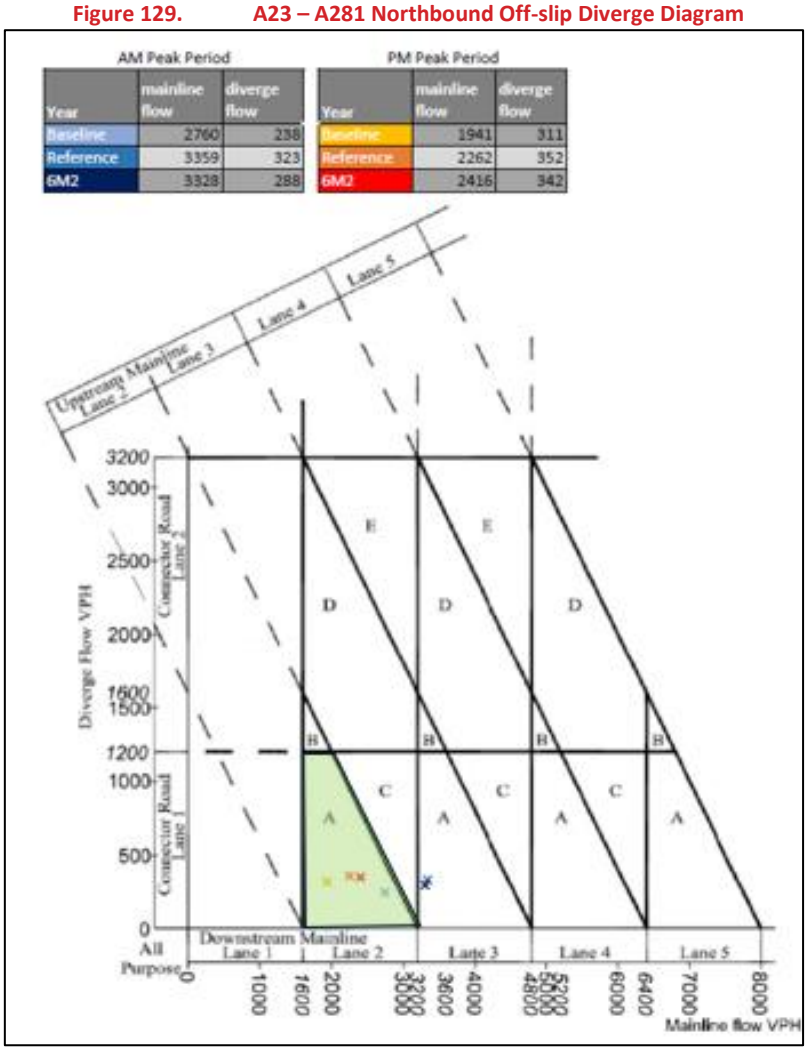
2.13.4 **Table 38** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 38. A23 – A281 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2760	1941	3359	2262	3328	2416	-31	154
Slip Road	238	311	323	352	288	342	-35	-10

2.13.5 **Figure 129** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 129. A23 – A281 Northbound Off-slip Diverge Diagram



2019 Baseline

2.13.6 AM and PM Baseline 2019 flows indicate a layout A taper diverge is sufficient and that the existing layout is more than adequate for existing traffic flows.

2039 Reference Case

2.13.7 Traffic flows in the PM period would continue to be accommodated by the existing layout, but the AM traffic flows are forecast to increase to a level where a layout change will be required. The layout A taper diverge will remain appropriate but an increase to three lanes both upstream and downstream will be required.

Scenario 6M2

2.13.8 Whilst traffic levels will change slightly with District Plan allocations, this will not require a further upgrade in the diverge arrangement for this junction in comparison to the 2039 reference case. Whilst an upgrade to a layout A taper diverge with three lanes upstream and downstream is required, this requirement is not attributable to additional District Plan traffic.

Northbound On-slip Merge:

2.13.9 The northbound on-slip does not operate as a taper merge but rather as a give-way merge, where drivers have to wait at the give way line until an appropriate gap in mainline traffic occurs. This arrangement can be seen in **Figure 130.** The A23 has two lanes upstream and two lanes downstream in this location.

Figure 130. Northbound On-slip Layout – Give-way Merge

Imagery ©2024 Maxar Technologies, Map data ©2024

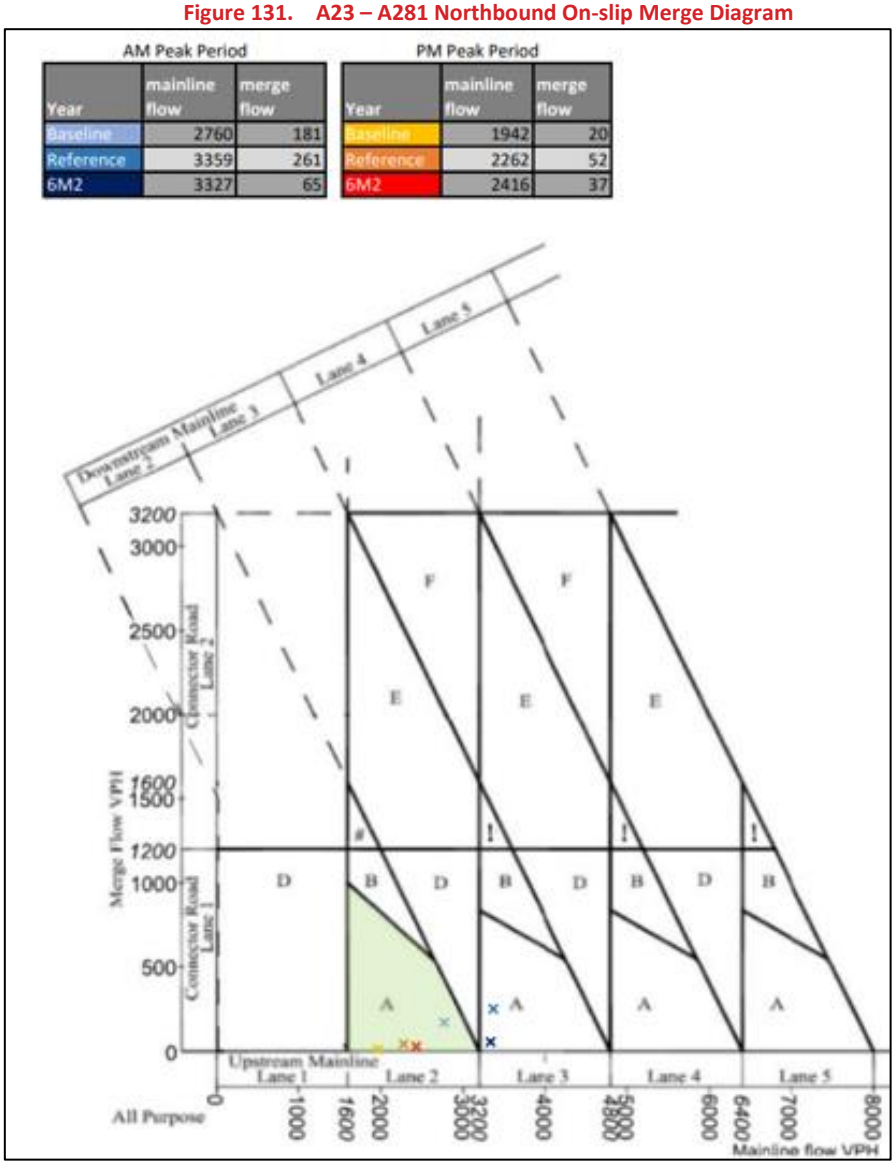
2.13.10 **Table 39** displays the actual flow data (vehicles) for the northbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 39. A23 – A281 Northbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Intermain	2760	1942	3359	2262	3327	2416	-32	154
Slip Road	181	20	261	52	65	37	-196	-15

2.13.11 **Figure 131** shows the plotted flow data onto the DMRB CD 122 merge graph. The graph shows how the junction would operate if a layout A taper merge was adopted, as standards require. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

Figure 131. A23 – A281 Northbound On-slip Merge Diagram



2019 Baseline

2.13.12 The 2019 Baseline AM and PM flows show that a layout A taper merge with two lanes upstream and downstream would be appropriate in this scenario.

2039 Reference Case

2.13.13 Traffic flows in the PM period would continue to be accommodated by a layout A taper merge, but the AM traffic flows are forecast to increase to a level where a layout change will be required. The layout A taper merge will remain appropriate but an increase to three lanes on both the upstream and downstream will be required.

Scenario 6M2

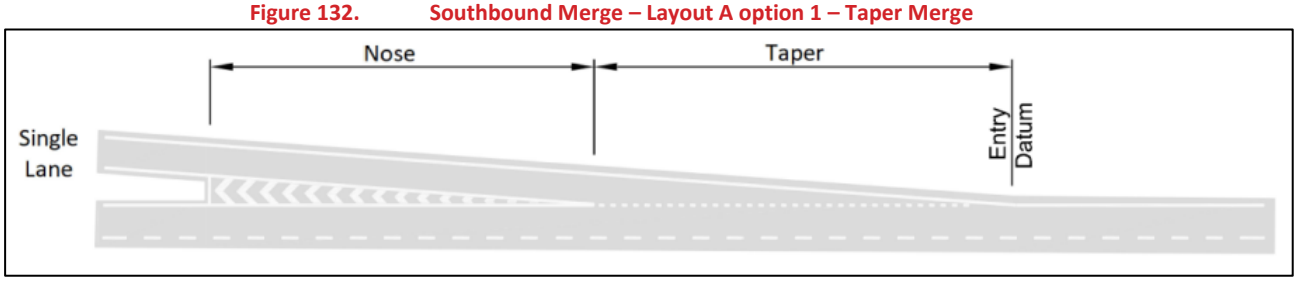
2.13.14 Whilst mainline traffic levels will increase further in the PM peak with District Plan allocations, this would not require a further upgrade in the required merge arrangement for

this junction in comparison to the 2039 reference case. Whilst an upgrade to a layout A taper merge with three lanes upstream and downstream is required, this requirement is not attributable to additional District Plan traffic.

Southbound On-slip Merge

2.13.15 The southbound on-slip is a type A option 1 taper merge as can be seen in **Figure 132** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 132. Southbound Merge – Layout A option 1 – Taper Merge



2.13.16 **Table 40** displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 40. A23 – A281 Southbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2- REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (upstream)	2184	3287	2859	4035	3092	4027	233	-8
Slip Road	211	176	319	13	352	13	33	0

2.13.17 **Figure 133** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

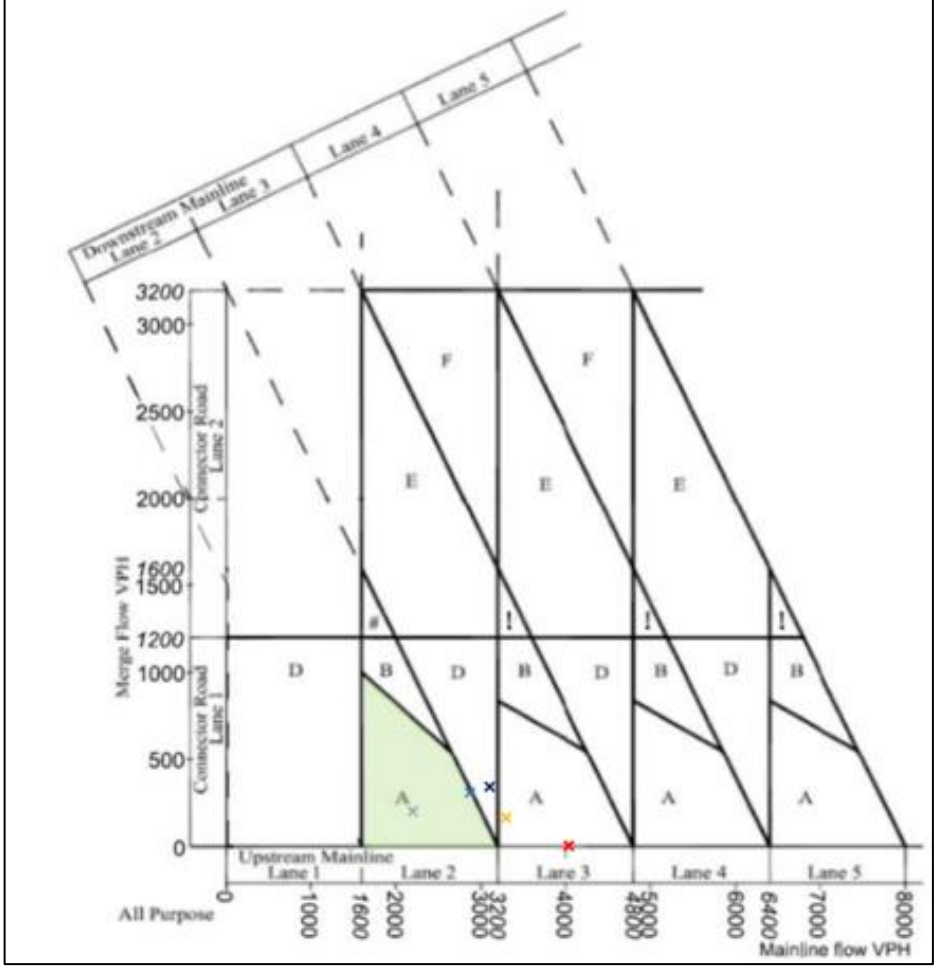
Figure 133. A23 – A281 Southbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	2184	211
Reference	2859	319
6M2	3092	352

PM Peak Period

Year	mainline flow	merge flow
Baseline	3287	176
Reference	4035	13
6M2	4027	13



2019 Baseline

2.13.18 AM Baseline 2019 flows indicate that the existing layout A taper merge with two lanes upstream and downstream is sufficient and that the layout is adequate for existing traffic flows. However, the PM flows show this layout to be sub-standard, and there is a requirement for three lanes upstream and downstream to be provided.

2039 Reference Case

2.13.19 The AM peak 2039 Reference Case flows indicate a layout A taper merge will continue to be appropriate for this scenario but that an upgrade to three lanes upstream and downstream is required for the PM peak. However, it should be noted that slip road traffic is significantly reduced in this scenario in the PM peak.

Scenario 6M2

2.13.20 Whilst traffic levels will increase further in the 6m2 scenario, this will not require a further upgrade in the merge arrangement for this junction. Whilst an upgrade to layout A taper merge with three lanes upstream and downstream is required, this requirement is not attributable to additional District Plan traffic.

2.14 A23 – A273 Junction

2.14.1 The A273 junction on the A23 comprises of two slip roads, the northbound off-slip and the southbound on-slip. In the northbound direction, the A23 mainline has three lanes upstream and two lanes downstream, whilst the southbound direction has two lanes upstream and three lanes downstream.

2.14.2 The location of the A23 A273 is shown below in **Figure 134**, with the aerial views shown in **Figure 135** and **Figure 136.**

Figure 134. Location of A23 A273

Figure 135. Aerial view of A23 A273 Northbound Off slip Diverge Layout

© 2024 Maxar Technologies, Map data

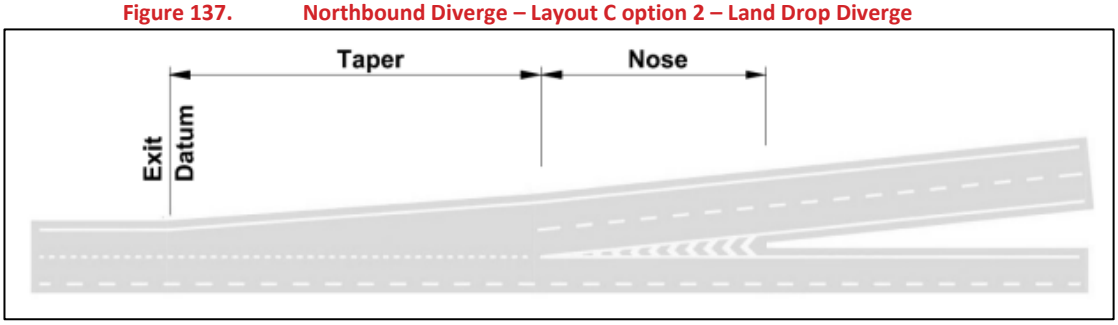
Figure 136. Aerial view of A23 A273 Southbound On-slip Merge Layout

© 2024 Maxar Technologies, Map data

Northbound Off-slip Diverge

2.14.3 The northbound off-slip is a layout C option 2 lane drop diverge with a two-lane connector road, as can be seen in **Figure 137** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 137. Northbound Diverge – Layout C option 2 – Land Drop Diverge



2.14.4 **Table 41** below displays the actual flow data (vehicles) for the northbound off-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 41. A23 – A273 Northbound Off-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2-2039 REF CASE	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (Downstream)	2802	2156	3404	2478	3309	2604	-95	126
Slip Road	788	835	783	920	834	941	51	21

2.14.5 **Figure 138** shows the plotted flow data onto the DMRB CD 122 diverge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

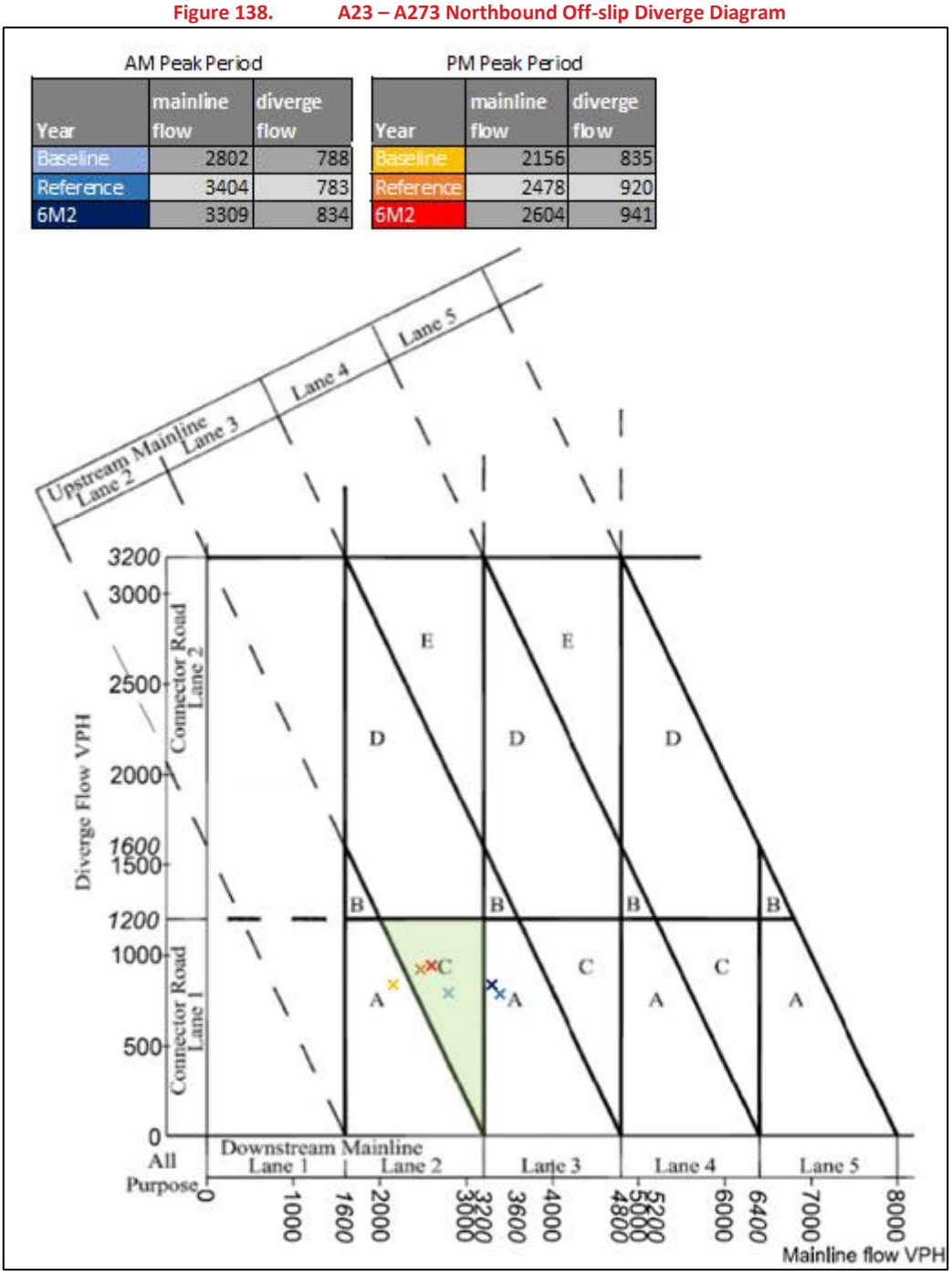
Figure 138. A23 – A273 Northbound Off-slip Diverge Diagram

AM Peak Period

Year	mainline flow	diverge flow
Baseline	2802	788
Reference	3404	783
6M2	3309	834

PM Peak Period

Year	mainline flow	diverge flow
Baseline	2156	835
Reference	2478	920
6M2	2604	941



2019 Baseline

2.14.6 AM and PM Baseline 2019 flows indicate a layout C option 2 lane drop diverge with three lanes upstream and two lanes downstream is appropriate, and therefore the existing layout is suitable for existing traffic flows.

2039 Reference Case

2.14.7 Traffic flows in the PM period would continue to be accommodated by the existing layout, but the AM traffic flows are forecast to increase to a level where a layout change will be required. In this instance a layout A taper diverge will be appropriate with three lanes both upstream and downstream. This is an increase in the number of downstream lanes from two to three.

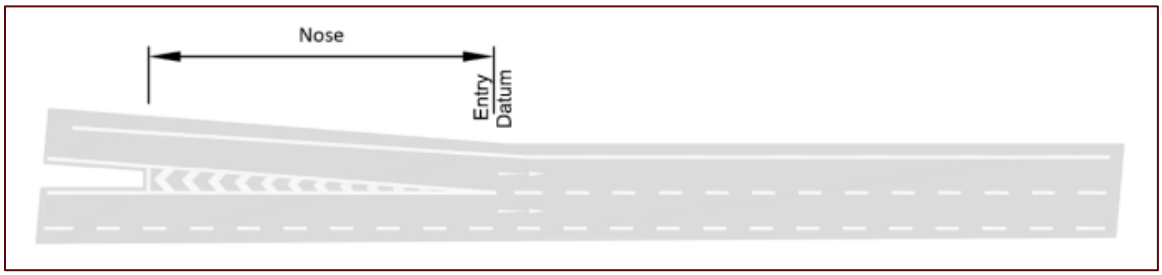
Scenario 6M2

2.14.8 Whilst traffic levels will change slightly with District Plan allocations, this will not require a further upgrade in the diverge arrangement for this junction. Whilst an upgrade to a layout A taper diverge with three lanes upstream and downstream is appropriate, this requirement is not attributable to additional District Plan traffic, as was also required in the 2039 reference case scenario.

Southbound On-slip Merge

2.14.9 The southbound on-slip is a layout D lane gain merge as can be seen in **Figure 139** taken from CD 122 Geometric design of grade separated junctions from DMRB.

Figure 139. Southbound Merge – Layout D – Lane Gain Merge



2.14.10 **Table 42** below displays the actual flow data (vehicles) for the southbound on-slip in AM and PM peaks for the baseline 2019 Existing Scenario, 2039 Reference Case, and Scenario 6m2.

Table 42. A23 – A273 Southbound On-slip Flow Data

	BASELINE 2019		REFERENCE CASE 2039		6M2 SCENARIO		DIF. BETWEEN 6M2-REF CASE 2039	
	AM	PM	AM	PM	AM	PM	AM	PM
Mainline (upstream)	2261	3425	2972	4014	3175	4001	203	-13
Slip Road	892	693	835	1101	761	1037	126	-64

2.14.11 **Figure 140** shows the plotted flow data onto the DMRB CD 122 merge graph. The shaded green area shows the existing arrangement. AM flows identified by blue crosses, and PM flows identified by yellow / red crosses.

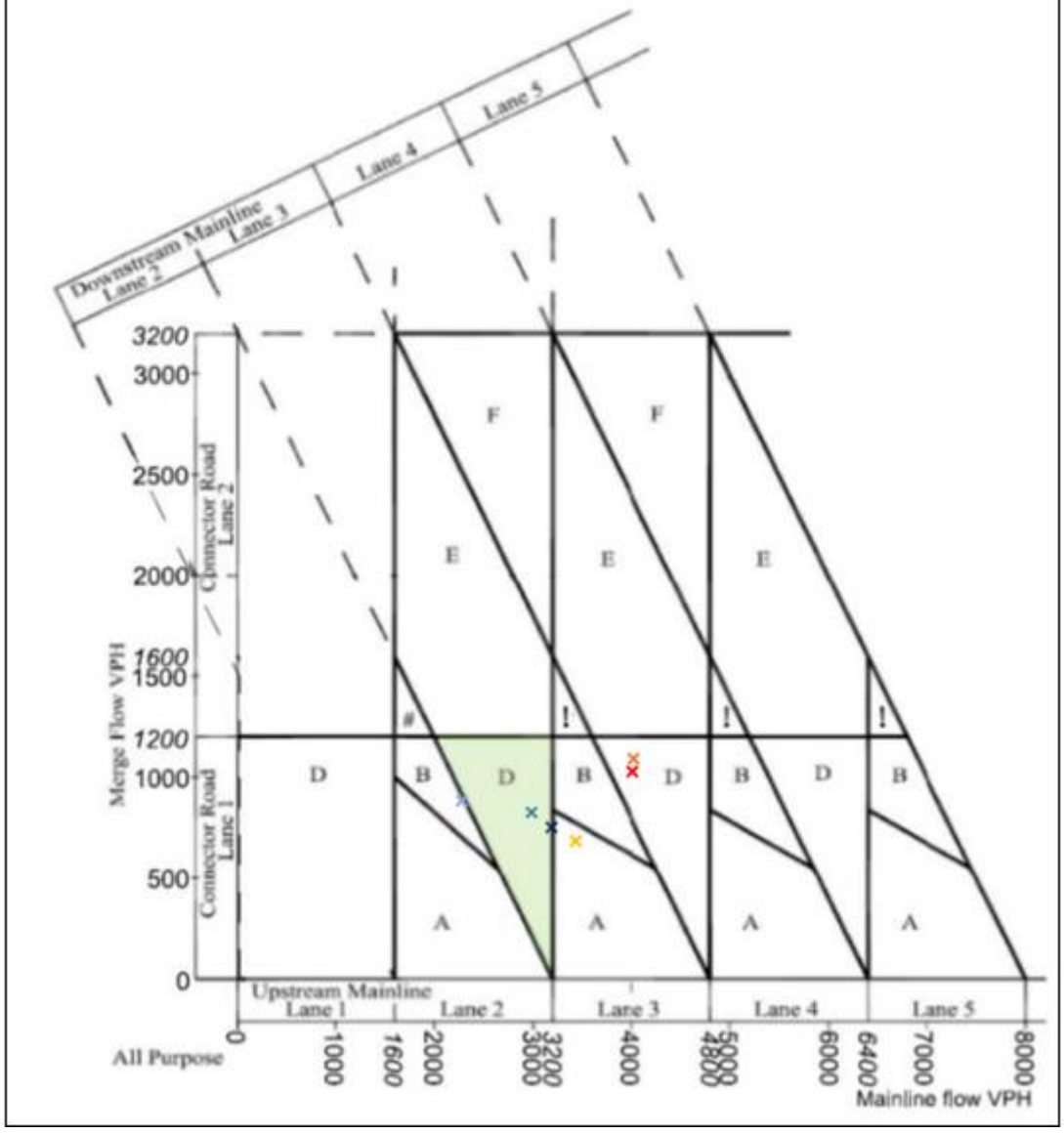
Figure 140. A23 – A273 Southbound On-slip Merge Diagram

AM Peak Period

Year	mainline flow	merge flow
Baseline	2261	892
Reference	2972	835
6M2	3175	761

PM Peak Period

Year	mainline flow	merge flow
Baseline	3425	693
Reference	4014	1101
6M2	4001	1037



2019 Baseline

2.14.12 The 2019 AM Baseline flows show that the existing layout D lane gain is suitable for existing traffic flows, but traffic flows in the PM peak are sufficiently high to require a layout upgrade. In this instance layout A option 1 is appropriate, with three lanes upstream and downstream.

2039 Reference Case

2.14.13 In the Reference Case the AM traffic flows would continue to be accommodated by the existing layout. However, increases in PM traffic flows will require a further layout upgrade. In this instance a layout D lane gain is suitable but with three upstream lanes and four downstream lanes.

Scenario 6M2

2.14.14 Whilst mainline traffic levels will increase further with District Plan allocations, slip road traffic is forecast to decrease in the 6m2 scenario as shown in **Table 42**. Therefore, there is no requirement for a further upgrade over the merge arrangement needed for the 2039 reference case scenario.

3. COVID 19 SCENARIO - SENSITIVITY ASSESSMENTS

3.1 Background

3.1.1 The Mid Sussex Strategic Highway Model (MSSHM) has a baseline of 2019 which has been validated to 2019 traffic surveys. However, it is widely recognized that travel patterns have changed significantly since the surveys were undertaken, largely due to the impacts of the COVID-19 pandemic in 2020-2022 and continued changes in travel behavior in subsequent years. Whilst traffic levels have risen over more recent years, they are still recognized to be lower than pre-pandemic levels as a result of home working.

3.1.2 In the context of forecast Local Plan scenarios, it is considered reasonable to apply a reduction factor to the baseline 2019 and Reference Case traffic flows from the MSSHM to provide a more representative assessment of current traffic levels.

3.1.3 Following consultation with MSDC and National Highways, it has been agreed to undertake sensitivity tests at key locations on the M23/A23 corridor in order to test the implications of a reduction in traffic flows associated with reduced travel demand following the pandemic.

3.2 Sensitivity Test Locations

3.2.1 The slip roads selected for the sensitivity tests are at locations where it has been identified that further investigation is required to adequately assess whether the uplift in vehicle traffic associated with the District Plan growth requires further physical interventions. This typically relates to locations where there is no change between layout type requirements between the Reference Case and 6m2 Scenario flows, however National Highway would like additional evidence to understand whether the residual impacts following an adjustment for COVID result in a lower layout type or mainline requirement. In some of these instances, the suggested physical upgrades may be difficult to implement due to local site conditions or land ownership issues. The sensitivity tests are intended to identify locations where a justifiable reduction in baseline traffic flows may allow more achievable merge or diverge interventions to be implemented and provide further evidence to justify that physical interventions are not always required to demonstrate soundness of the District Plan.

3.2.2 A total of ten locations have been identified for COVID-19 sensitivity testing and these are listed in **Table 43**.

Table 43. Selected COVID -19 Sensitivity Test Sites

JUNCTION	TEST SITE
M23 J11	Northbound off-slip diverge
A23 / B2110	Northbound on-slip merge
A23 / A272	Northbound off-slip diverge
	Southbound on-slip merge
A23 / A2300	Northbound off-slip diverge
	Northbound on-slip merge
	Southbound off-slip diverge
	Southbound on-slip merge
A23 / B2118	Southbound off-slip diverge
A23 / A281	Southbound on-slip merge

3.3 Methodology

3.3.1 In order to take account of a reduction of traffic levels in response to changes in travel behaviour, traffic flow levels have been reduced by 11% in the AM peak hour and 10% in the PM peak hour for the 2039 Reference Case flows. These figures have been agreed with MSDC and National Highways and are based on the evidence presented in the COVID Assessment Technical Note presented in **Appendix C**, which compared traffic flow counts from 2019 and 2023 at several locations across the district with the average percentage flow change subsequently applied to the flow volumes. The uplift in traffic flows between the Reference Case and Scenario 6m2 was then added to the adjusted 2039 Reference Case given that the District Plan site allocations had already been subject to adjustments to account for COVID-19 impacts as a result of increased levels of home working.

3.4 Results Summary

3.4.1 The outcomes of the sensitivity tests are summarised in **Table 44**. The table provides a comparison between the traffic flows for the 6m2 Scenario and the COVID-adjusted 6m2 Scenario. The resultant reduction of traffic at each location is also presented.

3.4.2 Each of the ten locations have been identified as potentially requiring revised merge or diverge layouts in the 6m2 Scenario. The summary table also provides a high-level view of how these requirements may change as a result of the reduction of traffic levels from a reduced demand for travel.

Table 44. Sensitivity Test Results Summary

		Scenario 6m2 Traffic Flows		Scenario 6m2 COVID Adjusted Traffic Flows		Difference		Scenario 6m2 Intervention Required	COVID Scenario Intervention Required
		AM	PM	AM	PM	AM	PM		
M23 J11	N/B Intermain	3488	2369	3113	2137	-375	-232	Yes	Yes - as 6m2
	N/B Diverge	1883	1619	1691	1458	-192	-161		
A23 / B2110	N/B Intermain	4380	3404	3924	3072	-456	-332	Yes	Yes - reduced requirement
	N/B Merge	991	584	880	523	-111	-61		
A23 / A272	N/B Intermain	4511	3336	4046	3019	-465	-317	Yes	No
	N/B Diverge	556	590	489	541	-67	-49		
	S/B Intermain	3176	4241	2834	3827	-342	-414	Yes	Yes - reduced requirement
	S/B Merge	490	760	440	691	-50	-69		
A23 / A2300	N/B Intermain	3578	2337	3203	2125	-375	-212	Yes	Yes - as 6m2
	N/B Diverge	309	77	282	70	-27	-7		
	N/B Intermain	3578	2337	3203	2125	-375	-212	Yes	Yes - reduced requirement
	N/B Merge	1489	1588	1333	1429	-156	-159		
	S/B Intermain	2197	3792	1966	3425	-231	-367	Yes	No
	S/B Diverge	1470	1209	1288	1093	-182	-116		
	S/B Intermain	2197	3792	1966	3425	-231	-367	Yes	Yes - as 6m2
	S/B Merge	786	809	704	736	-82	-73		
A23 / B2118	Intermain	2249	3642	1992	3257	-257	-385	Yes	Yes - as 6m2
	S/B Diverge	736	960	680	904	-56	-56		
A23 / A281	Intermain	3092	4027	2545	3632	-547	-395	Yes	Yes - as 6m2
	S/B Merge	352	13	284	12	-68	-1		

3.4.3 As shown in **Table 44**, the reduction in traffic flows to account for COVID-19 impacts is such that two junctions would no longer require merge / diverge interventions to accommodate District Plan growth and three further junctions would require a lesser level of intervention than previously identified.

3.4.4 Further details of the results of the COVID-19 sensitivity tests for the 6m2 Scenario are provided below for each of the junctions assessed. Additional detail can be found in the COVID-19 assessment spreadsheet including the resultant traffic flows and associated merge/diverge graph assessments presented in **Appendix C**.

M23 Junction 11 Northbound Off-slip Diverge

3.4.5 The existing layout of this slip road provides three lanes through the junction with a Layout type A option 1 taper diverge on the off-slip. In terms of intermain traffic this represents an over-provision of capacity on the mainline for forecast 6m2 traffic levels.

3.4.6 The busiest period for traffic at this junction is the AM peak hour and thus the layout requirements of this time period will take precedence over the PM peak hour.

3.4.7 As shown in **Table 45**, the sensitivity test shows that the COVID-adjusted traffic flows are not reduced sufficiently to require a reduced intervention over the forecast 6m2 Scenario.

Table 45. M23 J11 N/B Diverge – Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 3 lanes upstream 3 lanes downstream	Layout D 3 lanes upstream 2 lanes downstream	Layout D 3 lanes upstream 2 lanes downstream

A23 / B2110 Northbound On-slip Merge

3.4.8 The existing layout of this slip road provides three lanes through the junction with a Layout A taper merge on the on-slip. The highest traffic flows are forecast for the AM peak, which will therefore take precedence for the layout type requirement.

Table 46. A23 / B2110 N/B Merge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 3 lanes upstream 3 lanes downstream	Layout D 3 lanes upstream 4 lanes downstream	Layout B 3 lanes upstream 3 lanes downstream

3.4.9 As shown in **Table 46**, the 6m2 Scenario assessment shows that the slip road would require upgrading from the existing to a lane-gain arrangement with four downstream lanes.

3.4.10 Application of the COVID-adjusted traffic flows would reduce this requirement to a Layout B arrangement with a parallel, auxiliary lane merge.

A23 / A272 Northbound Off-slip Diverge

3.4.11 This off-slip has three lanes running through the junction with a taper diverge. The highest traffic flows are in the AM peak hour and this determines the diverge layout requirement.

Table 47. A23 / A272 N/B Diverge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 3 lanes upstream 3 lanes downstream	Layout C 4 lanes upstream 3 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream

3.4.12 As shown in **Table 47**, increases in AM flows forecast for the 6m2 Scenario would require an upgrade to a Layout C lane drop arrangement, although only by a narrow margin. Application

of the COVID adjusted flows would reduce this requirement to the extent that the existing layout would be sufficient to accommodate forecast future flows.

A23 / A272 Southbound On-slip Merge

3.4.13 The A23 mainline has three lanes through this junction with a Layout A taper merge. In this instance the higher traffic flows occur in the PM peak hour and this scenario will take precedence for future merge layout requirements.

Table 48. A23 / A272 S/B Merge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 3 lanes upstream 3 lanes downstream	Layout D 2 lanes upstream 3 lanes downstream	Layout B 3 lanes upstream 3 lanes downstream

3.4.14 As shown in **Table 48**, the 6m2 Scenario assessment requires that the merge arrangement be upgraded to a Layout D lane gain arrangement. However, application of the COVID-adjusted flows reduces the requirement to a Layout B parallel merge with auxiliary lane.

A23 / A2300 Northbound off-slip Diverge

3.4.15 The existing layout of the A23 northbound at the A2300 junction provides two lanes through the junction on the mainline and intermain. The northbound diverge has a Layout A taper diverge arrangement.

3.4.16 The highest traffic flows are in the AM peak and these will determine the future layout requirements at the junction.

Table 49. A23 / A2300 N/B Diverge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 2 lanes upstream 2 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream

3.4.17 As shown in **Table 49**, the forecast traffic flows from the 6m2 Scenario would require an upgrade at the junction to provide three lanes on the mainline through the junction. However, the existing taper merge arrangement will continue to be appropriate due to the low slip-road flows. This requirement remains in the COVID-adjusted scenario.

A23 / A2300 Northbound on-slip Merge

3.4.18 As noted above, the A23 northbound has a two lane intermain through the A2300 junction. The northbound merge has a lane gain arrangement to provide three lanes downstream of the junction.

3.4.19 Traffic flows on the intermain are highest in the AM peak. Merging traffic flows are higher in the PM peak but only by 6.6%, and thus the AM requirement will take precedence in this instance.

Table 50. A23 / A2300 N/B Merge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout D 2 lanes upstream 3 lanes downstream	Layout E 3 lanes upstream 3 lanes downstream	Layout B 3 lanes upstream 3 lanes downstream

3.4.20 As with the northbound diverge, the 6m2 Scenario would require that the intermain at the A2300 junction is upgraded to three lanes, as shown in **Table 50**. The forecast merging flows would also require that the merge is upgraded to a layout E two-lane ghost island merge.

3.4.21 In the COVID-adjusted scenario the intermain will still need to be upgraded to three lanes, with the merge to take the form of a Layout B parallel / auxiliary lane arrangement. This represents a reduction in requirement over the 6m2 Scenario.

A23 / A2300 Southbound off-slip Diverge

3.4.22 The A23 / A2300 southbound diverge has a lane drop layout, with three lanes upstream reducing to a two lane intermain. The highest intermain traffic is seen in the PM peak but with slightly higher diverge traffic in the AM peak. In this instance, the PM scenario will define the future layout of this diverge.

Table 51. A23 / A2300 S/B Diverge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout C 3 lanes upstream 2 lanes downstream	Layout D 4 lanes upstream 3 lanes downstream	Layout A 3 lanes upstream 2 lanes downstream

3.4.23 As shown in **Table 51**, the additional forecast flows of the 6m2 Scenario would require a Layout D arrangement with either a two lane ghost island or auxiliary lane diverge. This would require upgrading the mainline upstream A23 to four lanes.

3.4.24 Application of the COVID-adjusted traffic flows removes this requirement as the existing layout will have sufficient capacity to accommodate the forecast flows.

A23 / A2300 Southbound on-slip Merge

3.4.25 The A2300 southbound merge has a two lane intermain and two lanes downstream, with a Layout A taper merge arrangement. The highest southbound traffic flows are recorded in the PM peak and this period will take precedence.

Table 52. A23 / A2300 S/B Merge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 2 lanes upstream 2 lanes downstream	Layout B 3 lanes upstream 3 lanes downstream	Layout B 3 lanes upstream 3 lanes downstream

3.4.26 As shown in **Table 52**, the forecast 6m2 traffic flows would require an upgrade at the on-slip to provide three intermain and downstream lanes with a Layout B parallel / auxiliary lane merge. In this instance the reduction in traffic flows from the COVID-adjusted scenario is not sufficient to trigger a reduction in the upgrade requirement.

A23 / B2118 Southbound Off-slip Diverge

3.4.27 The existing layout at the A23 / B2118 off-slip has a two lane mainline with a Layout A taper diverge. The highest southbound traffic flows are recorded in the PM peak and this will determine the future layout requirement for the junction.

Table 53. A23 / B2118 S/B Diverge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 2 lanes upstream 2 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream

3.4.28 As shown in **Table 53**, additional traffic forecast for the 6m2 Scenario would require an upgrade at the off-slip to increase the mainline from two lanes to three lanes, although a taper diverge would continue to be appropriate. This requirement remains in the COVID-adjusted scenario.

A23 / A281 Southbound On-slip Merge

3.4.29 The existing layout at the A281 southbound merge is a two lane mainline with a Layout A parallel merge. The highest mainline traffic flows are recorded in the PM peak, with merging flows being low in both peaks.

Table 54. A23 / A281 S/B Merge - Layout Requirements

EXISTING LAYOUT	SCENARIO 6M2 REQUIREMENT	COVID-ADJUSTED SCENARIO 6M2 REQUIREMENT
Layout A 2 lanes upstream 2 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream	Layout A 3 lanes upstream 3 lanes downstream

3.4.30 As shown in **Table 54**, based on the PM traffic flows, the 6m2 Scenario would require an upgrade of the mainline to three lanes, although a parallel merge would continue to be appropriate. This would remain the case in the COVID-adjusted scenario despite the reduction in traffic volumes.

3.5 Summary

3.5.1 The sensitivity tests carried out to assess the potential impacts of changes to travel behaviours following the COVID- 19 pandemic have provided additional assessments to forecast how traffic reductions could impact on the resulting layout type and mainline requirements for selected junctions along the A23 and M23 corridor.

3.5.2 The assessments have shown that the COVID-adjusted traffic flows result in an overall reduced level of intervention at A23 and M23 junctions would be required in the future to accommodate Local Plan traffic growth.

3.5.3 The assessments have shown that the COVID-adjusted traffic flows for the ten slip-road locations conclude that two of the assessed junctions would not require upgrades that would otherwise be required by the 6m2 traffic growth scenario.

3.5.4 A further three junctions have been shown to require a reduced level of intervention in the COVID-adjusted scenario, although some works would still be required to accommodate traffic growth. However, these lesser interventions may prove to be more deliverable than the more onerous changes required by the 6m2 scenario.

3.5.5 The remaining five of the assessed slip-road layouts would continue to require the level of upgrade that are required by traffic flow levels forecast in the 6m2 scenario.

3.5.6 The subsequent chapter discusses each of these slip-road locations in turn providing a summary of the suitability and deliverability of mitigation considerations to demonstrate that the impacts are considered mitigated in a proportionate and sound manner.

4. NATIONAL HIGHWAYS RECOMMENDATIONS AND FURTHER FEASIBILITY CONSIDERATIONS

4.1.1 During development of the transport evidence base, several meetings have been held with National Highways to detail the outcome of the merge diverge assessments and seek in principal agreement of the mitigation schemes proposed. Written feedback from National Highways was received on 23/07/24 and 15/08/24 in the form of two Technical Notes which detailed the key locations where National Highways requested further consideration to ensure impacts of the District Plan were mitigated.

4.1.2 Consequently, further assessments have been undertaken at each of the locations identified including a high level COVID-19 assessment to manually reduce Reference case traffic flows, based on the outcomes of a COVID assessment exercise to analyze the difference in traffic flows between pre and post covid traffic surveys at count sites across the Mid Sussex highway network. This analysis of several traffic count sites found an average reduction in traffic flows of 11% in the AM and 10% in the PM. This manual reduction has been applied to account for the Mid Sussex Highway Model having a base year of 2019 and whilst the District Plan growth has been subject to reductions associated with home working the modelling has not applied assumptions associated with COVID impacts on the Baseline and Reference Case scenarios to account for post pandemic traffic flow trends in the existing conditions and growth trends. Full details of the traffic count site comparisons are included within the COVID assessment Technical Note within **Appendix C**.

4.1.3 The specific junctions and slip roads where National Highways have identified that further consideration is required regarding the feasibility of mitigation interventions includes:

- M23 J11 – Northbound Off Slip Diverge
- A23 B2110 – Northbound On Slip Merge
- A23 A272 – Northbound Off Slip Diverge
- A23 A272 – Southbound On Slip Merge
- A23 A2300 – Northbound Off Slip Diverge
- A23 A2300 – Northbound On Slip Merge
- A23 A2300 – Southbound Off Slip Diverge
- A23 A2300 – Southbound On Slip Merge
- A23 B2118 – Southbound Off Slip Diverge
- A23 A281 – Southbound On Slip Merge

4.1.4 A summary of the feasibility checks for the National Highways suggestions is detailed in the Table below, with a subsequent detailed analysis of assessments and conclusions for each location in turn.

Junction	Detail	Existing Layout	Absolute Slip Road Flow Increase (6M2-Ref Case)		Absolute Mainline Flow Increase (6M2 - Ref Case)		DMRB Requirement for Reference Case	DMRB Requirement for 6M2	NH Suggested Intervention (Due to acceptable DMRB relaxations)	Feasibility study	Summary
			AM	PM	AM	PM					
M23 J11	Northbound Diverge	Type A - taper diverge - 3 lane mainline	138	7	80	52	Type D - ghost lane drop - 3 lane upstream, 2 lane downstream,	Type D - ghost lane drop - 3 lane upstream, 2 lane downstream,	Type C - lane drop - 3 lane upstream, 2 lane downstream	Unable to build additional 4th lane for a lane drop due to bridge in the way. However there is the possibility to change outer lane to a slip road lane drop. Lowering to 2 lanes through the junction. Flow data suggests 2 lanes is still able to accommodate the traffic. Intervention already agreed as part of Crawley local plan.	Intervention already approved (Crawley Local Plan)
A23 B2110	Northbound Merge	Type A - taper merge - 3 lane mainline	-19	-26	237	86	Type D - lane gain - 3 lane upstream, 4 lane upstream	Type D - lane gain - 3 lane upstream, 4 lane upstream	Type B - parallel merge - 3 lane mainline or Type C - ghost merge - 3 lane mainline	Unable to build additional 4th mainline lane due to significant works and costs, as well as location of bridge 150m north. Type C ghost island merge would require 470m total length which would conflict with bridge. Type B parallel merge would require 290m total length which would also conflict bridge.	Not feasible
A23 A272	Northbound Diverge	Type A - taper diverge - 3 lane mainline	-50	96	282	113	Type A - taper diverge - 3 lane mainline	Type C - lane drop - 4 lane upstream, 3 lane downstream	Type B - ghost diverge - 3 lane mainline	Existing slip lane commences on bridge overpass so building outward would prove costly. There are currently 3 lanes on the mainline so potential for a lane to be re-prioritised for the slip road lane drop. However the flow data suggests that 3 lanes are required for the mainline, and therefore reprioritising a lane for the slip road would not be feasible.	Not feasible
A23 A272	Southbound Merge	Type A - taper merge - 3 lane mainline	35	67	64	98	Type B - parallel merge - 3 lane mainline	Type D - lane gain - 3 lane upstream, 4 lane upstream	Type B - parallel merge - 3 lane mainline or Type C - ghost merge - 3 lane mainline	Sufficient highway boundary space for an upgrade to a parallel or ghost merge, there are no structures within the required distance for these upgrades. A full parallel merge would require 290m of length, and a full ghost merge would require 485m of length. Approximately 700m to the south there is a taper access and egress for a farm track, this would sit outside of the required lengths of upgrades.	Intervention possible
A23 A2300	Northbound Diverge	Type A - taper diverge - 2 lane mainline	68	9	165	216	Type A - taper diverge - 3 lane mainline	Type A - taper diverge - 3 lane mainline	Type B - ghost diverge - 2 lane mainline	Room to lengthen slightly but not within CD spec for type B. Highway boundary wont allow widening. Bridge structure 300m south which would require alteration in order to accommodate new diverge type. Full length ghost type B required 470m. This would also conflict / overlap with the B2118 proposed type C ghost merge. Weaving space between junctions would be reduced to almost nothing.	Not feasible
A23 A2300	Northbound Merge	Type D - lane gain - 2 lane upstream, 3 lane downstream	67	-7	165	216	Type E - ghost lane gain - 3 lane upstream, 4 lane downstream	Type E - ghost lane gain - 3 lane upstream, 4 lane downstream	Type E - ghost lane gain - 2 lane upstream, 3 lane downstream	Unable to build an additional slip way lane as residential properties in close proximity to the West. Highway boundary is already very tight either side. No room to build additional mainlines lane, would involve significant cost and work to achieve.	Not feasible
A23 A2300	Southbound Diverge	Type C - lane drop - 3 lane upstream, 2 lane downstream	1	44	99	121	Type D - ghost lane drop - 4 lane upstream, 3 lane downstream,	Type D - ghost lane drop - 4 lane upstream, 3 lane downstream,	Type D - ghost land drop - 3 lane upstream, 2 lane downstream	Junction present 200 metres north of diverge, and vehicle refuge 300 m. An additional mainline lane would involve significant works and cost. A type D would require a full length of 470m north of the diverge, which would conflict junctions and laybys to the north. Limited highway boundary width to be able to achieve any upgrades. NH suggest a speed reduction to 60mph, however this would be very localised and only required in a single direction at this junction.	Not feasible
A23 A2300	Southbound Merge	Type A - taper merge - 2 lane mainline	39	74	99	121	Type B - parallel merge - 3 lane mainline	Type B - parallel merge - 3 lane mainline	Type B - parallel merge - 2 lane mainline	Concrete foot bridge approximately 200 m south of the end of the existing taper, sufficient highway boundary width for parallel lane however not sufficient length to the south to provide the full 290m length parallel merge slip road due to bridge.	Not feasible
A23 B2118	Southbound Diverge	Type A - taper diverge - 2 lane mainline	230	400	-91	-204	Type A - taper diverge - 3 lane mainline	Type A - taper diverge - 3 lane mainline	Type A - option 2 - parallel diverge - 2 lane mainline or Type B - ghost diverge - 2 lane mainline	Type A option 2 parallel diverge would require 255m length, and a type B ghost diverge would require 470m length. There is a footbridge approximately 470m north of the existing diverge which may prove challenging to provide a ghost diverge within this space, however a parallel diverge could be provided within this length. However there is approximately 3-4m of highway boundary width available off the edge of existing carriageway, therefore would have insufficient space to be able to provide a parallel lane.	Not feasible
A23 A281	Southbound Merge	Layout A - taper merge - 2 lane mainline	33	0	233	-8	Type A - taper diverge - 3 lane mainline	Type A - taper diverge - 3 lane mainline	Type B - parallel merge - 2 lane mainline	Bridge south of the merge restricts any parallel merge, despite sufficient highway boundary width. Parallel merge requires a length of 290m, and the bridge is approximately 280m to the south.	Not feasible

M23 J11 – Northbound Off Slip Diverge

4.1.5 The absolute flow change on the M23 J11 northbound diverge between the Reference Case and 6m2 scenario shows an increase of 138 vehicles (7%) in the AM peak and 7 vehicles in the PM peak (<1%), with the intermain increasing by 80 vehicles in the AM (2%) and 52 vehicles in the PM (3%).

4.1.6 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type D Lane drop with 3 lanes upstream and 2 lanes downstream in both 2039 Reference Case and 6m2 Scenario compared to the existing layout of Type A taper diverge with 3 lanes on the mainline.

4.1.7 As identified the layout type requirement does not change between the Reference Case and the 6M2 Scenario in the Mid Sussex District Plan modelling. This differs from the outputs of Crawley where the Local Plan scenario triggers an upgrade when compared back to the Reference Case modelling. Consequently, for Mid Sussex, the requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth between the 2019 Baseline and 2039 Reference Case growth. Considering this and fact that a committed scheme exists within the Crawley Local Plan mitigation package, it is not felt that the M23 J11 should be a priority location for intervention delivery.

4.1.8 It is noted that the Crawley Local Plan provides a commitment to deliver this intervention as part of the package of agreed mitigation measures to support the adopted Local Plan. As agreed within the Model Assumptions Note, which forms part of the MSDC transport evidence package, adjacent borough development has been accommodated through TEMPRO traffic flow growth as well as addition of any specific development sites which have been agreed for inclusion. This committed intervention therefore sufficiently addresses the needs of traffic growth associated with growth of both the Crawley Local Plan and the Mid Sussex District Plan. National Highways have raised concerns regarding the operation of the M23 J11 diverge should the Crawley intervention not be delivered. Given the growth targets in the Crawley borough and recent recommendation for adoption of the plan subject to final modifications it is felt that it is reasonable to assume that the scheme will be implemented to the support the growth identified in the Crawley Local Plan.

4.1.9 Future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. In the unlikely scenario where development at Crawley does not come forward and trigger the upgrade mitigation agreed, consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 B2110 Northbound Merge

4.1.1 The absolute flow change on the A23 B2110 northbound merge shows a slight decrease in both the AM and PM peak on the on-slip, however the intermain flow increases by 237 in the AM and 86 in the PM, representing a percentage increase compared to the Reference Case intermain flows of 5.7% in the AM (4,142 Ref Case intermain) and 3% in the PM (3,318 Ref Case intermain).

4.1.2 It is noted that the increase in traffic flows on the mainline results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type D Lane gain with 3 lanes upstream and 4 lanes downstream in both 2039 Reference Case

and 6m2 Scenario in the AM peak compared to the existing layout of Type A taper diverge with 3 lanes on the mainline. The existing layout offers sufficient capacity in the PM peak for 6m2 scenario. Feasibility investigations have identified a bridge located approximately 160m to the north of the merge, this restricts the ability of the lane gain from being implemented and therefore National Highways suggestion of a Type B or C merge is considered. CD 122 England National Application Annex to CD 122 Geometric design of grade separated junctions, Chapter E/2, Paragraph E/2.3 part 1 states 1) the road class in CD 122 Table 3.21 can be relaxed to 'urban road speed limit 60 mph' and part 3 states that "where no lane gains are to be introduced, the CD 122 layout can be substituted as described below: a) Layout B can be used instead of Layout D; b) Layout C or Layout E3 can be used instead of Layout E1 and E2". Based on this, the minimum length of a type B merge when taking in to account the geometric length relaxations stated above is 215m, however the bridge abutment distance from the nose is approximately 160m. Therefore, the distance required to implement the Type B merge still significantly exceeds the distance to the bridge reflecting a clear constraint to the delivery of physical interventions in this location. The 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which would be consistent with a Type B layout with 3 lanes on the mainline, representing a lesser provision than the Type D requirement for the 6m2 flows with no adjustment for COVID.

4.1.3 As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

4.1.4 The importance of maintaining the safe and efficient operation of the SRN is recognized and consideration could be given to including warning signage to alert drivers of the presence of the B2110 merge and/or the likelihood of busy conditions during peak hours. Future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A272 – Northbound Off Slip Diverge

4.1.5 The absolute flow change on the A23 A272 northbound diverge between the Reference Case and 6m2 scenario shows a decrease of 50 vehicles (-9%) in the AM peak and an increase of 96 vehicles (16%) in the PM peak, with the intermain increasing by 282 vehicles in the AM (6%) and 113 vehicles in the PM (3%).

4.1.6 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type C Lane drop with 3 lanes downstream and 4 lanes upstream in the 6m2 Scenario in the AM peak compared to the existing layout of Type A taper diverge with 3 lanes on the mainline. The existing layout is suitable for the 6m2 forecast flows in the PM peak. The Reference Case AM flows are just on

the boundary between requiring a Type A layout and a Type C layout. The existing layout offers sufficient capacity in the PM peak for the Reference Case scenario.

4.1.7 Feasibility investigations have identified that the northbound diverge starts immediately after an existing bridge overpass and this restricts the ability of the lane gain from being implemented and therefore National Highways suggestion of a Type B ghost diverge is considered. CD 122 England National Application Annex to CD 122 Geometric design of grade separated junctions, Chapter E/2, Paragraph E/2.3 part 1 states 1) the road class in CD 122 Table 3.21 can be relaxed to 'urban road speed limit 60 mph' and part 3 states that "where no lane gains are to be introduced, the CD 122 layout can be substituted as described below: a) Layout B can be used instead of Layout D; b) Layout C or Layout E3 can be used instead of Layout E1 and E2". Based on this, the minimum length of a type B diverge when taking in to account the geometric length relaxations stated above is 470m, however the overbridge ends at the point of the onset of the diverge reflecting a clear constraint to the delivery of physical interventions in this location. The 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which, if applied to a design for new infrastructure, would translate to a requirement for a Type A Layout with 3 lanes on the mainline in the AM and Type C Lane drop with 3 lanes upstream and 2 lanes downstream in the PM. Consequently, the existing layout Type A with 3 lanes on the mainline is deemed sufficient to accommodate the forecast future flows under the COVID assessed scenario in the AM and for the PM, offering greater capacity with three lanes available on both the mainline upstream and downstream.

4.1.8 Considering that the COVID assessment indicates the existing layout is sufficient to accommodate future forecast demand, along with the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

4.1.9 The importance of maintaining the safe and efficient operation of the SRN is recognized and consideration could be given to early warning to alert drivers of the imminent diverge after the overbridge and/or the likelihood of busy conditions during peak hours. Future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development and this could therefore be considered at this time. Consideration through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A272 – Southbound On Slip Merge

4.1.10 The absolute flow change on the A23 A272 southbound merge between the Reference Case and 6m2 scenario shows an increase of 35 vehicles (7%) in the AM peak and an increase of 67 vehicles (9%) in the PM peak, with the intermain increasing by 64 vehicles in the AM (2%) and 98 vehicles in the PM (2%).

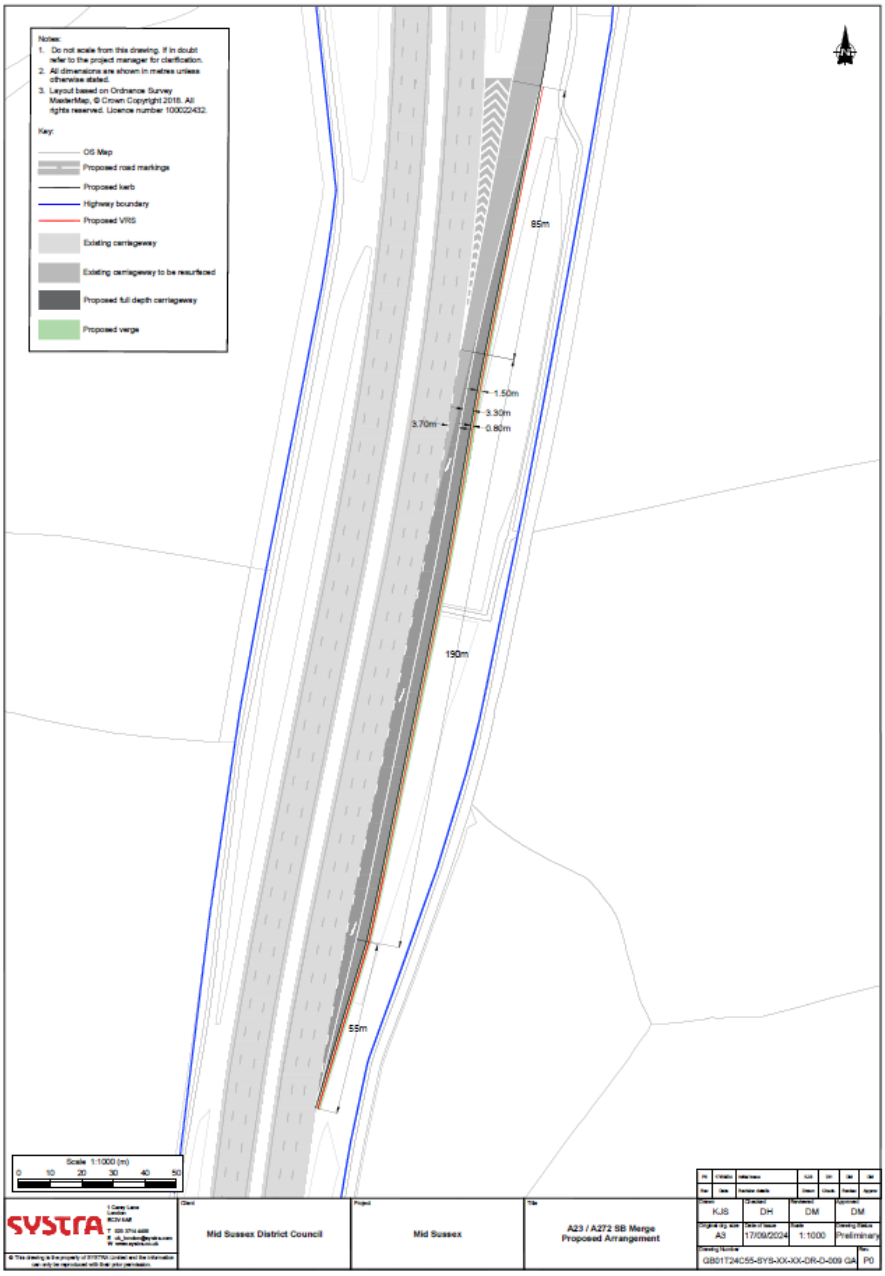
4.1.11 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type D Lane gain with 3 lanes upstream and 4 lanes downstream in the 6m2 Scenario in the PM peak compared to the existing layout of Type A taper diverge with 3 lanes on the mainline. The Reference Case AM flows are just on the boundary between requiring a Type B layout and a Type D layout.

4.1.12 National Highways have suggested that a Type B parallel merge or Type C ghost merge would offer a proportionate intervention rather than a full lane gain arrangement to mitigate the District Plan growth.

4.1.13 Feasibility investigations have identified that the suggested Type B parallel merge can be accommodated within the available highway boundary with the closest physical constraint being approximately 700m to the south where there is a taper access and egress to a farm, however this does not conflict with the length of a parallel merge requiring approximately 290m in length.

4.1.14 The provision of an improvement to the A23 A272 southbound on slip merge to reflect a Type B parallel merge has been taken forward for design development. The general arrangement sketch of the proposed design which will form part of the Mid Sussex District Plan highways mitigation package is shown in **Figure 141** as well as in **Appendix A**.

Figure 141. A23/A272 SB Merge Proposed Mitigation



A23 A2300 – Northbound Off Slip Diverge

4.1.15 The absolute flow change on the A23 A2300 northbound diverge between the Reference Case and 6m2 scenario shows an increase of 68 vehicles (2%) in the AM peak and an increase of 9 vehicles (1%) in the PM peak, with the intermain increasing by 165 vehicles in the AM (5%) and 216 vehicles in the PM (9%).

4.1.16 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type A layout with 3 lanes on the upstream and downstream mainline in both the Reference Case and 6m2 Scenario in the AM peak compared to the existing layout of Type A taper diverge with 2 lanes on the mainline. The existing layout is suitable for the Reference Case and 6m2 forecast flows in the PM peak.

4.1.17 Feasibility investigations have identified that the bridge structure 300m to the south would limit the ability of providing an additional mainline lane and therefore National Highways suggestion of a Type B ghost diverge has been considered. CD 122 England National Application Annex to CD 122 Geometric design of grade separated junctions, Chapter E/2, Paragraph E/2.3 part 1 states 1) the road class in CD 122 Table 3.21 can be relaxed to 'urban road speed limit 60 mph' and part 3 states that “where no lane gains are to be introduced, the CD 122 layout can be substituted as described below: a) Layout B can be used instead of Layout D; b) Layout C or Layout E3 can be used instead of Layout E1 and E2”. Based on this, the minimum length of a type B diverge when taking in to account the geometric length relaxations stated above is 470m. The existing bridge structure is located 300m to the south and would require alterations with the proposed layout type suggested. Additionally, to support development at Sayers Common and ensure District Plan Growth impacts are mitigated, a type C ghost merge at the A23/B2118 northbound on slip is proposed (see **Figure 114**). If a Type B ghost diverge were to be implemented at A23/ A2300 northbound diverge, there would be conflict between the weaving of the two interventions. The 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which, if applied to a design for new infrastructure, would translate to a requirement for a Type A Layout with 3 lanes on the mainline with the COVID assessment flows still requiring the third mainline lane.

4.1.18 As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention including interaction with other proposed mitigation schemes, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be “severe” in terms of the definition set out within NPPF. It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A2300 – Northbound On Slip Merge

4.1.19 The absolute flow change on the A23 A272 northbound on slip merge between the Reference Case and 6m2 scenario shows an increase of 67 vehicles (5%) in the AM peak and a decrease of 7 vehicles (<1%) in the PM peak, with the intermain increasing by 165 vehicles in the AM (5%) and 216 vehicles in the PM (9%).

4.1.20 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type E lane gain with 3 lanes on the upstream and 4 lanes downstream mainline in both the Reference Case and 6m2 Scenario in the AM peak compared to the existing layout of Type D layout taper with 2 lanes upstream and 3 lanes downstream.

4.1.21 Feasibility investigations have identified that the residential properties located to the west of the on-slip merge limit the available highways boundary space to incorporate the required intervention in this location. National Highways have suggested that a Type E ghost lane gain should be considered with 2 lanes upstream and 3 lanes downstream, however the proximity to adjacent residential properties restricts this even without the additional lane on the mainline. The 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which, if applied to a design for new infrastructure, would translate to a requirement for a Type B Layout with three lanes on the mainline with the COVID assessment flows still requiring the third mainline lane.

4.1.22 The Mid Sussex District Plan results in a small decrease in the merge flows and therefore given the lack of available highway land no physical interventions are proposed. As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

4.1.23 It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A2300 – Southbound Off Slip Diverge

4.1.24 The absolute flow change on the A23 A2300 Southbound Off Slip Diverge between the Reference Case and 6m2 scenario shows an increase of 1 vehicle (<1%) in the AM peak and an increase of 44 vehicles (4%) in the PM peak, with the intermain increasing by 99 (5%) vehicles in the AM and an increase of 121 vehicles (3%) vehicles in the PM.

4.1.25 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type D lane drop with 4 lanes on the upstream and 3 lanes downstream in the 6m2 Scenario compared to the

existing layout of Type C lane drop with 2 lanes downstream and 3 lanes upstream on the mainline.

4.1.26 Feasibility investigations have identified that an existing junction is present approximately 200m north of the diverge as well as a vehicle refuge approximately 300m north of the diverge. The National Highways suggestion of a Type D ghost island lane drop has been considered (3 lanes upstream, 2 lanes downstream). CD 122 England National Application Annex to CD 122 Geometric design of grade separated junctions, Chapter E/2, Paragraph E/2.3 part 1 states 1) the road class in CD 122 Table 3.21 can be relaxed to 'urban road speed limit 60 mph' and part 3 states that "where no lane gains are to be introduced, the CD 122 layout can be substituted as described below: a) Layout B can be used instead of Layout D; b) Layout C or Layout E3 can be used instead of Layout E1 and E2". Based on this, the minimum length of a type D ghost island lane drop when taking in to account the geometric length relaxations stated above is 470m, however as there is only c. 200m to the adjacent access it would not be feasible for a physical upgrade to be provided in this location. Additionally, the 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which, if applied to a design for new infrastructure, would translate to a requirement for a Type A Layout with 3 lanes on the mainline in the PM and Type B with 2 lanes on the mainline in the AM.

4.1.27 As a result of the constraints identified above including interaction with adjacent junctions and vehicle refuges no physical mitigation is proposed at this junction. As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

4.1.28 It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A2300 – Southbound On Slip Merge

4.1.29 The absolute flow change on the A23 A2300 Southbound On Slip Merge between the reference case and 6m2 scenario shows an increase of 39 vehicles (5%) in the AM peak and an increase of 74 vehicles (9%) in the PM peak with the intermain increasing by 99 vehicles (5%) in the AM and an increase of 121 vehicles (3%) vehicles in the PM.

4.1.30 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type B layout with 3 lanes on the upstream and downstream mainline in both the Reference Case and the 6m2 Scenario compared to the existing layout of Type A with 2 lanes upstream and downstream on the mainline.

4.1.31 Feasibility investigations have identified that an existing bridge structure is present approximately 200m south of the end of the existing taper. The National Highways suggestion of a Type B parallel merge with 2 lanes on the mainline has been considered. This is with regards to CD 122 England National Application Annex to CD 122 Geometric design of grade separated junctions, Chapter E/2, Paragraph E/2.3 part 1 states 1) which states that the road class in CD 122 Table 3.21 can be relaxed to 'urban road speed limit 60 mph' and part 3 states that "where no lane gains are to be introduced, the CD 122 layout can be substituted as described below: a) Layout B can be used instead of Layout D; b) Layout C or Layout E3 can be used instead of Layout E1 and E2." Based on this, the minimum length of a type B parallel merge is 290m when taking in to account the geometric length relaxations, however as there is only c. 200m to the existing bridge structure a physical upgrade in this location would not be considered proportionate to the Mid Sussex District Plan impact in this location.

4.1.32 As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be "severe" in terms of the definition set out within NPPF.

4.1.33 It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 B2118 – Southbound Off Slip Diverge

4.1.34 The absolute flow change on the A23 B2118 – Southbound Off Slip Diverge between the Reference Case and 6m2 scenario shows an increase by 230 vehicles (31%) in the AM peak and an increase of 400 vehicles (42%) in the PM peak, with the mainline (downstream) decreasing by 91 vehicles (4%) in the AM and a decrease of 204 vehicles (6%) in the PM.

4.1.35 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type A layout with 3 lanes on both the upstream and 3 lanes downstream in both Reference Case and the 6m2 Scenario compared to the existing layout of Type A with 2 lanes upstream and downstream on the mainline. It noted that whilst there is an uplift in traffic on the diverge flows, the layout type A is still the assessed required layout type with the change relating to the additional mainline lane.

4.1.36 Feasibility investigations have identified that an existing bridge structure is present approximately 470m north of the existing diverge and the available highway boundary is restricted to less than 5m in width as shown in **Figure 142** below.

Figure 142. A23 B2118 – Highway Boundary

4.1.37 The available highway boundary restricts the delivery of a proportionate and deliverable physical intervention as it would require land take to deliver the upgrade.

4.1.38 The National Highways suggestion of either a Type A parallel diverge with 2 lanes on the mainline or a Type B ghost diverge with 2 lanes on the mainline is challenging to accommodate due to the restricted highway boundary space including limited space within the central reserve close to the point of the diverge. The 6m2 COVID assessment as detailed in Chapter 3 results in traffic flows which, if applied to a design for new infrastructure, would translate to the same requirement for a Type A Layout with 3 mainline lanes.

4.1.39 As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be “severe” in terms of the definition set out within NPPF with no safety concerns flagged in the Mid Sussex District Plan Safety Study report for this location.

4.1.40 It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

A23 A281 – Southbound On Slip Merge

4.1.41 The absolute flow change on the A23 A281 – Southbound On Slip Merge between the Reference Case and 6m2 scenario shows an increase of 33 vehicles (10%) in the AM peak and no changes in the PM peak, with the mainline (Upstream) increasing by 233 vehicles (8%) in the AM and a decrease of 8 vehicles (<1%) in the PM.

4.1.42 It is noted that the increase in traffic flows results in a traffic flow volume which, if applied to a design for new infrastructure, would translate to a requirement for a Type A layout with 3 lanes on the upstream and 3 lanes downstream in both the Reference Case and the 6m2 Scenario compared to the existing layout of Type A with 2 lanes on the upstream and downstream on the mainline.

4.1.43 Feasibility investigations have identified that an existing bridge structure is located approximately 280m to the south, which limits the feasibility of implementing an additional lane in this location as well as proportionate physical interventions at this location. The National Highways suggestion of a Type B parallel merge with 2 lanes on the mainline requires an approximately minimum length of 290m to implement a compliant layout type. Additionally, the 6m2 COVID assessment as detailed in Chapter X results in traffic flows which, if applied to a design for new infrastructure, would translate to a requirement for a Type A Layout with 3 lanes on the mainline, which is the same layout type as the existing layout type but requires an additional mainline and aligns with the 6m2 assessed layout.

4.1.44 As identified the layout type which corresponds to the calculated traffic flows does not change between the Reference Case and the 6M2 Scenario. Consequently, the potential requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth on the mainline between the 2019 Baseline and 2039 Reference Case growth. Considering this and the wider constraints to delivery of a physical intervention, it is not considered proportionate for Mid Sussex to be required to mitigate these wider impacts to demonstrate soundness of the District Plan. On this basis, we also do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be “severe” in terms of the definition set out within NPPF.

4.1.45 It is noted that future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development. Consideration at this time through opening year assessments can be made to monitor and manage techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

5. SUMMARY AND CONCLUSION

5.1.1 SYSTRA have been commissioned by Mid-Sussex District Council (MSDC) to develop the transport evidence base to support the development of the Mid Sussex District Plan.

5.1.2 This report details the outcomes of the merge and diverge assessment exercise which has been undertaken to assess the impact of the targeted growth in the District Plan on the Strategic Road Network.

5.1.3 The assessments identify how the traffic growth forecasts impact the merge/ diverge and mainline layout type requirements in accordance with Design Manual for Roads and Bridges (DMRB) CD 122 Geometric design of grade separated junctions.

5.1.4 Following consultation with National Highways 14 junctions have been taken forward for merge/diverge assessment from M23 J9 in the north in proximity to Gatwick airport to A23 A272 in the south at Pyecombe.

5.2 Merge/ Diverge Assessment Summary

5.2.1 The merge diverge assessment has considered the following aspects:

- **Existing Conditions –** current layout type, number of mainline lanes upstream/ downstream.
- **Traffic Flow Scenarios –** Including the number of vehicles forecast on the mainline and merge/diverges for the 2019 Baseline, 2039 Reference Case and 2039 6m2 District Plan scenario, as well as the difference to identify traffic flow uplift (or slight reduction in certain instances).
- **Merge/ Diverge Diagrams –** demonstrating the layout types required for the three scenarios assessed.
- Commentary on the **layout trigger upgrades**.
- Assessment of **feasibility of upgrade** where relevant.

Overview of Reference Case and 6M2 Initial Assessments

5.2.2 Within the 2039 Reference Case scenario, out of the assessed fourteen junctions, ten has slip roads triggering an upgrade including a total of twenty slip road merge / diverges.

5.2.3 Four were associated with a merge/diverge type change, eight were associated with a mainline lane change and eight involved both.

5.2.4 Within the 2039 Scenario 6m2, out of the assessed fourteen junctions, eleven had slip roads triggering an upgrade, a total of twenty-two slip road merge / diverges.

5.2.5 Four were associated with a merge/diverge type change, six were associated with a mainline lane change and twelve involved both.

District Plan Growth Impacts

5.2.6 To assess the impact of District Plan growth on the merge/ diverge assessments at the fourteen junctions, a comparison has been made between the Reference Case and 6m2 Scenario layout type and mainline requirements.

5.2.7 The following five slip road merges/diverges trigger an upgrade between the flows assessed for the Reference Case compared to Scenario 6m2.

- A23 B2115 – Southbound On-Slip Merge
- A23 A272 – Northbound Off-Slip Diverge
- A23 A272 – Southbound On-Slip Merge
- A23 B2118 – Northbound On-Slip Merge
- A23 B2117 – Southbound On-Slip Merge

A23 B2115 Southbound On Slip Merge

5.2.8 The B2115 southbound on slip merge forecast flows in the 6m2 scenario trigger a merge type change from the existing type A to a type D, as well as an additional mainline lane downstream.

5.2.9 The existing type A is a single taper merge, and the required type D is a lane gain. It is noted that the junction is already on the boundary of the layout upgrade threshold based on the 2039 Reference Case flows.

5.2.10 The A23 B2115 southbound on slip merge is very limited on space for upgrade due to the proximity of Brighton Road which runs parallel to the slip road.

5.2.11 This restricts the ability to provide the required upgrade to type D as well as any possible intermediate upgrades to types B or C. Feasibility checks have identified that the junction has very constrained highway boundary space available, limiting deliverable physical solutions at this location. It is noted that across both the merge and the intermain there is only an increase of 119 (3%) total vehicles in the AM and 136 (3%) total vehicles in the PM. We do not consider that the available data indicates that the impact of the traffic associated with the Local Plan would be “severe” in terms of the definition set out within NPPF.

A23 A272 Northbound Off Slip Diverge

5.2.12 The A272 northbound off slip forecast flows in the 6M2 scenario trigger a diverge type change from the existing type A to a type C, as well as requiring an additional mainline lane upstream.

5.2.13 The existing type A is a single taper diverge, and the required type C is a lane drop. It is noted that the junction is already on the boundary of the layout upgrade threshold based on the 2039 Reference Case flows.

5.2.14 Feasibility checks have identified that the northbound diverge starts immediately after an existing bridge overpass and this restricts the ability of the lane gain from being implemented. National Highways subsequently suggested a Type B ghost diverge is considered however the geometric constraints with the bridge overpass still limit delivery of providing a proportionate and deliverable layout type upgrade. The importance of maintaining the safe and efficient operation of the SRN is recognized and consideration could be given to early warning to alert drivers of the imminent diverge after the overbridge and/or the likelihood of busy conditions during peak hours. Future planning applications for developments within the Mid Sussex region will be required to assess the development impact on the SRN in accordance with DfT Circular 01/2022 Strategic Road Network and the Delivery of Sustainable Development and this could therefore be considered at this time. Consideration through opening year assessments can be made to monitor and manage

techniques to encourage sustainable development and travel demand management to further reduce residual impacts.

5.2.15 Additional justification has been provided within Chapter 4, including that under the COVID scenario flows no layout type upgrade is triggered. It is concluded that the impact of the traffic associated with the Local Plan would not be classed as "severe" in terms of the definition set out within NPPF.

A23 A272 Southbound On Slip Merge

5.2.16 The A23 A272 southbound on slip merge forecast flows in the 6M2 scenario trigger a merge type change from existing type A to a type D, as well as requiring an additional mainline lane downstream.

5.2.17 The existing type A is a single taper merge, and the required type D is a lane gain.

5.2.18 Initial feasibility investigations noted constraints associated with provision of an additional mainline lane in this location and it was not deemed proportionate to the impacts of the District Plan. As requested during further discussions with National Highways, additional assessments have been undertaken at this junction to further investigate the potential deliverability of a lesser Type B physical mitigation scheme. A proposed Type B parallel merge drawing has been prepared to form part of the mitigation package to support the District Plan growth.

A23 B2118 Northbound On Slip Merge

5.2.19 The A23 B2118 northbound on slip merge forecast flows in the 6M2 scenario trigger a merge type change from the existing type B to a type D, as well as requiring an additional mainline lane downstream.

5.2.20 The existing type B is a parallel merge, and the required type D is a lane gain.

5.2.21 The A23 B2118 northbound on slip has limited highway boundary space available beyond the edge of the existing slip road (approximately 5m in width). Further to this approximately 420m north of the merge, there is an existing pedestrian footbridge in close proximity to the carriageway.

5.2.22 Therefore, the requirement for a type D lane gain would not be feasible as it would require alteration to the structure which would involve significant works and costs. However, an intermediate measure has been considered. The existing arrangement is a type B parallel merge; therefore, the feasibility of a type C ghost island merge has been considered.

5.2.23 There is sufficient space within the existing extents of the highway boundary in order to provide a ghost island merge due to the existing auxiliary lane. Further to this, the additional entry of the ghost island can be provided on the inside of the existing slip road minimizing the need for additional highway space. The required length of the ghost island merge can also be accommodated without impacting the structure to the north.

5.2.24 A proposed Type C ghost island merge drawing has been prepared to form part of the mitigation package to support the District Plan growth.

A23 B2117 Southbound On Slip Merge

5.2.25 The A23 B2117 southbound on slip merge forecast flows in the 6M2 scenario trigger a merge type change from the existing type A to a type B.

5.2.26 The existing type A is a single taper merge, and the required type B is a parallel merge.

5.2.27 The A23 B2117 southbound on slip has sufficient highway boundary space beyond the edge of the existing slip road (approximately 6-8m in width). The existing arrangement is a type A taper merge, with the requirement being a type B parallel merge.

5.2.28 A type B parallel merge requires a length of approximately 300m and width of approximately 6m-8m which can feasibly be accommodated within the highway boundary.

5.2.29 A proposed Type B parallel merge drawing has been prepared to form part of the mitigation package to support the District Plan growth.

5.3 Additional Locations Requested for Further Investigation by National Highways

5.3.1 Written feedback from National Highways was received on 23/07/24 and 15/08/24 in the form of two Technical Notes which detailed the key locations where National Highways requested further consideration to ensure impacts of the District Plan were mitigated.

5.3.2 The specific junctions and slip roads where National Highways have identified that further consideration is required regarding the feasibility of mitigation interventions includes:

- M23 J11 – Northbound Off Slip Diverge
- A23 B2110 – Northbound On Slip Merge
- A23 A272 – Northbound Off Slip Diverge
- A23 A272 – Southbound On Slip Merge
- A23 A2300 – Northbound Off Slip Diverge
- A23 A2300 – Northbound On Slip Merge
- A23 A2300 – Southbound Off Slip Diverge
- A23 A2300 – Southbound On Slip Merge
- A23 B2118 – Southbound Off Slip Diverge
- A23 A281 – Southbound On Slip Merge

5.3.3 As part of the feedback from National Highways, it was recommended that consideration was made to the impact of the COVID-19 pandemic on traffic flows. Consequently, in response to changes in travel behaviors, traffic flow levels have been reduced by 11% in the AM peak hour and 10% in the PM peak hour for the 2039 Reference Case flows. These reduction figures have been agreed with MSDC and National Highways and are based on the evidence presented in the COVID Assessment Technical Note, which compared traffic flow counts from 2019 and 2023 at several locations across the district with the average percentage flow change subsequently applied to the flow volumes.

5.3.4 The reduction in traffic flows to account for COVID-19 impacts is such that two junctions would no longer require merge / diverge interventions to accommodate District Plan growth and three further junctions would require a lesser level of intervention than previously identified.

5.3.5 As a result of the additional assessments and feasibility check requested by National Highways a mitigation scheme for the A23 A272 to provide a Type B parallel merge has been included as part of the mitigation package to support the mitigation of impacts associated with the District Plan.

5.3.6 It is noted that the M23 J11 Northbound off-slip has been assessed in further detail in light of National Highways concerns regarding ensuring Mid Sussex mitigates its own impacts at this junction. As detailed in Chapter 4, it should be noted that the layout type requirement does not change between the Reference Case and the 6M2 Scenario in the Mid Sussex District Plan modelling. This differs from the outputs of Crawley where the Local Plan scenario triggers an upgrade when compared back to the Reference Case modelling. Consequently, for Mid Sussex, the requirement for a layout type upgrade is not a result of District Plan growth, but rather a result of background growth between the 2019 Baseline and 2039 Reference Case growth. Considering this and fact that a committed scheme exists within the Crawley Local Plan mitigation package, it is not felt that the M23 J11 should be a priority location for intervention delivery.

5.3.7 Additionally, within Chapter 4 justification is provided in relation to conclusions reached for the remaining locations identified by National Highways. The additional assessments have demonstrated that mitigation has been provided where it is deemed proportionate and reasonable on the basis of District Plan growth and no impacts remain which would be considered “severe” in terms of the definition set out within NPPF.

5.4 Conclusion

5.4.1 Overall, the assessments presented demonstrate how the targeted growth within the District Plan and the impacts on merge/diverge assessments have been assessed and mitigated accordingly where proportionate and reasonable. Proposed mitigation designs have been developed with deliverability in mind by ensuring the proposals are designed within available highway boundary space. The highway mitigation package to support the District Plan ensures that no impacts remain which would be considered “severe” in terms of the definition set out within NPPF.

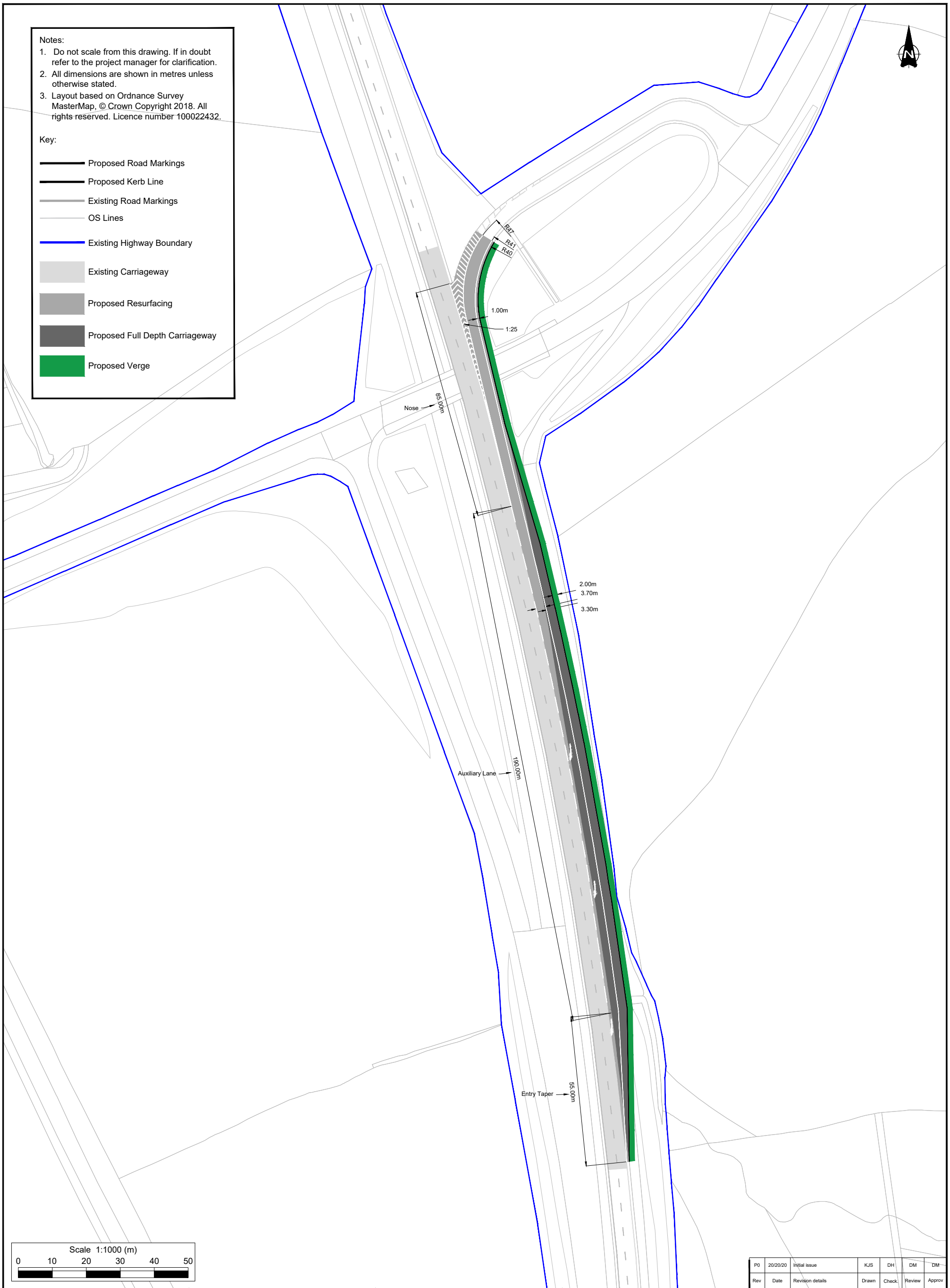
Appendix A – General Arrangement Proposed Mitigation Drawings

Notes:

1. Do not scale from this drawing. If in doubt refer to the project manager for clarification.
2. All dimensions are shown in metres unless otherwise stated.
3. Layout based on Ordnance Survey MasterMap, © Crown Copyright 2018. All rights reserved. Licence number 100022432.

Key:

- Proposed Road Markings
- Proposed Kerb Line
- Existing Road Markings
- OS Lines
- Existing Highway Boundary
- Existing Carriageway
- Proposed Resurfacing
- Proposed Full Depth Carriageway
- Proposed Verge



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Rev	Date	Revision details	Drawn	Check	Review	Approv
P0	20/20/20	Initial issue	KJS	DH	DM	DM

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Client: **Mid-Sussex District Council**

Project: **Mid Sussex**

Title: **A23 B2117 Proposed Arrangement**

Drawn	Checked	Reviewed	Approved
KJS	DH	DM	DM

Original drg. size	Date of Issue	Scale	Drawing Status
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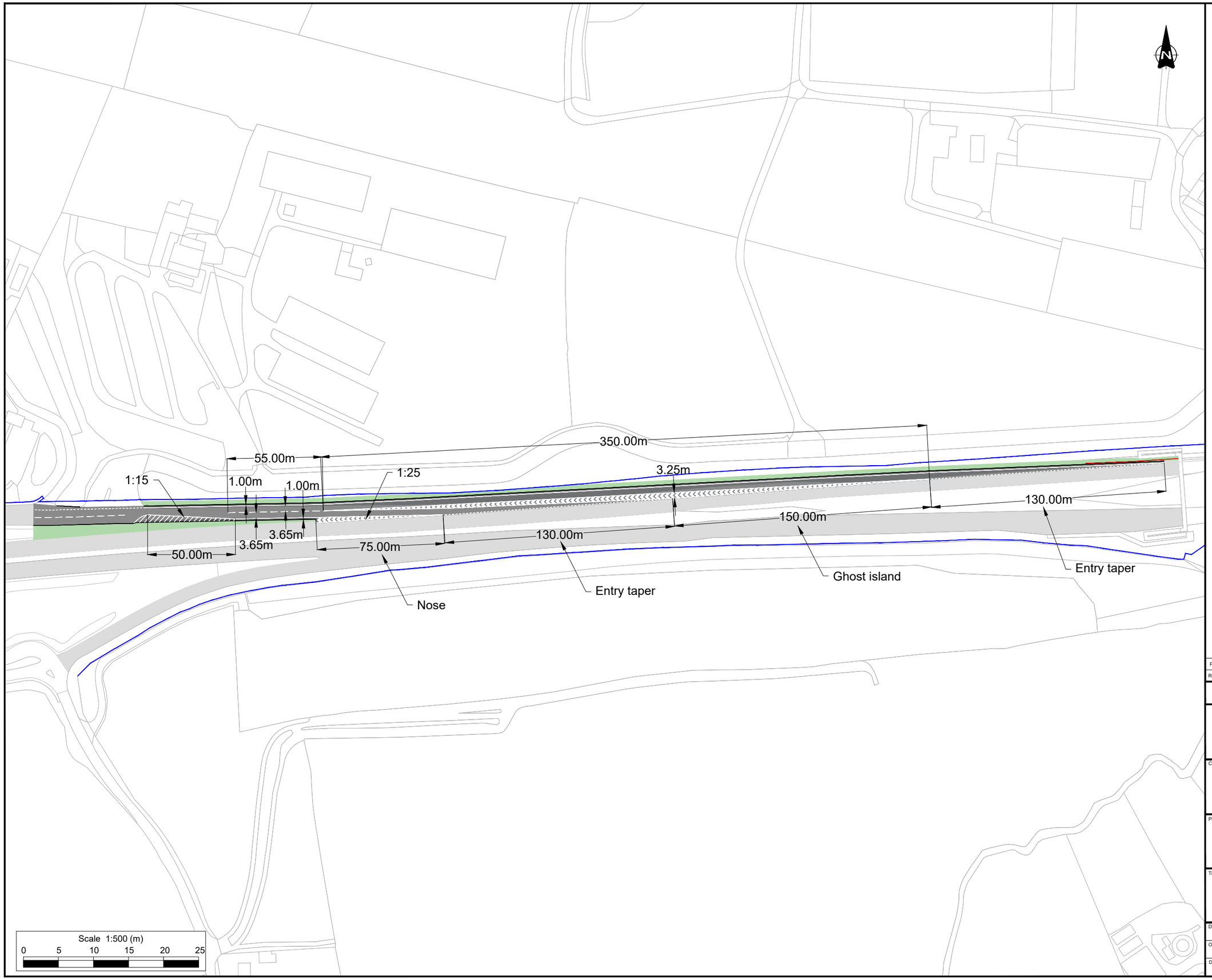
Drawing Number	Rev.
GB01T24C55-SYS-XX-XX-DR-D-006	P0



Notes:

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Key:

- OS mapping
- Existing road markings
- Existing carriageway
- Highway boundary
- Proposed kerb
- Proposed carriageway resurfacing
- Proposed carriageway full depth
- Proposed road markings
- Proposed verge
- Proposed VRS

Rev	Date	Revision details	Drawn	Check.	Review	Approv
P0	20/08/24	Initial issue	DH	DM	-	DM

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Client: **Mid-Sussex District Council**

Project: **Mid Sussex**

Title: **A23 B2118 Proposed Arrangement Overview**

Drawn	Checked	Reviewed	Approved
DH	DM	-	DM
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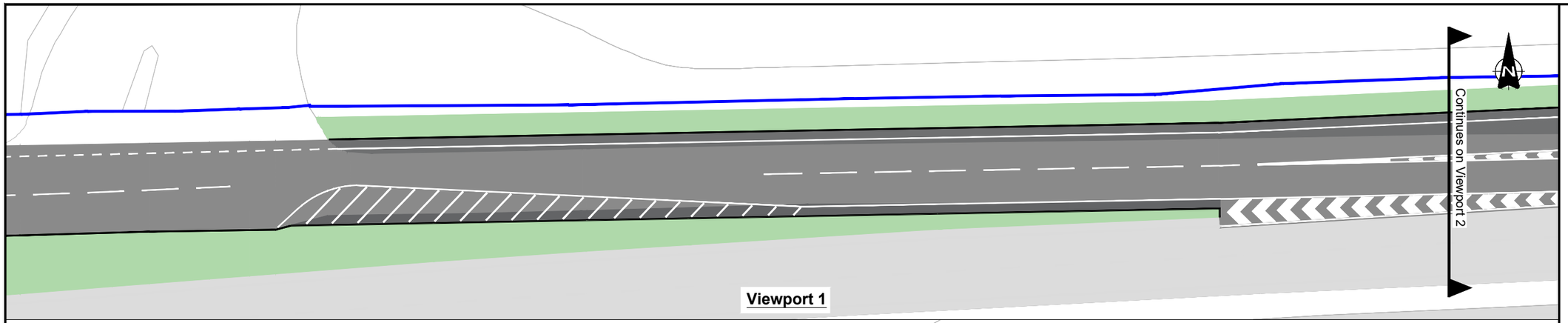
Drawing Number: GB01T24C55-SYS-XX-XX-DR-D-007 Rev. P0



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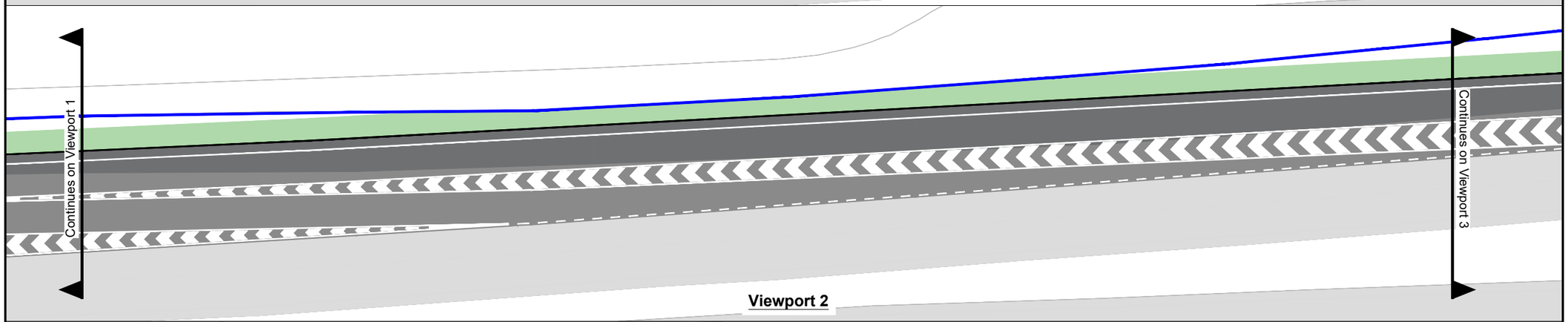

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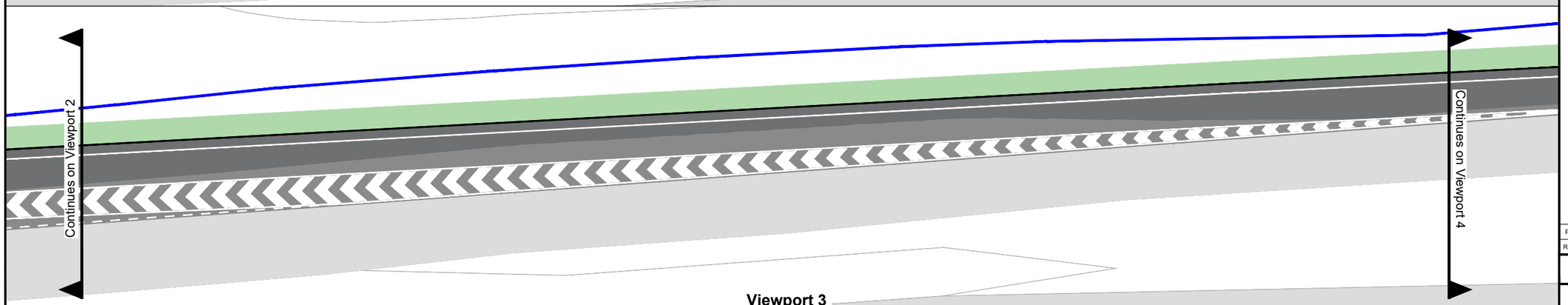

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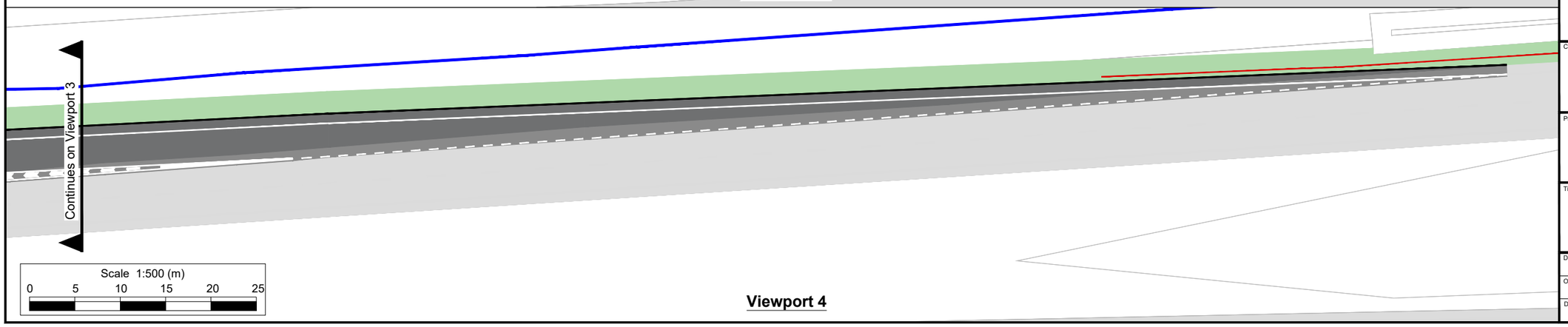

Viewport 4

Scale 1:500 (m)

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Notes:

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Key:

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- Existing road markings
- Existing carriageway
- Highway boundary
- Proposed kerb
- Proposed carriageway resurfacing
- Proposed carriageway full depth
- Proposed road markings
- Proposed verge
- Proposed VRS

Rev	Date	Revision details	Drawn	Check.	Review	Approv
P0	20/08/24	Initial issue	DH	DM	-	DM

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Client

Mid-Sussex District Council

Project

Mid Sussex

Title

A23 B2118 Proposed Arrangement Detail

Drawn	Checked	Reviewed	Approved
DH	DM	-	DM

Original drg. size	Date	Scale	Drawing Status
A3	20/08/2024	1:500	Preliminary

Drawing Number	Rev.
GB01T24C55-SYS-XX-XX-DR-D-008	P0

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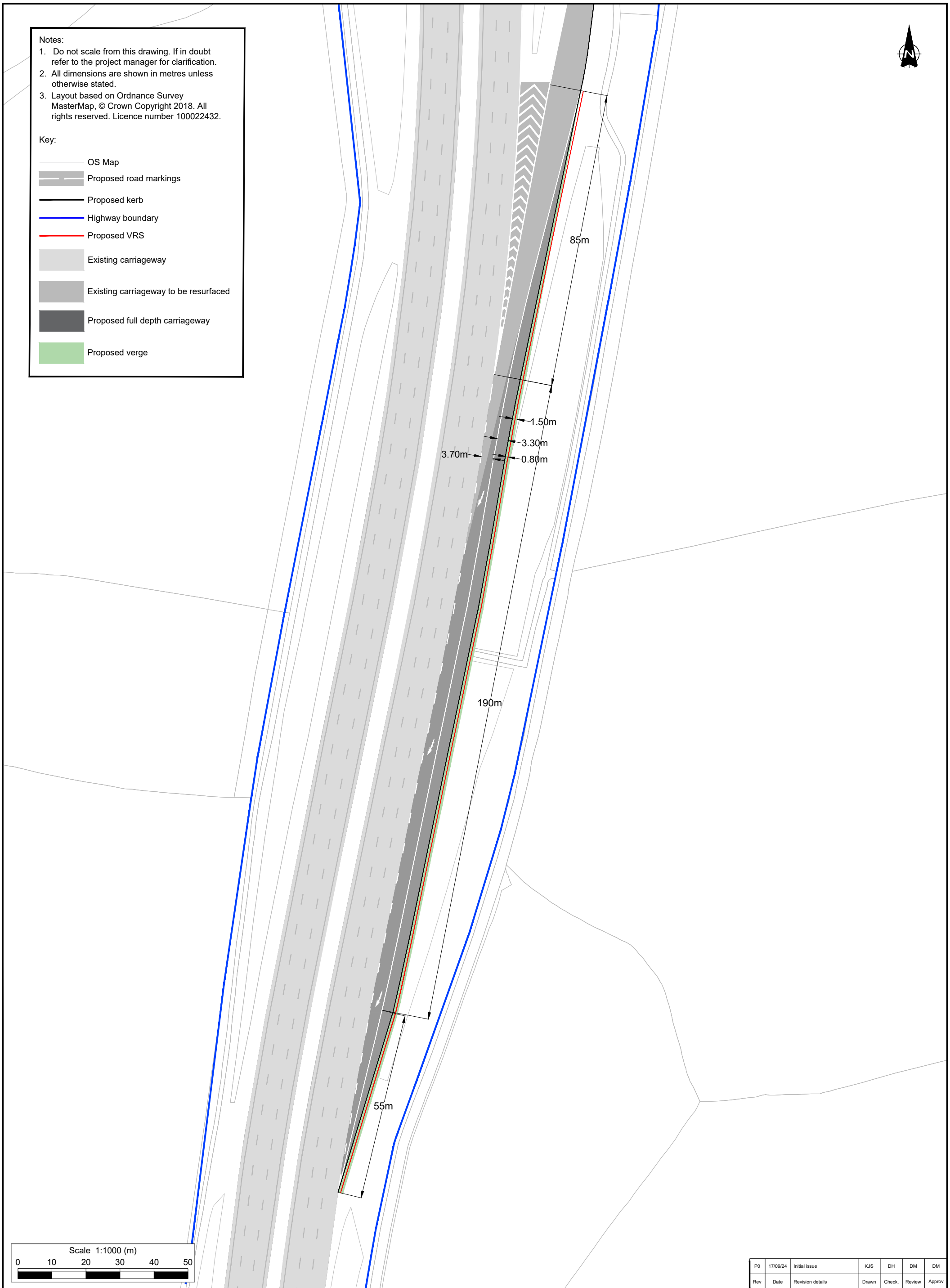
Key:

- OS Map
- Proposed road markings
- Proposed kerb
- Highway boundary
- Proposed VRS
- Existing carriageway
- Existing carriageway to be resurfaced
- Proposed full depth carriageway
- Proposed verge



Scale 1:1000 (m)

0 10 20 30 40 50

Rev	Date	Revision details	Drawn	Check.	Review	Approv
P0	17/09/24	Initial issue	KJS	DH	DM	DM

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Client: **Mid Sussex District Council**

Project: **Mid Sussex**

Title: **A23 / A272 SB Merge Proposed Arrangement**

Drawn	Checked	Reviewed	Approved
KJS	DH	DM	DM

Original drg. size	Date of Issue	Scale	Drawing Status
A3	17/09/2024	1:1000	Preliminary

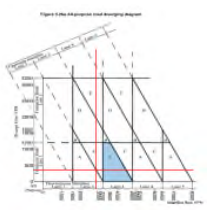
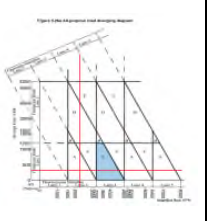
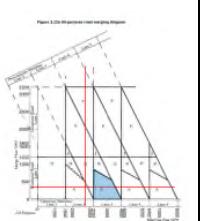
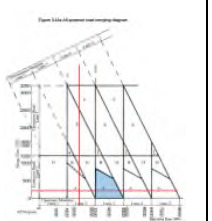
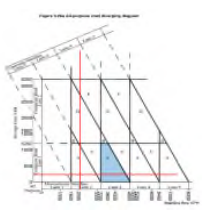
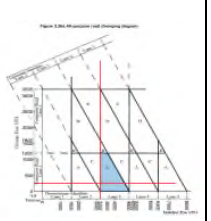
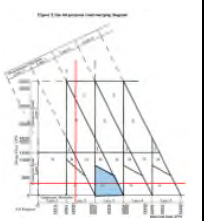
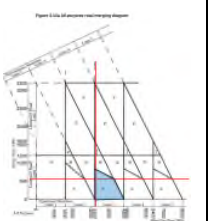
Drawing Number	Rev.
GB01T24C55-SYS-XX-XX-DR-D-009 GA	P0

Appendix B -Merge/Diverge Assessment Spreadsheet and Graphs

A23 A272

Note - All flows are Actual flows in Vehicles

Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2911	Intermain	2189	Intermain	2911	Intermain	2189	Intermain	2086	Intermain	3212	Intermain	2086	Intermain	3212
	Northbound Off-Slip Diverge	307	Northbound Off-Slip Diverge	313	Northbound On-Slip Merge	261	Northbound On-Slip Merge	206	Southbound Off-Slip Diverge	235	Southbound Off-Slip Diverge	339	Southbound On-Slip Merge	366	Southbound On-Slip Merge	561
	Total NB Incoming Flow from A23 A2300	3219	Total NB Incoming Flow from A23 A2300	2501	Total NB Incoming Flow to A23 Broxmead Lane	3173	Total NB Incoming Flow to A23 Broxmead Lane	2395	Total SB Incoming Flow from A23 Broxmead Lane	2320	Total SB Incoming Flow from A23 Broxmead Lane	3550	Total SB Incoming Flow to A23 A2300	2452	Total SB Incoming Flow to A23 A2300	3773
	Incoming-Outgoing	1	Incoming-Outgoing	-1	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0
A23 / A272 Cowfold Road / Bolney Road																
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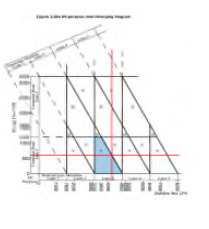
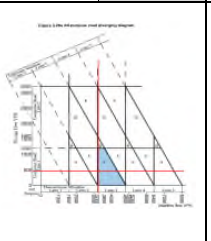
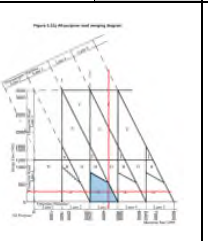
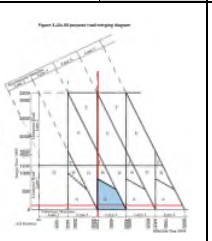
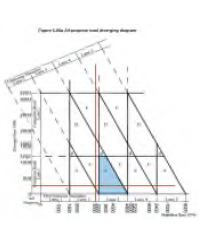
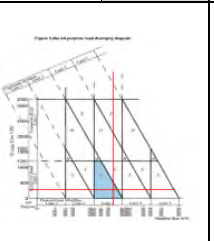
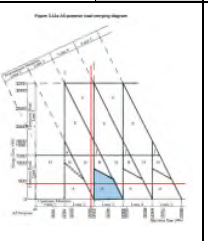
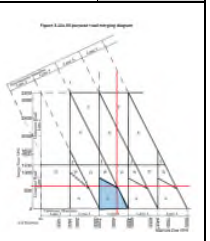
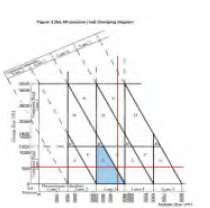
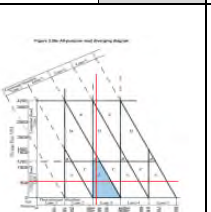
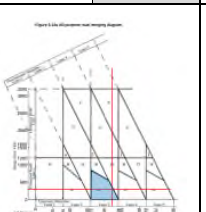
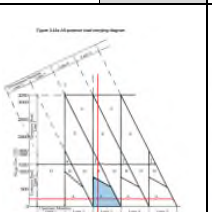
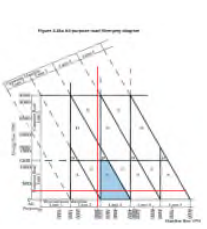
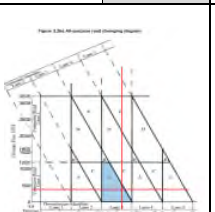
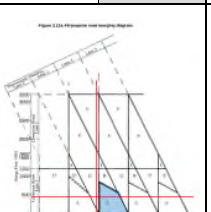
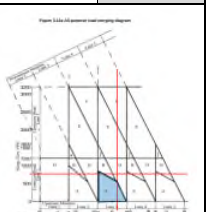
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4229	Intermain	3223	Intermain	4229	Intermain	3223	Intermain	3112	Intermain	4143	Intermain	3112	Intermain	4143
	Northbound Off-Slip Diverge	606	Northbound Off-Slip Diverge	494	Northbound On-Slip Merge	225	Northbound On-Slip Merge	189	Southbound Off-Slip Diverge	266	Southbound Off-Slip Diverge	342	Southbound On-Slip Merge	455	Southbound On-Slip Merge	693
	Total NB Incoming Flow from A23 A2300	4835	Total NB Incoming Flow from A23 A2300	3716	Total NB Incoming Flow to A23 Broxmead Lane	4454	Total NB Incoming Flow to A23 Broxmead Lane	3412	Total SB Incoming Flow from A23 Broxmead Lane	3379	Total SB Incoming Flow from A23 Broxmead Lane	4485	Total SB Incoming Flow to A23 A2300	3567	Total SB Incoming Flow to A23 A2300	4836
	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0
A23 / A272 Cowfold Road / Bolney Road																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The mainline requires a 4th lane and the merge type needs to be upgraded to a Type B
Comments																

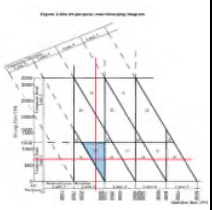
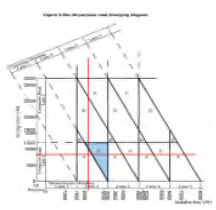
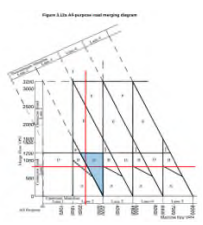
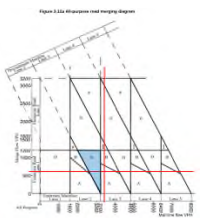
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4511	Intermain	3336	Intermain	4511	Intermain	3336	Intermain	3176	Intermain	4241	Intermain	3176	Intermain	4241
	Northbound Off-Slip Diverge	556	Northbound Off-Slip Diverge	590	Northbound On-Slip Merge	211	Northbound On-Slip Merge	198	Southbound Off-Slip Diverge	289	Southbound Off-Slip Diverge	406	Southbound On-Slip Merge	490	Southbound On-Slip Merge	760
	Total NB Incoming Flow from A23 A2300	5067	Total NB Incoming Flow from A23 A2300	3925	Total NB Incoming Flow to A23 Broxmead Lane	4721	Total NB Incoming Flow to A23 Broxmead Lane	3535	Total SB Incoming Flow from A23 Broxmead Lane	3466	Total SB Incoming Flow from A23 Broxmead Lane	4648	Total SB Incoming Flow to A23 A2300	3667	Total SB Incoming Flow to A23 A2300	5001
	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	-1	Incoming-Outgoing	1	Incoming-Outgoing	1	Incoming-Outgoing	1	Incoming-Outgoing	1	Incoming-Outgoing	0
A23 / A272 Cowfold Road / Bolney Road																
	Assessed Layout =	Type C layout with 3 lanes downstream and 4 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 4 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	Yes - the existing mainline requires 4 lanes upstream and but the diverge requires to be upgraded to Type C	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The mainline requires a 4th lane and the merge type needs to be upgraded to a Type D
Comments			AM takes precedence										PM takes precedence			

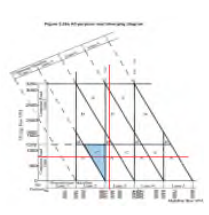
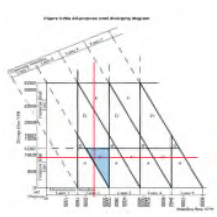
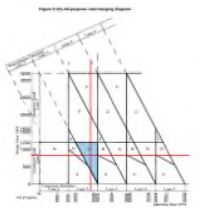
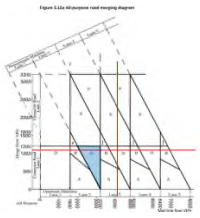
A23 A273

Note - All flows are Actual flows in Vehicles

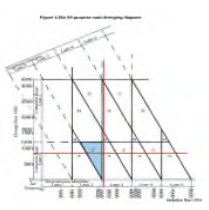
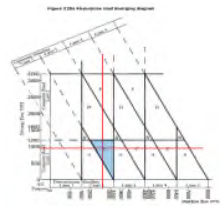
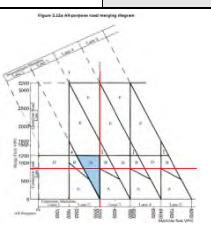
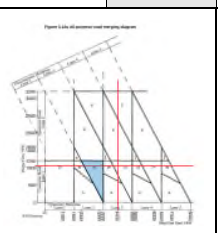
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (downstream)	2802	Mainline (downstream)	2156	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	2261	Mainline (Upstream)	3425
	Northbound Off-Slip Diverge	788	Northbound Off-Slip Diverge	835	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	892	Southbound On-Slip Merge	693
	Total NB Incoming from A23 A27	3590	Total NB Incoming from A23 A27	2991									Total SB Incoming Flow to A23 A27	3153	Total SB Incoming Flow to A23 A27	4119
	Incoming- Diverge	0	Incoming- Diverge	0									Incoming - Outgoing	0	Incoming - Outgoing	1
A23 / A273																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The upstream mainline requires a 3rd lane. And the slip road requires a change from a lane gain type A taper merge
Comments			AM has higher requirement than PM										PM takes Precedence			

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (downstream)	3404	Mainline (downstream)	2478	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	2972	Mainline (Upstream)	4014
	Northbound Off-Slip Diverge	783	Northbound Off-Slip Diverge	920	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	835	Southbound On-Slip Merge	1101
	Total NB Incoming from A23 A27	4187	Total NB Incoming from A23 A27	3398									Total SB Incoming Flow to A23 A27	3807	Total SB Incoming Flow to A23 A27	5114
	Incoming- Diverge	0	Incoming- Diverge	0									Incoming - Outgoing	0	Incoming - Outgoing	-1
A23 / A273																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 3 lanes upstream and 4 lanes downstream
	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Change required?	Yes - the mainline requires a 3rd lane downstream and a type change to Layout A.	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The upstream mainline requires a 3rd lane, and downstream requires a 4th lane.
Comments													PM takes Precedence			

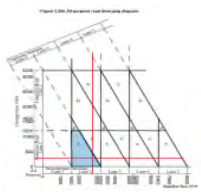
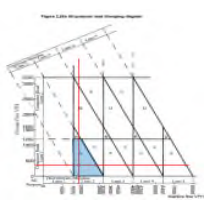
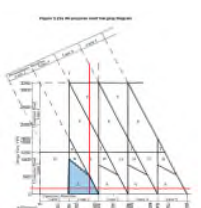
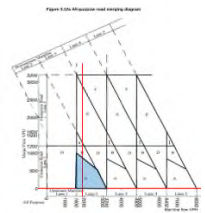
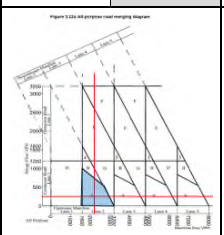
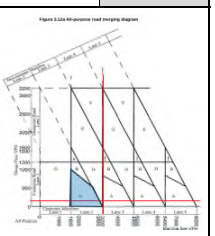
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (downstream)	3309	Mainline (downstream)	2604	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	3175	Mainline (Upstream)	4001
	Northbound Off-Slip Diverge	834	Northbound Off-Slip Diverge	941	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	761	Southbound On-Slip Merge	1037
	Total NB Incoming from A23 A27	4143	Total NB Incoming from A23 A27	3545									Total SB Incoming Flow from A23 A281	3937	Total SB Incoming Flow from A23 A281	5036
	Incoming- Diverge	0	Incoming- Diverge	0									Incoming - Outgoing	1	Incoming - Outgoing	-2
A23 / A273																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 3 lanes upstream and 4 lanes downstream
	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is a requirement to change to Layout A however the mainline requires a 3rd lane downstream.	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The upstream mainline requires a 3rd lane, and downstream requires a 4th lane.
Comments													PM takes Precedence			

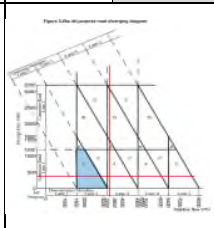
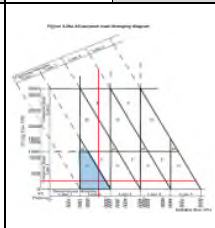
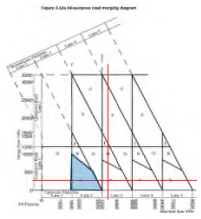
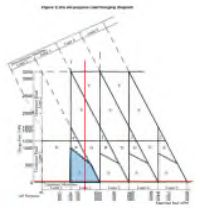
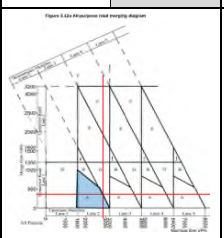
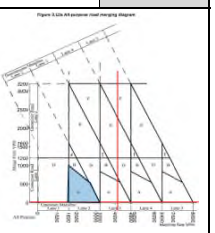
A23 A281

Note - All flows are Actual flows in Vehicles

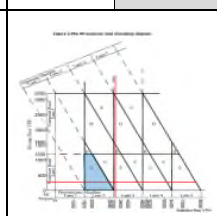
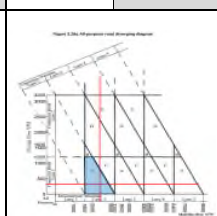
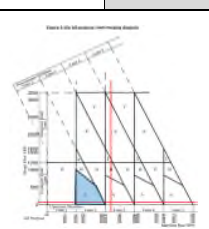
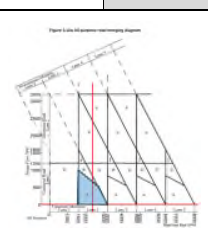
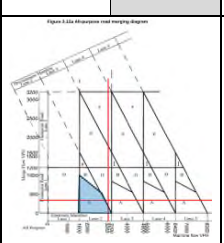
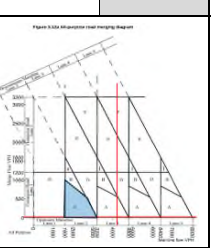
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2760	Intermain	1941	Intermain	2760	Intermain	1942	Mainline		Mainline		Mainline (Upstream)	2184	Mainline (Upstream)	3287
	Northbound Off-Slip Diverge	238	Northbound Off-Slip Diverge	311	Northbound On-Slip Merge	181	Northbound On-Slip Merge	20	Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	211	Southbound On-Slip Merge	176
	Total NB Incoming Flow from A23 A273	2998	Total NB Incoming Flow from A23 A273	2252	Total NB Incoming Flow to A23 B2117	2941	Total NB Incoming Flow to A23 B2117	1962					Total SB Incoming from Outgoing Flow from A23 B2117	2185	Total SB Incoming from Outgoing Flow from A23 B2117	3287
	Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0					Incoming - Outgoing	1	Incoming - Outgoing	0
A23 / A281 West Road																
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments													PM take precedence			

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3359	Intermain	2262	Intermain	3359	Intermain	2262	Mainline		Mainline		Mainline (Upstream)	2859	Mainline (Upstream)	4035
	Northbound Off-Slip Diverge	323	Northbound Off-Slip Diverge	352	Northbound On-Slip Merge	261	Northbound On-Slip Merge	52	Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	319	Southbound On-Slip Merge	13
	Total Incoming Flow from A273 (Mainline)	3681	Total Incoming Flow from A273 (Mainline)	2614	Total NB Incoming Flow to A23 B2117	3620	Total NB Incoming Flow to A23 B2117	2314					Total SB Incoming from Outgoing Flow from A23 B2117	2859	Total SB Incoming from Outgoing Flow from A23 B2117	4035
	Incoming - Outgoing	-1	Incoming - Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0					Incoming - Outgoing	0	Incoming - Outgoing	0
A23 / A281 West Road																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - The slip road diverge has sufficient capacity, however the mainline requires a 3rd lane in both the upstream and downstream	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - The slip road diverge has sufficient capacity, however the mainline requires a 3rd lane both upstream and downstream	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments			AM takes precedence.				AM takes precedence									

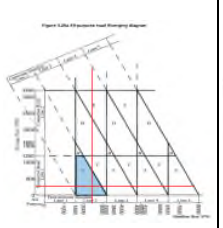
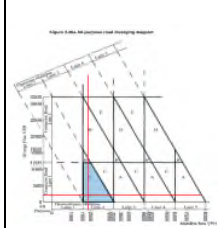
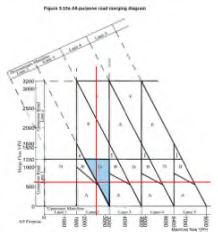
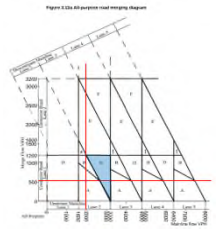
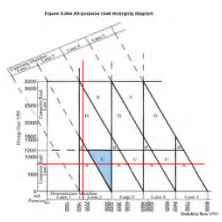
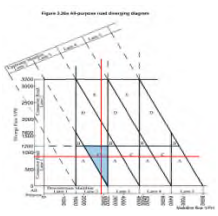
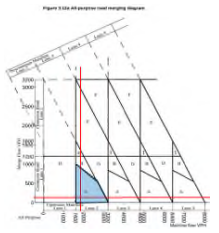
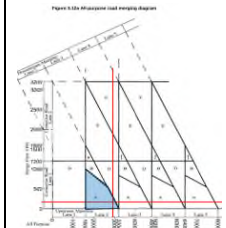
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3328	Intermain	2416	Intermain	3327	Intermain	2416	Mainline		Mainline		Mainline (Upstream)	3092	Mainline (Upstream)	4027
	Northbound Off-Slip Diverge	288	Northbound Off-Slip Diverge	342	Northbound On-Slip Merge	65	Northbound On-Slip Merge	37	Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	352	Southbound On-Slip Merge	13
	Total Incoming Flow from A273 (Mainline)	3615	Total Incoming Flow from A273 (Mainline)	2757	Total NB Incoming Flow to A23 B2117	3393	Total NB Incoming Flow to A23 B2117	2453					Total SB Incoming from Outgoing Flow from A23 B2117	3093	Total SB Incoming from Outgoing Flow from A23 B2117	4028
	Incoming - Outgoing	-1	Incoming - Outgoing	-1	Incoming-Outgoing	1	Incoming-Outgoing	0					Incoming - Outgoing	1	Incoming - Outgoing	1
A23 / A281 West Road																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - The slip road diverge has sufficient capacity, however the mainline requires a 3rd lane in both the upstream and downstream	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - The slip road diverge has sufficient capacity, however the mainline requires a 3rd lane	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	Yes - The mainline requires a 3rd lane downstream, and the slip road changed from a taper merge to a lane gain	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments			AM takes precedence.										PM takes Precedence			

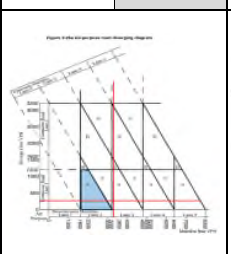
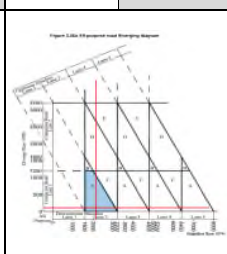
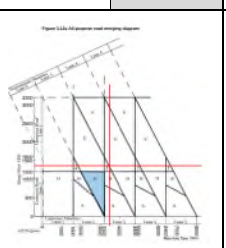
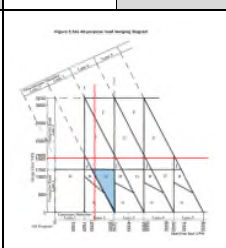
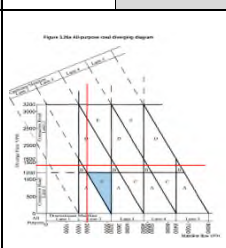
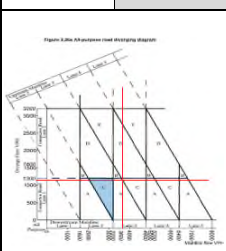
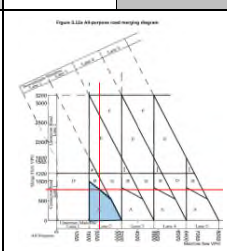
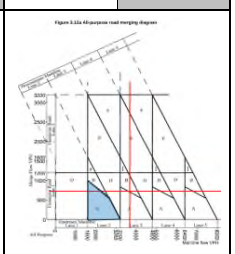
A23 A2300

Note - All flows are Actual flows in Vehicles

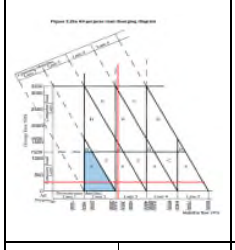
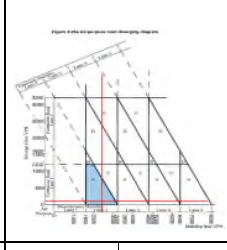
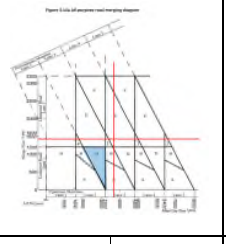
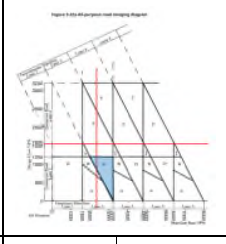
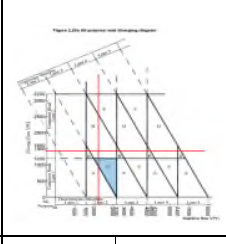
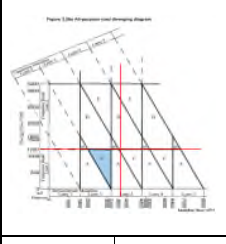
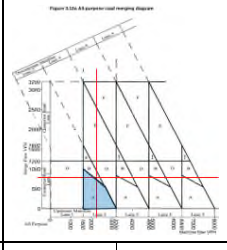
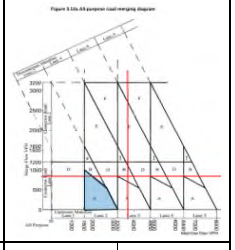
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2542	Intermain	1940	Intermain	2542	Intermain	1940	Intermain	1743	Intermain	2922	Intermain	1743	Intermain	2922
	Northbound Off-Slip Diverge	318	Northbound Off-Slip Diverge	181	Northbound On-Slip Merge	677	Northbound On-Slip Merge	561	Southbound Off-Slip Diverge	709	Southbound Off-Slip Diverge	851	Southbound On-Slip Merge	182	Southbound On-Slip Merge	199
	Total NB Incoming Flow from A23 B2118	2860	Total NB Incoming Flow from A23 B2118	2121	Total NB Incoming Flow to A23 A272	3218	Total NB Incoming Flow to A23 A272	2502	Total SB Incoming flow from A23 A272	2452	A23 A272 Intermain + Merge	3773	Total SB Incoming to A23 B2118	1926	Total SB Incoming to A23 B2118	3121
	Difference	0	Difference	0	Difference	-1	Difference	1	Difference	0	Difference	0	Difference	1	Difference	0
A23 / A300 Hickstead Lane																
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream, lane gain	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream, lane gain	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity on both existing the mainline and merge	Change required?	No as there is significant capacity on both existing the mainline and merge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3413	Intermain	2121	Intermain	3413	Intermain	2121	Intermain	2098	Intermain	3671	Intermain	2098	Intermain	3671
	Northbound Off-Slip Diverge	241	Northbound Off-Slip Diverge	68	Northbound On-Slip Merge	1422	Northbound On-Slip Merge	1595	Southbound Off-Slip Diverge	1469	Southbound Off-Slip Diverge	1165	Southbound On-Slip Merge	747	Southbound On-Slip Merge	735
	Total NB Incoming Flow from A23 B2118	3654	Total NB Incoming Flow from A23 B2118	2190	Total NB Incoming Flow to A23 A272	4835	Total NB Incoming Flow to A23 A272	3717	A23 A2300 Intermain	3567	A23 A2300 Intermain	4836	Total SB Incoming to A23 B2118	2846	Total SB Incoming to A23 B2118	4406
	Difference	0	Difference	1	Difference	0	Difference	1	Difference	0	Difference	0	Difference	1	Difference	0
A23 / A300 Hickstead Lane																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - the existing mainline need upgraded to 3 lanes down stream and 3 lanes upstream but the diverge Type can remain	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - the existing mainline need upgraded to 4 lanes upstream and the merge upgraded to Type E	Change required?	Yes - there is capacity in the existing mainline but the merge requires to be upgraded to Type E	Change required?	Yes - the diverge requires to be upgraded to Type D	Change required?	Yes - the existing mainline need upgraded to 3 lanes downstream and the diverge to Type A	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	Yes - the existing mainline requires 3 lanes upstream and downstream and the merge requires to be upgraded to Type B
Comments			AM takes precedence				AM takes precedence				AM takes precedence		PM takes precedence			

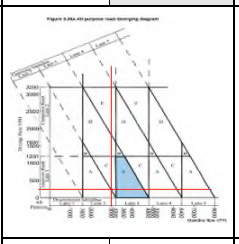
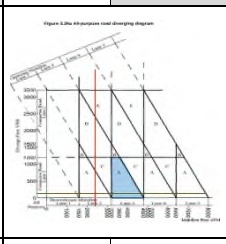
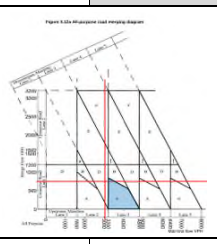
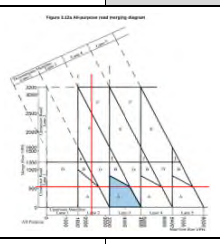
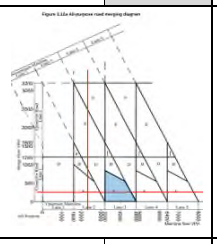
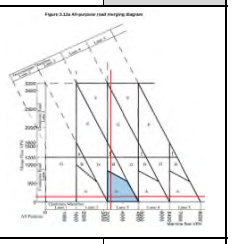
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3578	Intermain	2337	Intermain	3578	Intermain	2337	Intermain	2197	Intermain	3792	Intermain	2197	Intermain	3792
	Northbound Off-Slip Diverge	309	Northbound Off-Slip Diverge	77	Northbound On-Slip Merge	1489	Northbound On-Slip Merge	1588	Southbound Off-Slip Diverge	1470	Southbound Off-Slip Diverge	1209	Southbound On-Slip Merge	786	Southbound On-Slip Merge	809
	Total NB Incoming Flow from A23 B2118	3888	Total NB Incoming Flow from A23 B2118	2414	Total NB Incoming Flow to A23 A272	5067	Total NB Incoming Flow to A23 A272	3926	A23 A2300 Intermain	3666	A23 A2300 Intermain	5001	Total SB Incoming to A23 B2118	2985	Total SB Incoming to A23 B2118	4602
	Difference	1	Difference	0	Difference	0	Difference	1	Difference	-1	Difference	0	Difference	2	Difference	1
A23 / A300 Hickstead Lane																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - the existing mainline need upgraded to 3 lanes down stream and 3 lanes upstream but the diverge Type can remain	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - the existing mainline needs upgraded to 4 lanes upstream and the merge upgraded to Type E	Change required?	Yes - there is capacity in the existing mainline but the merge requires to be upgraded to Type E	Change required?	Yes - the diverge requires to be upgraded to Type D	Change required?	Yes - the existing mainline need upgraded to 3 lanes downstream and 4 lanes upstream and the diverge to Type D	Change required?	Yes - the merge requires to be upgraded to Type B	Change required?	Yes - the existing mainline requires 3 lanes upstream and downstream and the merge requires to be upgraded to Type B
Comments			AM takes precedence				AM takes precedence						PM takes precedence			

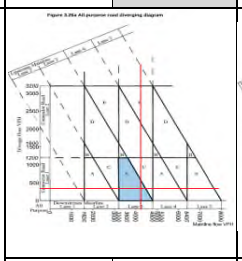
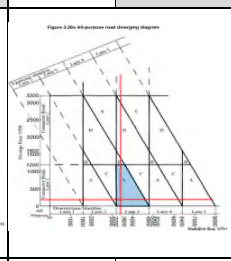
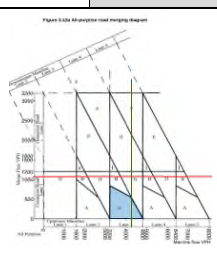
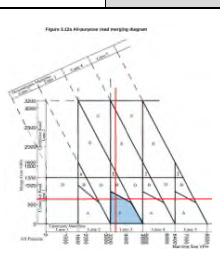
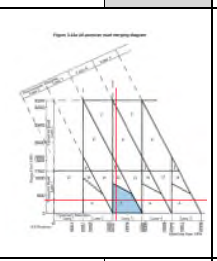
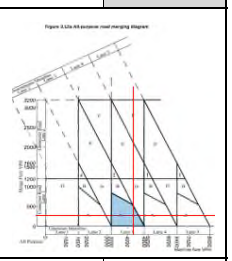
A23 B2110

Note - All flows are Actual flows in Vehicles

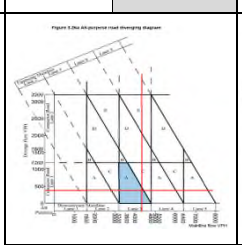
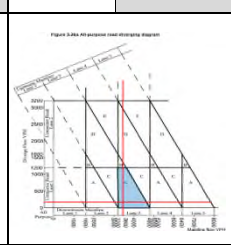
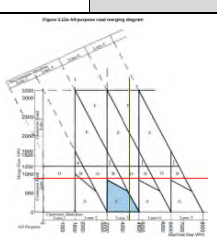
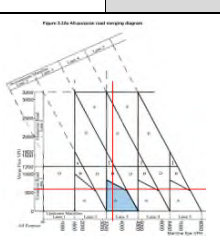
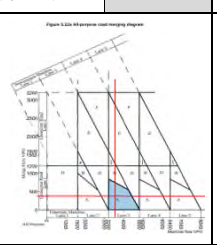
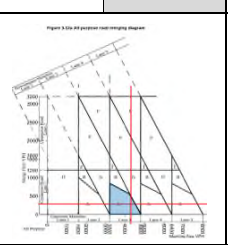
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3006	Intermain	2327	Intermain	3006	Intermain	2327	Mainline		Mainline		Mainline (Upstream)	2251	Mainline (Upstream)	3360
	Northbound Off-Slip Diverge	217	Northbound Off-Slip Diverge	148	Northbound On-Slip Merge	772	Northbound On-Slip Merge	512					Southbound On-Slip Merge	289	Southbound On-Slip Merge	185
	Total Incoming Flow from A23 B2115	3222	Total Incoming Flow from A23 B2115	2475	Total NB Incoming Flow to M23 J11	3778	Total NB Incoming Flow to M23 J11	2838					Total Incoming Flow from A23 B2114	2251	Total Incoming Flow from A23 B2114	3360
	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	-1					Incoming-Mainline (Upstream)	0	Incoming-Mainline (Upstream)	0
A23 B2110																
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4143	Intermain	3318	Intermain	4143	Intermain	3318					Mainline (Upstream)	3300	Mainline (Upstream)	4274
	Northbound Off-Slip Diverge	345	Northbound Off-Slip Diverge	169	Northbound On-Slip Merge	1010	Northbound On-Slip Merge	610					Southbound On-Slip Merge	302	Southbound On-Slip Merge	267
	Total Incoming Flow from A23 B2115	4487	Total Incoming Flow from A23 B2115	3487	Total NB Incoming Flow to M23 J11	5153	Total NB Incoming Flow to M23 J11	3929	Mainline		Mainline		Total Incoming Flow from A23 B2114	3300	Total Incoming Flow from A23 B2114	4274
	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	1	Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Incoming-Mainline (Upstream)	0	Incoming-Mainline (Upstream)	0
A23 B2110																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 3 lanes upstream and 4 lanes downstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the downstream mainline requires a 4th lane, and the slip road merge requires an update from a taper merge to a lane gain	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments							AM takes precedence									

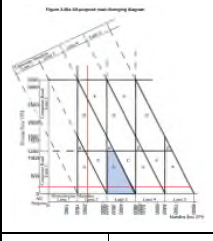
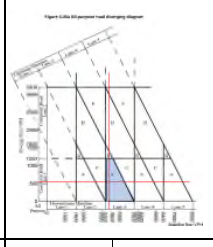
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4380	Intermain	3404	Intermain	4380	Intermain	3404					Mainline (Upstream)	3378	Mainline (Upstream)	4337
	Northbound Off-Slip Diverge	385	Northbound Off-Slip Diverge	189	Northbound On-Slip Merge	991	Northbound On-Slip Merge	584					Southbound On-Slip Merge	324	Southbound On-Slip Merge	275
	Total Incoming Flow from A23 B2115	4764	Total Incoming Flow from A23 B2115	3593	Total NB Incoming Flow to M23 J11	5371	Total NB Incoming Flow to M23 J11	3988	Mainline		Mainline		Total Incoming Flow from A23 B2114	3378	Total Incoming Flow from A23 B2114	4337
	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Incoming-Mainline (Upstream)	0	Incoming-Outgoing	0
A23 B2110																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 3 lanes upstream and 4 lanes downstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the downstream mainline requires a 4th lane, and the slip road merge requires an update from a taper merge to a lane gain	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments							AM takes precedence									

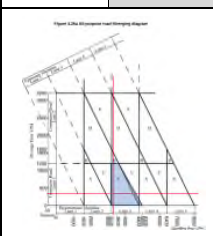
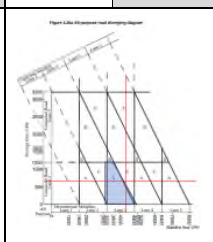
A23 B2114

Note - All flows are Actual flows in Vehicles

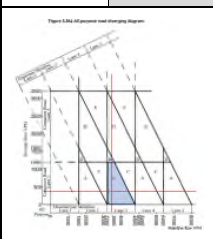
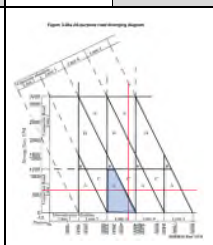
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Intermain		Intermain		Mainline (Downstream)	2251	Mainline (Downstream)	3360	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge	223	Southbound Off-Slip Diverge	578	Southbound On-Slip Merge		Southbound On-Slip Merge	
									Total SB Incoming Flow from J11	2474	Total SB Incoming Flow from J11	3938				
									Incoming-Outgoing	0	Incoming-Outgoing	0				
A23 B2114																
	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Intermain		Intermain		Mainline (Downstream)	3300	Mainline (Downstream)	4274	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge	306	Southbound Off-Slip Diverge	648	Southbound On-Slip Merge		Southbound On-Slip Merge	
									Total SB Incoming Flow from J11	3604	Total SB Incoming Flow from J11	4921				
									Incoming-Outgoing	-2	Incoming-Outgoing	-1				
A23 B2114																
	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 3 lanes downstream and 4 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - There is a requirement for a Layout C lane drop to be implemented and the mainline requires a 4th lane	Change required?		Change required?	
Comments									PM takes precedence							

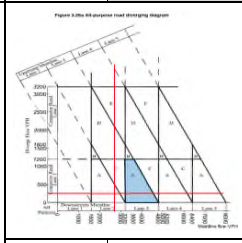
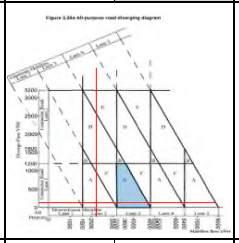
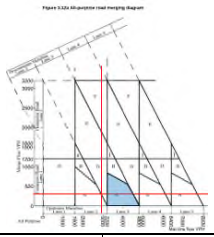
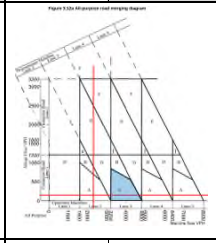
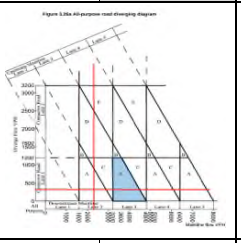
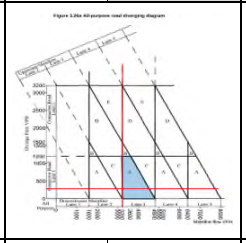
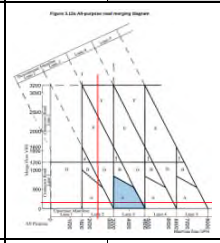
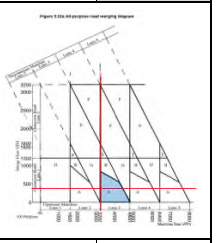
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Intermain		Intermain		Mainline (Downstream)	3378	Mainline (Downstream)	4337	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge	302	Southbound Off-Slip Diverge	611	Southbound On-Slip Merge		Southbound On-Slip Merge	
									Total SB Incoming Flow from J11	3678	Total SB Incoming Flow from J11	4948				
									Incoming-Outgoing	-2	Incoming-Outgoing	0				
A23 B2114																
	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 3 lanes downstream and 4 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - There is a requirement for a Layout C lane drop to be implemented and the mainline requires a 4th lane	Change required?		Change required?	
Comments																

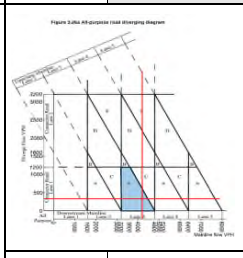
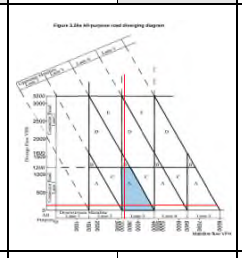
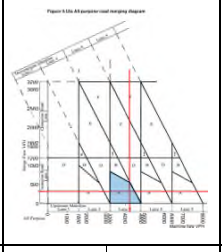
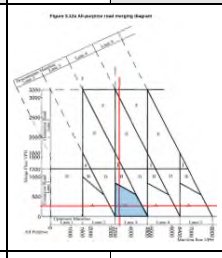
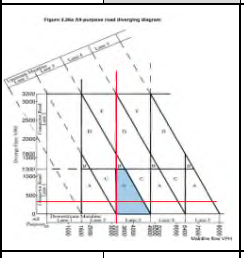
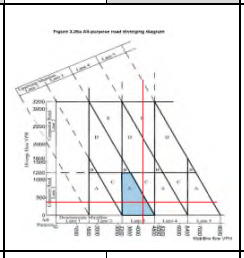
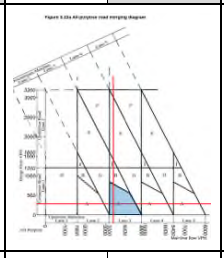
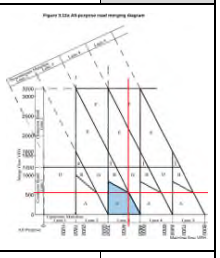
A23 B2115

Note - All flows are Actual flows in Vehicles

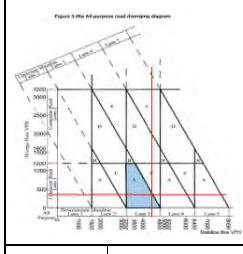
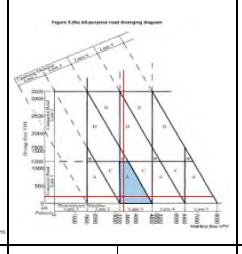
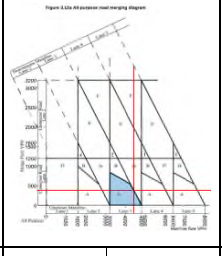
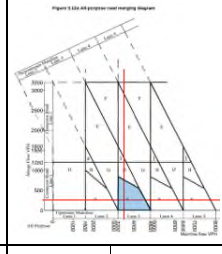
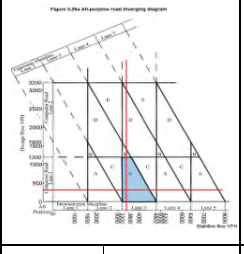
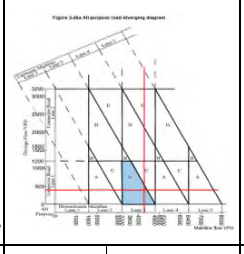
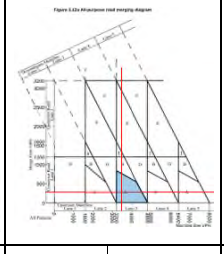
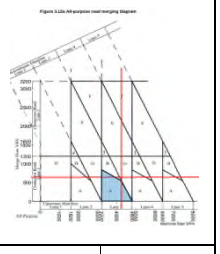
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2938	Intermain	2280	Intermain	2938	Intermain	2280	Intermain	2231	Intermain	3267	Intermain	2232	Intermain	3267
	Northbound Off-Slip Diverge	234	Northbound Off-Slip Diverge	116	Northbound On-Slip Merge	284	Northbound On-Slip Merge	195	Southbound Off-Slip Diverge	308	Southbound Off-Slip Diverge	278	Southbound On-Slip Merge	179	Southbound On-Slip Merge	361
	Total NB Incoming Flow from A23 Broxmead Lane	3173	Total NB Incoming Flow from A23 Broxmead Lane	2395	Total NB Incoming Flow to A23 B2110	3223	Total NB Incoming Flow to A23 B2110	2475	Total SB Incoming Flow from A23 B2100	2540	Total SB Incoming Flow from A23 B2100	3545	Total SB Incoming Flow to A23 Broxmead Lane	2410	Total SB Incoming Flow to A23 Broxmead Lane	3628
	Incoming-Outgoing	1	Incoming-Outgoing	-1	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0
A23 B2115																
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4162	Intermain	3276	Intermain	4162	Intermain	3276	Intermain	3265	Intermain	4148	Intermain	3264	Intermain	4148
	Northbound Off-Slip Diverge	292	Northbound Off-Slip Diverge	136	Northbound On-Slip Merge	325	Northbound On-Slip Merge	211	Southbound Off-Slip Diverge	338	Southbound Off-Slip Diverge	393	Southbound On-Slip Merge	222	Southbound On-Slip Merge	569
	Total NB Incoming Flow from A23 Broxmead Lane	4454	Total NB Incoming Flow from A23 Broxmead Lane	3412	Total NB Incoming Flow to A23 B2110	4488	Total NB Incoming Flow to A23 B2110	3487	Total SB Incoming Flow from A23 B2100	3602	Total SB Incoming Flow from A23 B2100	4541	Total SB Incoming Flow to A23 Broxmead Lane	3487	Total SB Incoming Flow to A23 Broxmead Lane	4717
	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0
A23 B2115																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments																

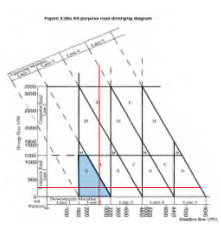
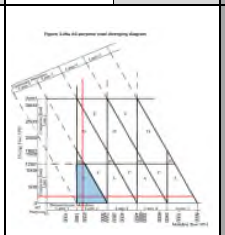
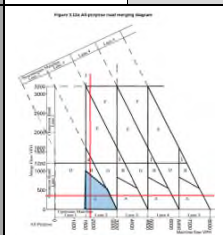
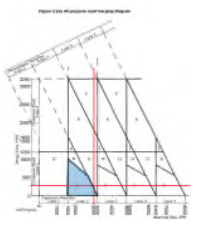
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4413	Intermain	3374	Intermain	4413	Intermain	3374	Intermain	3368	Intermain	4231	Intermain	3368	Intermain	4231
	Northbound Off-Slip Diverge	308	Northbound Off-Slip Diverge	160	Northbound On-Slip Merge	351	Northbound On-Slip Merge	219	Southbound Off-Slip Diverge	333	Southbound Off-Slip Diverge	380	Southbound On-Slip Merge	237	Southbound On-Slip Merge	622
	Total NB Incoming Flow from A23 Broxmead Lane	4721	Total NB Incoming Flow from A23 Broxmead Lane	3535	Total NB Incoming Flow to A23 B2110	4766	Total NB Incoming Flow to A23 B2110	3593	Total SB Incoming Flow from A23 B2100	3702	Total SB Incoming Flow from A23 B2100	4611	Total SB Incoming Flow to A23 Broxmead Lane	3606	Total SB Incoming Flow to A23 Broxmead Lane	4853
	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	2	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0
A23 B2115																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 4 lanes downstream and 3 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - the downstream mainline requires a 4th lane, and the slip road merge requires an update from a taper merge to a lane gain
Comments													PM takes precedence.			

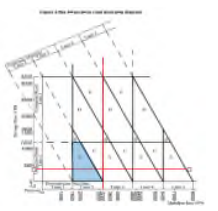
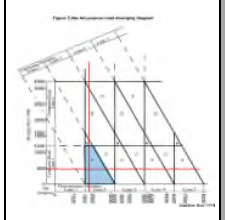
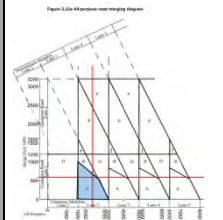
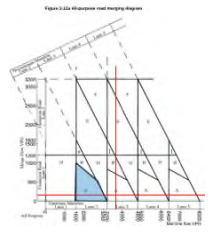
A23 B2117

Note - All flows are Actual flows in Vehicles

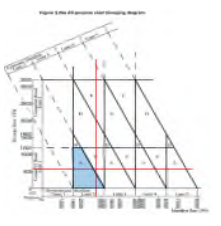
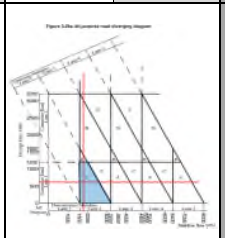
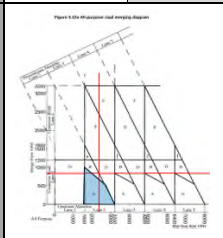
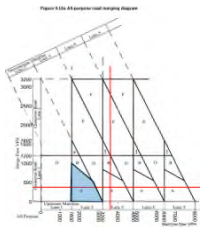
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (Downstream)	2689	Mainline (Downstream)	1751	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	1795	Mainline (Upstream)	3009
	Northbound Off-Slip Diverge	252	Northbound Off-Slip Diverge	211	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	390	Southbound On-Slip Merge	278
	Total NB Incoming Flow to A23 B2118	2689	Total NB Incoming Flow to A23 B2118	1750									Total SB Incoming Flow to A23 A281	2184	Total SB Outgoing Flow from A23 B2118	3287
	Incoming - Outgoing	0	Incoming - Outgoing	1									Incoming - Outgoing (merge+intermain)	-1	Incoming - Outgoing (merge+intermain)	0
A23 / B2117																
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - the downstream mainline requires a 3rd lane. And the slip road merge requires a change from a taper merge too a lane gain
Comments													PM takes precedence.			

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (Downstream)	3227	Mainline (Downstream)	1819	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	2339	Mainline (Upstream)	3846
	Northbound Off-Slip Diverge	393	Northbound Off-Slip Diverge	495	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	520	Southbound On-Slip Merge	189
	Total NB Incoming Flow to A23 B2118	3227	Total NB Incoming Flow to A23 B2118	1820									Total SB Outgoing Flow from A23 B2118	2859	Total SB Outgoing Flow from A23 B2118	4035
	Incoming - Outgoing	0	Incoming - Outgoing	-1									Incoming - Outgoing (merge+intermain)	0	Incoming - Outgoing (merge+intermain)	0
A23 / B2117																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - The mainline requires a 3rd lane upstream, and the slip road requires upgrade to a lane drop.	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments			AM takes Precedence										PM takes precedence.			

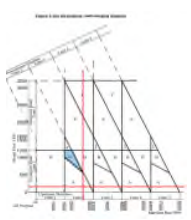
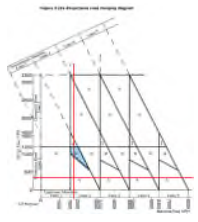
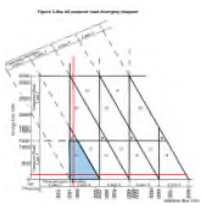
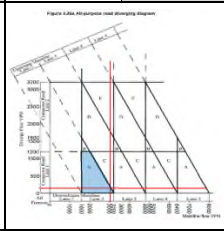
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline (Downstream)	2881	Mainline (Downstream)	1784	Intermain		Intermain		Mainline		Mainline		Mainline (Upstream)	2250	Mainline (Upstream)	3642
	Northbound Off-Slip Diverge	512	Northbound Off-Slip Diverge	669	Northbound On-Slip Merge		Northbound On-Slip Merge		Southbound Off-Slip Diverge		Southbound Off-Slip Diverge		Southbound On-Slip Merge	843	Southbound On-Slip Merge	386
	Total NB Incoming Flow to A23 B2118	2881	Total NB Incoming Flow to A23 B2118	1784									Total SB Outgoing Flow from A23 B2118	3092	Total SB Outgoing Flow from A23 B2118	4027
	Incoming - Outgoing	0	Incoming - Outgoing	0									Incoming - Outgoing (merge+intermain)	-1	Incoming - Outgoing (merge+intermain)	-1
A23 / B2117																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =		Req. Layout =		Req. Layout =		Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =		Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - The mainline requires a 3rd lane upstream, and the slip road requires upgrade to a lane drop.	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?		Change required?		Change required?		Change required?	Yes - the slip road merge requires a change from a taper merge too a auxiliary lane taper merge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments			AM takes Precedence													

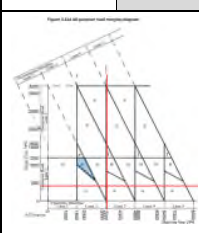
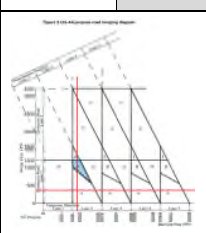
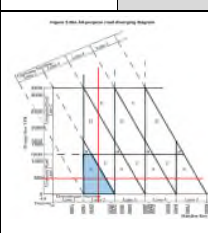
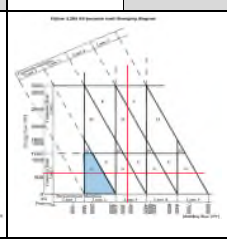
A23 B2118

Note - All flows are Actual flows in Vehicles

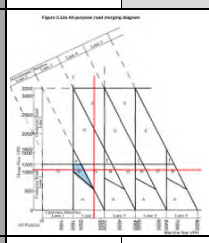
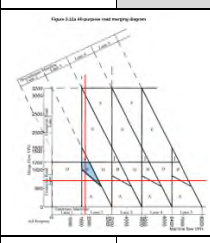
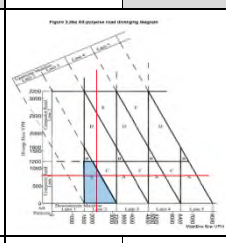
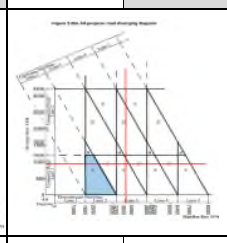
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	2689	Mainline (Upstream)	1750	Mainline (Downstream)	1794	Mainline (Downstream)	3009	Mainline		Mainline	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	171	Northbound On-Slip Merge	371	Southbound Off-Slip Diverge	132	Southbound Off-Slip Diverge	112	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow to A2300 NB	2860	Total NB Incoming Flow to A2300 NB	2121	Total SB Incoming Flow to A23 B2117	1795	Total SB Incoming Flow to A23 B2117	3009				
					Incoming - Outgoing (merge+intermain)	0	Incoming - Outgoing (merge+intermain)	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	0				
A23 / B2118																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	3227	Mainline (Upstream)	1820	Mainline (Downstream)	2340	Mainline (Downstream)	3846	Mainline		Mainline	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	427	Northbound On-Slip Merge	370	Southbound Off-Slip Diverge	506	Southbound Off-Slip Diverge	560	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow to A2300 NB	3654	Total NB Incoming Flow to A2300 NB	2189	Total SB Incoming Flow to A23 B2117	2339	Total SB Incoming Flow to A23 B2117	3846				
					Incoming - Outgoing (merge+intermain)	0	Incoming - Outgoing (merge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	1	Incoming - Outgoing (diverge+intermain)	0				
A23 / B2118																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	Yes -There is sufficient capacity on the slip road however the mainline requires a 3rd lane.	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the mainline requires a 3rd lane.	Change required?		Change required?	
Comments							AM takes Precedence		PM takes precedence							

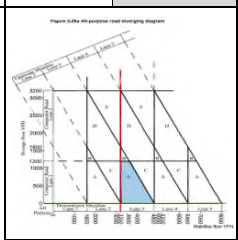
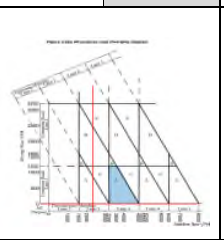
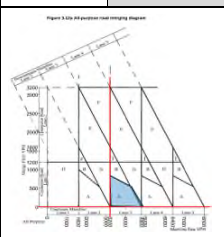
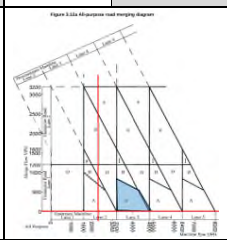
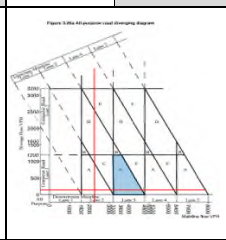
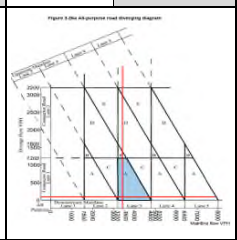
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	2881	Mainline (Upstream)	1784	Mainline (Downstream)	2249	Mainline (Downstream)	3642	Mainline		Mainline	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	1007	Northbound On-Slip Merge	630	Southbound Off-Slip Diverge	736	Southbound Off-Slip Diverge	960	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow to A2300 NB	3887	Total NB Incoming Flow to A2300 NB	2414	Total SB Incoming Flow to A23 B2117	2250	Total SB Incoming Flow to A23 B2117	3642				
					Incoming - Outgoing (merge+intermain)	-1	Incoming - Outgoing (merge+intermain)	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	0				
A23 / B2118																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	Yes - the downstream mainline requires a 3rd lane, and the slip road merge requires a change from a taper merge to a lane gain.	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the mainline requires a 3rd lane.	Change required?		Change required?	
Comments									PM takes Precedence							

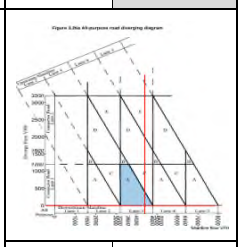
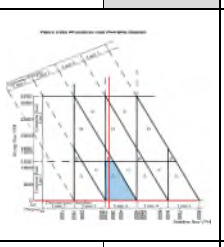
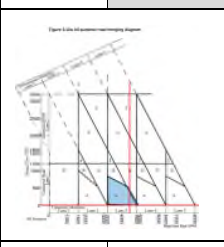
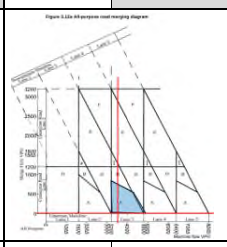
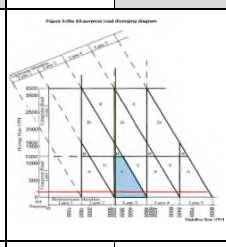
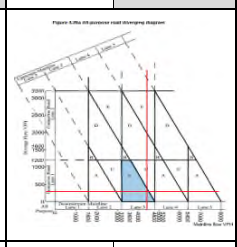
A23 Broxmead Ln

Note - All flows are Actual flows in Vehicles

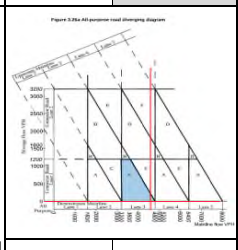
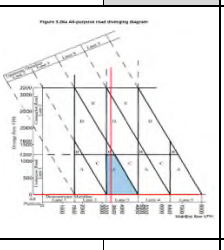
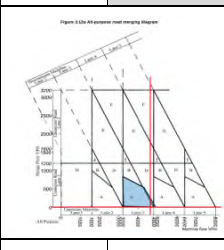
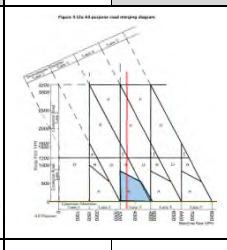
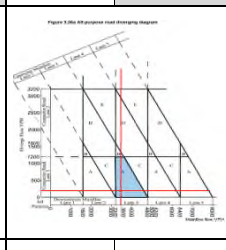
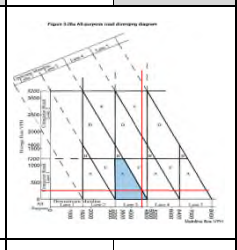
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3173	Intermain	2395	Intermain	3173	Intermain	2395	Mainline (Downstream)	2320	Mainline (Downstream)	3550	Intermain		Intermain	
	Northbound Off-Slip Diverge	0	Northbound Off-Slip Diverge	0	Northbound On-Slip Merge	0	Northbound On-Slip Merge	0	Southbound Off-Slip Diverge	90	Southbound Off-Slip Diverge	78	Southbound On-Slip Merge		Southbound On-Slip Merge	
	Total NB Incoming Flow from A272	3172	Total NB Incoming Flow from A272	2395	Total NB Incoming Flow to B2115	3173	Total NB Incoming Flow to B2115	2395	Total Incoming Flow to A272	2320	Total Incoming Flow to A272	3550				
	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0				
																
A23 Broxmead Ln	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4454	Intermain	3412	Intermain	4454	Intermain	3412	Mainline (Downstream)	3379	Mainline (Downstream)	4485	Intermain		Intermain	
	Northbound Off-Slip Diverge	0	Northbound Off-Slip Diverge	0	Northbound On-Slip Merge	0	Northbound On-Slip Merge	0	Southbound Off-Slip Diverge	108	Southbound Off-Slip Diverge	232	Southbound On-Slip Merge		Southbound On-Slip Merge	
	Total NB Incoming Flow from A272	4454	Total NB Incoming Flow from A272	3412	Total NB Incoming Flow to B2115	4454	Total NB Incoming Flow to B2115	3412	Total Incoming Flow to A272	3378	Total Incoming Flow to A272	4485				
	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0				
																
A23 Broxmead Ln	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

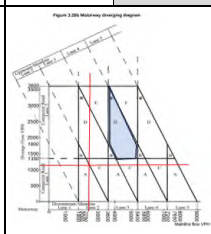
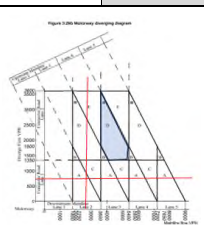
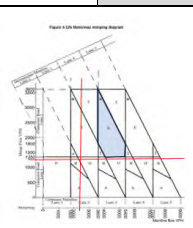
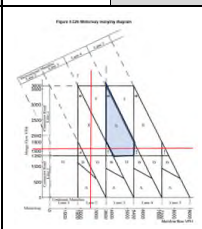
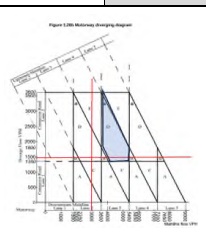
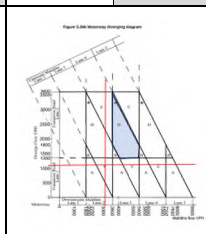
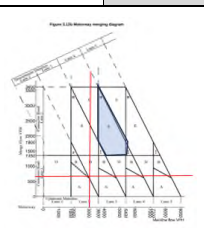
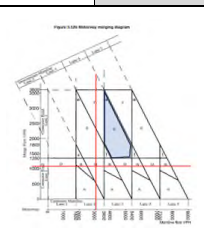
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	4721	Intermain	3535	Intermain	4721	Intermain	3535	Mainline (Downstream)	3466	Mainline (Downstream)	4648	Intermain		Intermain	
	Northbound Off-Slip Diverge	0	Northbound Off-Slip Diverge	0	Northbound On-Slip Merge	0	Northbound On-Slip Merge	0	Southbound Off-Slip Diverge	140	Southbound Off-Slip Diverge	205	Southbound On-Slip Merge		Southbound On-Slip Merge	
	Total NB Incoming Flow from A272	4722	Total NB Incoming Flow from A272	3534	Total NB Incoming Flow to B2115	4721	Total NB Incoming Flow to B2115	3535	Total Incoming Flow to A272	3465	Total Incoming Flow to A272	4647				
	Incoming-Outgoing	1	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	-1				
																
A23 Broxmead Ln	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

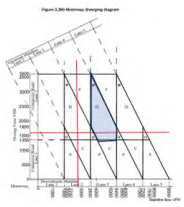
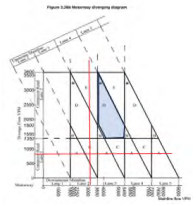
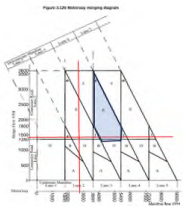
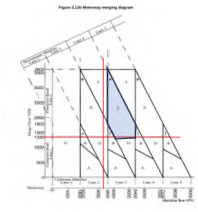
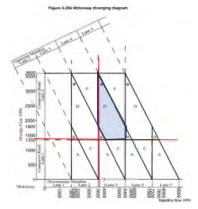
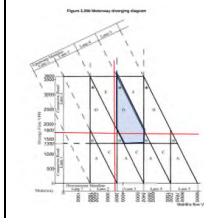
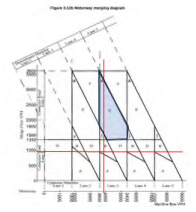
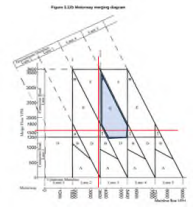
M23 J9

Note - All flows are Actual flows in Vehicles

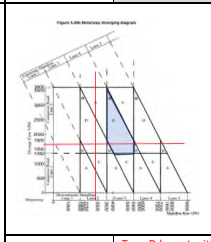
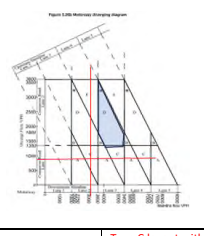
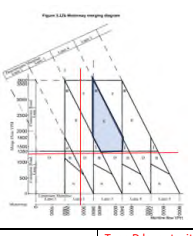
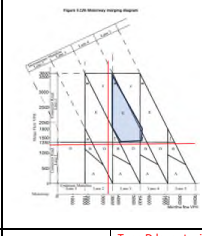
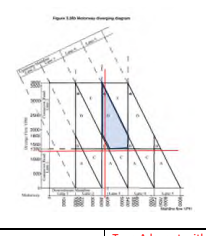
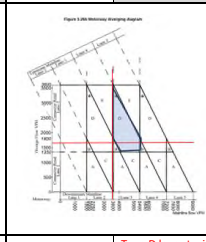
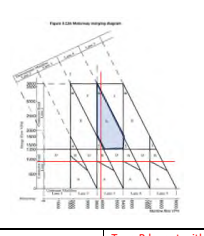
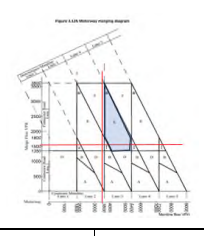
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2514	Intermain	2717	Intermain	2514	Intermain	2717	Intermain	3032	Intermain	3147	Intermain	3032	Intermain	3147
	Northbound Off-Slip Diverge	1138	Northbound Off-Slip Diverge	741	Northbound On-Slip Merge	1252	Northbound On-Slip Merge	1586	Southbound Off-Slip Diverge	1497	Southbound Off-Slip Diverge	1179	Southbound On-Slip Merge	663	Southbound On-Slip Merge	1085
	Total Incoming Flow from M23 J10 (Merge + Intermain)	3651	Total Incoming Flow from M23 J10 (Merge + Intermain)	3457	Total Outgoing Flow into M23 J8	3766	Total Outgoing Flow into M23 J8	4303	Total Incoming Flow from M23 J8	4529	Total Incoming Flow from M23 J8	4326	Total Incoming Flow to M23 J10	3695	Total Incoming Flow to M23 J10	4232
	Incoming - Outgoing (diverge +Intermain)	-1	Incoming - Outgoing (diverge +Intermain)	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0
M23 J9																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2897	Intermain	3218	Intermain	2897	Intermain	3218	Intermain	3803	Intermain	3472	Intermain	3803	Intermain	3472
	Northbound Off-Slip Diverge	1566	Northbound Off-Slip Diverge	890	Northbound On-Slip Merge	1399	Northbound On-Slip Merge	1369	Southbound Off-Slip Diverge	1369	Southbound Off-Slip Diverge	1712	Southbound On-Slip Merge	907	Southbound On-Slip Merge	1551
	Total Incoming Flow from M23 J10 (Merge + Intermain)	4463	Total Incoming Flow from M23 J10 (Merge + Intermain)	4107	Total Outgoing Flow into M23 J8	4294	Total Outgoing Flow into M23 J8	4590	Total Incoming Flow from M23 J8	5172	Total Incoming Flow from M23 J8	5184	Total Incoming Flow to M23 J10	4710	Total Incoming Flow to M23 J10	5023
	Incoming - Outgoing (diverge +Intermain)	0	Incoming - Outgoing (diverge +Intermain)	-1	Incoming-Outgoing	-2	Incoming-Outgoing	3	Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0
M23 J9																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain
	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge		No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge
Comments																

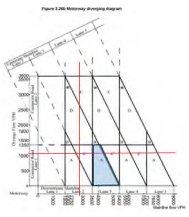
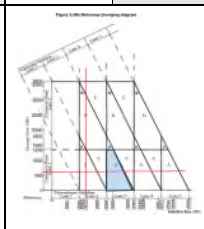
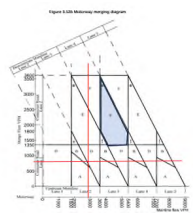
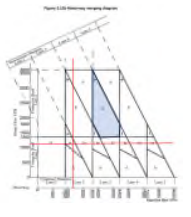
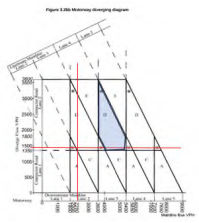
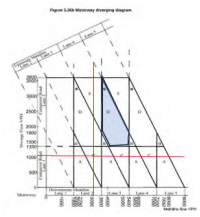
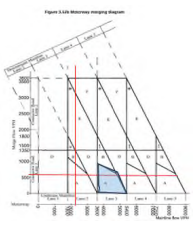
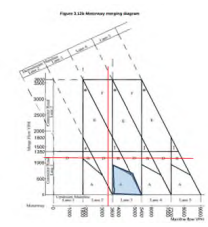
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3000	Intermain	3171	Intermain	3000	Intermain	3171	Intermain	3697	Intermain	3431	Intermain	3697	Intermain	3431
	Northbound Off-Slip Diverge	1633	Northbound Off-Slip Diverge	964	Northbound On-Slip Merge	1319	Northbound On-Slip Merge	1324	Southbound Off-Slip Diverge	1298	Southbound Off-Slip Diverge	1674	Southbound On-Slip Merge	961	Southbound On-Slip Merge	1570
	Total Incoming Flow from M23 J10 (Merge + Intermain)	4632	Total Incoming Flow from M23 J10 (Merge + Intermain)	4134	Total Outgoing Flow into M23 J8	4317	Total Outgoing Flow into M23 J8	4498	Total Incoming Flow from M23 J8	4995	Total Incoming Flow from M23 J8	5106	Total Incoming Flow to M23 J10	4658	Total Incoming Flow to M23 J10	5001
	Incoming - Outgoing (diverge +Intermain)	-1	Incoming - Outgoing (diverge +Intermain)	-1	Incoming-Outgoing	-2	Incoming-Outgoing	3	Incoming - Outgoing	0	Incoming - Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	0
M23 J9																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream, Lane Drop (3 mainline lanes)	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain
	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge
Comments																

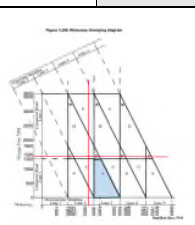
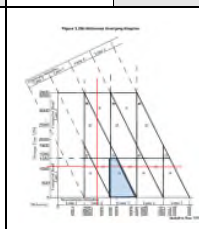
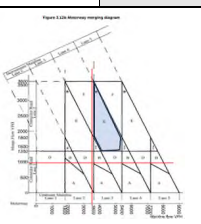
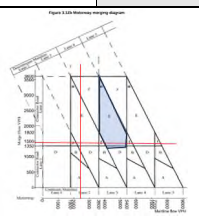
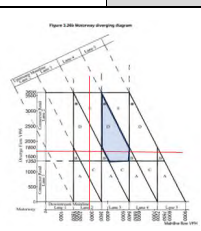
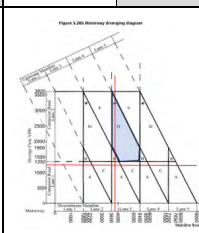
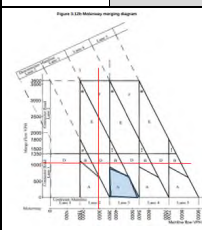
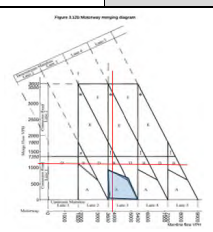
M23 J10

Note - All flows are Actual flows in Vehicles

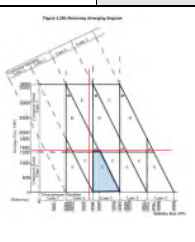
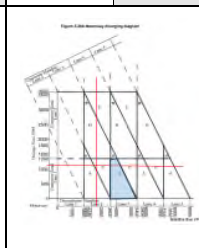
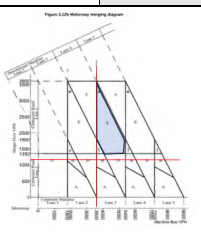
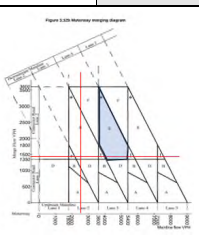
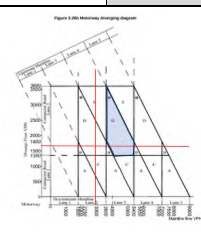
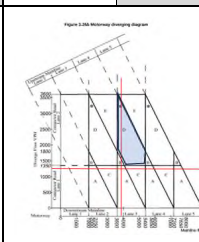
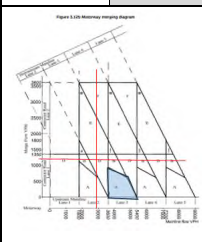
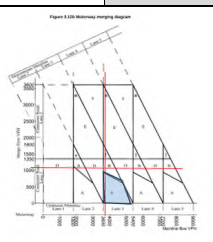
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2805	Intermain	2350	Intermain	2805	Intermain	2350	Intermain	2268	Intermain	3162	Intermain	2268	Intermain	3162
	Northbound Off-Slip Diverge	1069	Northbound Off-Slip Diverge	598	Northbound On-Slip Merge	846	Northbound On-Slip Merge	1107	Southbound Off-Slip Diverge	1427	Southbound Off-Slip Diverge	1070	Southbound On-Slip Merge	531	Southbound On-Slip Merge	1197
	Total NB Incoming Flow from M23 J10a	3874	Total NB Incoming Flow from M23 J10a	2948	Total Outgoing Flow into M23 J9	3652	Total Outgoing Flow into M23 J9	3458	Total SB Incoming Flow from M23 J9	3695	Total SB Incoming Flow from M23 J9	4232	Total Outgoing Flow into M23 J10a	2800	Total Outgoing Flow into M23 J10a	4359
	Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming - Outgoing	1	Incoming - Outgoing	1	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing	1	Incoming - Outgoing	0
M23 J10																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3470	Intermain	2664	Intermain	3470	Intermain	2664	Intermain	2952	Intermain	3765	Intermain	2952	Intermain	3765
	Northbound Off-Slip Diverge	1411	Northbound Off-Slip Diverge	1095	Northbound On-Slip Merge	993	Northbound On-Slip Merge	1443	Southbound Off-Slip Diverge	1758	Southbound Off-Slip Diverge	1258	Southbound On-Slip Merge	1077	Southbound On-Slip Merge	1181
	Total NB Incoming Flow from M23 J10a	4881	Total NB Incoming Flow from M23 J10a	3760	Total Outgoing Flow into M23 J9	4463	Total Outgoing Flow into M23 J9	4108	Total SB Incoming Flow from M23 J9	4710	Total SB Incoming Flow from M23 J9	5023	Total Outgoing Flow into M23 J10a	4030	Total Outgoing Flow into M23 J10a	4947
	Incoming - Outgoing	0	Incoming - Outgoing	1	Incoming - Outgoing	0	Incoming - Outgoing	1	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing	1	Incoming - Outgoing	1
M23 J10																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type B
Comments			AM takes precedence										PM takes precedence			

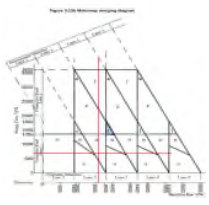
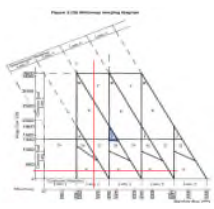
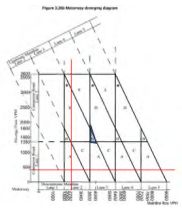
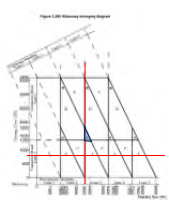
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3525	Intermain	2652	Intermain	3525	Intermain	2652	Intermain	2905	Intermain	3704	Intermain	2905	Intermain	3704
	Northbound Off-Slip Diverge	1397	Northbound Off-Slip Diverge	1109	Northbound On-Slip Merge	1107	Northbound On-Slip Merge	1482	Southbound Off-Slip Diverge	1753	Southbound Off-Slip Diverge	1298	Southbound On-Slip Merge	1180	Southbound On-Slip Merge	1185
	Total NB Incoming Flow from M23 J10a	4922	Total NB Incoming Flow from M23 J10a	3761	Total Outgoing Flow into M23 J9	4633	Total Outgoing Flow into M23 J9	4135	Total SB Incoming Flow from M23 J9	4658	Total SB Incoming Flow from M23 J9	5001	Total Outgoing Flow into M23 J10a	4087	Total Outgoing Flow into M23 J10a	4891
	Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming - Outgoing	1	Incoming - Outgoing	1	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing	2	Incoming - Outgoing	2
M23 J10																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type E layout with 3 lanes upstream and 4 lanes downstream, Lane gain	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type D layout with 3 lanes downstream and 4 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type B
Comments			AM takes precedence										PM takes precedence			

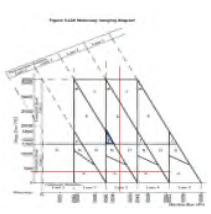
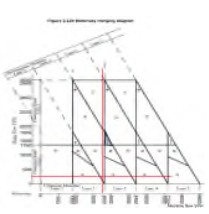
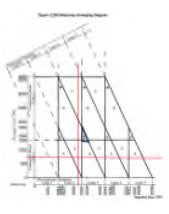
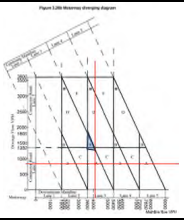
M23 J10A

Note - All flows are Actual flows in Vehicles

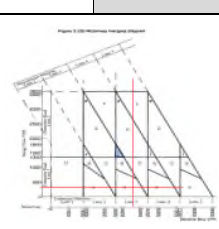
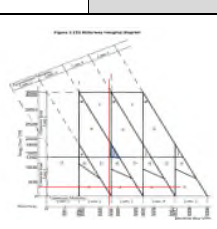
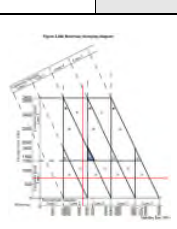
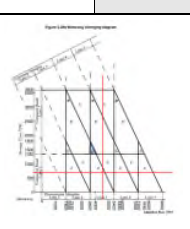
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	3259	Mainline (Upstream)	2637	Mainline (Downstream)	2336	Mainline (Downstream)	3568	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	615	Northbound On-Slip Merge	311	Southbound Off-Slip Diverge	464	Southbound Off-Slip Diverge	791	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow from J11	3259	Total NB Incoming Flow from J11	2637	Total SB Incoming Flow from M23 J10	2799	Total SB Incoming Flow from M23 J10	4359				
					Incoming - Outgoing	0	Incoming - Outgoing	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	0				
M23 10A																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	4407	Mainline (Upstream)	3488	Mainline (Downstream)	3353	Mainline (Downstream)	4227	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	474	Northbound On-Slip Merge	272	Southbound Off-Slip Diverge	677	Southbound Off-Slip Diverge	720	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow from J11	4407	Total NB Incoming Flow from J11	3488	Total SB Incoming Flow from M23 J10	4029	Total SB Incoming Flow from M23 J10	4946				
					Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	-1				
M23 10A																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

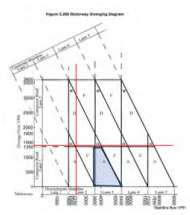
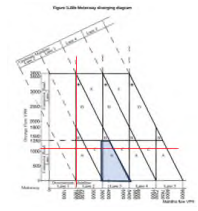
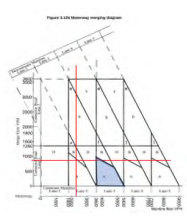
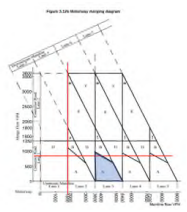
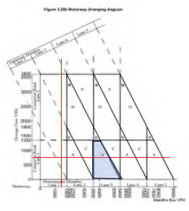
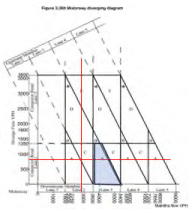
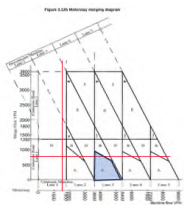
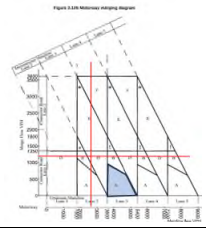
Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Mainline		Mainline		Mainline (Upstream)	4448	Mainline (Upstream)	3498	Mainline (Downstream)	3409	Mainline (Downstream)	4149	Intermain		Intermain	
	Northbound Off-Slip Diverge		Northbound Off-Slip Diverge		Northbound On-Slip Merge	474	Northbound On-Slip Merge	263	Southbound Off-Slip Diverge	678	Southbound Off-Slip Diverge	742	Southbound On-Slip Merge		Southbound On-Slip Merge	
					Total NB Incoming Flow from J11	4448	Total NB Incoming Flow from J11	3497	Total SB Incoming Flow from M23 J10	4085	Total SB Incoming Flow from M23 J10	4889				
					Incoming - Outgoing (diverge+intermain)	0	Incoming - Outgoing (diverge+intermain)	-1	Incoming - Outgoing (diverge+intermain)	-2	Incoming - Outgoing (diverge+intermain)	-2				
M23 10A																
	Req. Layout =		Req. Layout =		Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Req. Layout =		Req. Layout =	
	Ex. Layout =		Ex. Layout =		Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =		Ex. Layout =	
	Change required?		Change required?		Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?		Change required?	
Comments																

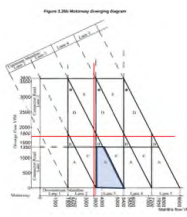
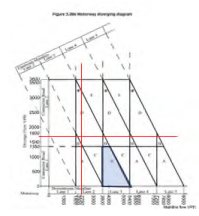
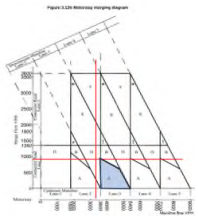
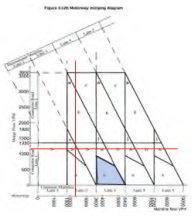
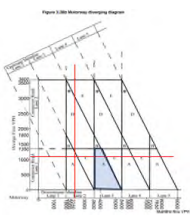
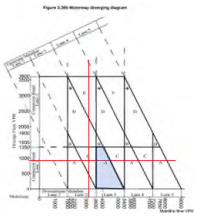
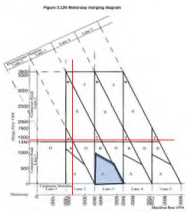
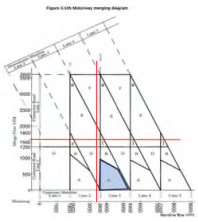
M23 J11

Note - All flows are Actual flows in Vehicles

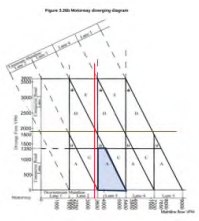
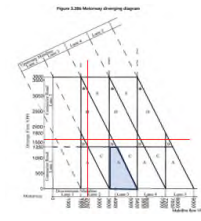
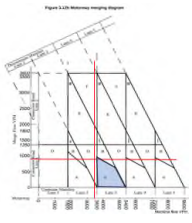
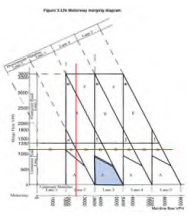
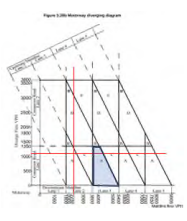
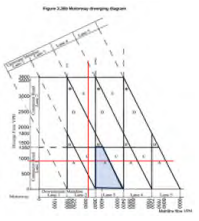
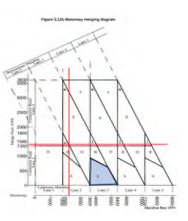
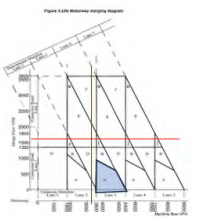
Baseline 2019

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	2371	Intermain	1768	Intermain	2371	Intermain	1768	Intermain	1630	Intermain	2717	Intermain	1630	Intermain	2717
	Northbound Off-Slip Diverge	1407	Northbound Off-Slip Diverge	1070	Northbound On-Slip Merge	888	Northbound On-Slip Merge	869	Southbound Off-Slip Diverge	706	Southbound Off-Slip Diverge	851	Southbound On-Slip Merge	844	Southbound On-Slip Merge	1221
	Total NB Incoming Flow from B2114	3778	Total NB Incoming Flow from B2114	2839	Total NB Incoming Flow to M23 J10A	3259	Total NB Incoming Flow to M23 J10A	2637	Total SB Incoming Flow from J10a	2336	Total SB Incoming Flow from J10a	3568	Total SB Incoming Flow to B2114	2474	Total SB Incoming Flow to B2114	3938
	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing (Mainline SB into A23/B2114)	0	Incoming-Outgoing	0
M23 J11																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 1 lanes downstream and 2 lanes upstream	Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type D layout with 1 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 1 lanes downstream and 2 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type D layout with 1 lanes upstream and 2 lanes downstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge
Comments			AM takes precedence													

2039 Reference Case

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3408	Intermain	2317	Intermain	3408	Intermain	2317	Intermain	2205	Intermain	3231	Intermain	2205	Intermain	3231
	Northbound Off-Slip Diverge	1745	Northbound Off-Slip Diverge	1612	Northbound On-Slip Merge	999	Northbound On-Slip Merge	1171	Southbound Off-Slip Diverge	1149	Southbound Off-Slip Diverge	995	Southbound On-Slip Merge	1399	Southbound On-Slip Merge	1690
	Total NB Incoming Flow from B2114	5153	Total NB Incoming Flow from B2114	3928	Total NB Incoming Flow to M23 J10A	4407	Total NB Incoming Flow to M23 J10A	3488	Total SB Incoming Flow from J10a	3353	Total SB Incoming Flow from J10a	4227	Total SB Incoming Flow to B2114	3606	Total SB Incoming Flow to B2114	4922
	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	0
M23 J11																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type E	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type E
Comments																

Scenario 6m2

Junction Name	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Intermain	3488	Intermain	2369	Intermain	3488	Intermain	2369	Intermain	2269	Intermain	3190	Intermain	2269	Intermain	3190
	Northbound Off-Slip Diverge	1883	Northbound Off-Slip Diverge	1619	Northbound On-Slip Merge	960	Northbound On-Slip Merge	1128	Southbound Off-Slip Diverge	1140	Southbound Off-Slip Diverge	958	Southbound On-Slip Merge	1409	Southbound On-Slip Merge	1758
	Total NB Incoming Flow from B2114	5371	Total NB Incoming Flow from B2114	3988	Total NB Incoming Flow to M23 J10A	4448	Total NB Incoming Flow to M23 J10A	3498	Total SB Incoming Flow from J10a	3409	Total SB Incoming Flow from J10a	4149	Total SB Incoming Flow to B2114	3680	Total SB Incoming Flow to B2114	4948
	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	0	Incoming-Outgoing	-1	Incoming-Outgoing	0	Incoming-Outgoing	1	Incoming-Outgoing	0	Incoming-Outgoing	0
M23 J11																
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 2lanes downstream and 2 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream	Ex. Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type E	Change required?	Yes - There is significant capacity on the existing mainline but the merge requires to be upgraded to Type E
Comments																

Appendix C – COVID-19 Assessment Technical Note and COVID-19 Merge/Diverge Assessments

TECHNICAL NOTE

MID SUSSEX LOCAL PLAN

IMPACTS OF COVID ASSESSMENT

IDENTIFICATION TABLE	
Client/Project owner	Mid Sussex District Council
Project	Mid Sussex Local Plan
Title of Document	Impacts of COVID Assessment
Type of Document	Technical Note
Date	02/08/2024
Reference number	C110563
Number of pages	13

TABLE OF CONTENTS

1. IMPACT OF COVID ON TRAFFIC FLOWS

1.1 Introduction

1.1.1 As evidenced through DfT official statistics, the COVID pandemic had a significant influence on travel behaviours with overall traffic volumes for most modes still below pre-pandemic levels. This impact in travel demand is acknowledged in the most recent DfT TAG Guidance Unit M4 (Forecasting and Uncertainty) Appendix B, which provides recommendations on how this should be appropriately represented in any updates to transport analysis and appraisal.

1.1.2 As such, to interpret the robustness of existing Mid Sussex Local Plan forecasts and how COVID has impacted upon this, traffic data for pre and post COVID periods is analysed and compared against the current model forecasting assumptions. A comparison of neutral months (Feb-June & Sept-Nov, excluding bank holidays) traffic flows for 2019 (the Mid Sussex model base year), is compared against the 2023 post Covid position. Where 2023 data wasn't available, 2022 has been considered. Covid travel restrictions were considered lifted by 2022, enabling users to return to, or redefine, their 'normal' travel patterns. However, where possible, if 2022 data has been used, we have focussed on data from the latter half of the year.

2. LOCAL COUNT DATA

2.1 Introduction

2.1.1 Count data within the Mid Sussex District, and wider area for 2019 was compared to 2022 or in 2023 data and evaluated to determine any changes in travel trends. For a few sites that did not have data available for 2023, the data from year 2022 was used in the comparison. The comparison was made between an average flow from Feb-June and Sep-Nov for 2019 with the same months of 2022 or 2023. The analysis was concatenated to the main modelled time periods of the AM and Peak hour (0800-0900 & 1700-1800).

2.1.2 Due to limited available count sites, we have utilised data inside and outside the Mid Sussex District area. Whilst the West Sussex County Council count sites were considered to have comprehensive coverage of the Mid Sussex District, a reasonable number of these counts contained incomplete data, resulting in these count sites not being fit for this purpose.

2.1.3 A map detailing the comparison count site locations is shown in Figure 1.

2.1.4 The total average peak hour vehicle flows for the 2019 and 2023(2022), as well as the respective % change of vehicle flows seen between 2019 and 2023(2022) for Mid Sussex district count sites are shown in Table 1, and the additional count sites outside of Mid Sussex are shown in Table 2. Please note that table totals for Table 2 also include those count sites in Table 1.

2.1.5 Data marked with an ***** uses some or all of 2022 data within the 2022/23 count data.

Figure 1. Map showing WSCC and WebTRIS count site locations

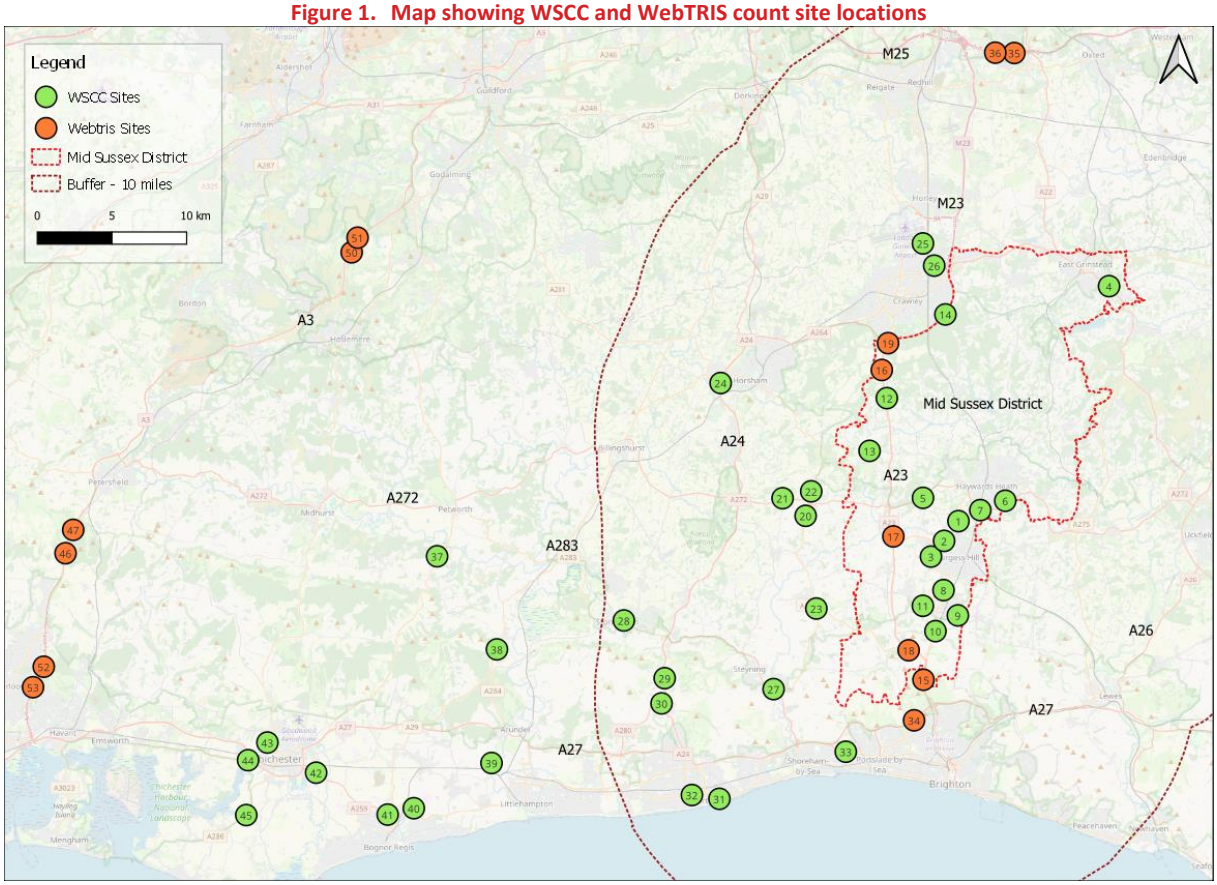


Table 1. Total average peak hour vehicle flows for the 2019 and 2023(2022), and % change between years, for sites within the Mid Sussex District.

ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
1	WSCC	11	A273, Isaac's Lane, Burgess Hill	942	585*	-38%	935	595*	-36%
2	WSCC	12	A273, Sussex Way, Burgess Hill	1195	1050	-12%	1231	1014	-18%
3	WSCC	15	A273, Jane Murray Way	1667	1423*	-15%	1755	1445*	-18%
4	WSCC	18	A22, Lewes Rd	1426	1173*	-18%	1400	1199*	-14%
5	WSCC	26	A272, Bolney Rd, Ansty	1352	972*	-28%	1375	1063*	-23%
6	WSCC	55	A272, Rocky Lane	866	960	11%	871	967	11%
7	WSCC	56	A272, Haywards Heath, Rocky Lane	1350	747	-45%	1357	769	-43%
8	WSCC	57	A273, Hassocks, London Rd	1183	1173	-1%	1191	1239	4%
9	WSCC	58	B2116, Hassocks, Keymer Rd	768	641*	-17%	771	737*	-4%
10	WSCC	59	A273, Hassocks, Brighton Rd	985	852*	-14%	1059	950*	-10%
11	WSCC	60	B2116, Hassocks, Hurst Rd	574	610	6%	585	587	0%
12	WSCC	72	B2114, Handcross, Staplefield Rd	344	317	-8%	293	166	-43%
13	WSCC	99	B2115, Warninglid	411	315	-23%	403	315	-22%
14	WSCC	569	B2036, Balcombe Rd, Balcombe	1253	1184*	-6%	1405	1341*	-5%
15	Webtris	30360504	A23, London Rd, between A273 and A27	2812	2715	-3%	3614	3282	-9%
16	Webtris	5997/1	A23, London Rd between B2110 and M23/A264	3498	2869	-18%	3057	2682	-12%
17	Webtris	5881/2	A23, London Road within the A2300 junction	2004	1855	-7%	2925	2232	-24%
18	Webtris	5884/2	A23 within the A281 junction	2704	1882	-30%	2093	1849	-12%
19	Webtris	5996/1	M23 within J11 (off-slip) - SB	1258	1644	31%	2151	2230	4%
Total (Mid Sussex District)				**26592**	**22967**	**-14%**	**28471**	**24662**	**-13%**

Data marked with an * uses some or all of 2022 data within the 2022/23 count data.

Table 2. Total average peak hour vehicle flows for the 2019 and 2023(2022), and % change between years, for sites within Mid Sussex District and within 10 mile buffer.

ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
1	WSCC	11	A273, Isaac's Lane, Burgess Hill	942	585*	-38%	935	595*	-36%
2	WSCC	12	A273, Sussex Way, Burgess Hill	1195	1050	-12%	1231	1014	-18%
3	WSCC	15	A273, Jane Murray Way	1667	1423*	-15%	1755	1445*	-18%
4	WSCC	18	A22, Lewes Rd	1426	1173*	-18%	1400	1199*	-14%
5	WSCC	26	A272, Bolney Rd, Ansty	1352	972*	-28%	1375	1063*	-23%
6	WSCC	55	A272, Rocky Lane ((East of B2112 Roundabout)	866	960	11%	871	967	11%
7	WSCC	56	A272, Haywards Heath, Rocky Lane (West of B2112 Roundabout)	1350	747	-45%	1357	769	-43%
8	WSCC	57	A273, Hassocks, London Rd	1183	1173	-1%	1191	1239	4%
9	WSCC	58	B2116, Hassocks, Keymer Rd	768	641*	-17%	771	737*	-4%
10	WSCC	59	A273, Hassocks, Brighton Rd	985	852*	-14%	1059	950*	-10%
11	WSCC	60	B2116, Hassocks, Hurst Rd	574	610	6%	585	587	0%
12	WSCC	72	B2114, Handcross, Staplefield Rd	344	317	-8%	293	166	-43%
13	WSCC	99	B2115, Warninglid	411	315	-23%	403	315	-22%
14	WSCC	569	B2036, Balcombe Rd, Balcombe	1253	1184*	-6%	1405	1341*	-5%
15	Webtris	30360504	A23, London Rd, between A273 and A27	2812	2715	-3%	3614	3282	-9%
16	Webtris	5997/1	A23, London Rd between B2110 and M23/A264	3498	2869	-18%	3057	2682	-12%
17	Webtris	5881/2	A23, London Road within the A2300 junction	2004	1855	-7%	2925	2232	-24%
18	Webtris	5884/2	A23 within the A281 junction	2704	1882	-30%	2093	1849	-12%
19	Webtris	5996/1	M23 within J11 (off-slip) - SB	1258	1644	31%	2151	2230	4%
20	WSCC	44	A281 Cowfold, Henfield Rd	519	434	-16%	562	450	-20%
21	WSCC	46	A272, Cowfold, Station Rd	1568	1526*	-3%	1756	1713*	-2%
22	WSCC	4493	A281, Cowfold, Horsham Rd	826	696*	-16%	780	713*	-9%
23	WSCC	5	A281, Hensfield Common Rd	453	430	-5%	488	446	-9%
24	WSCC	45	A24, High Wood Hill Interchange	1560	1483	-5%	1809	1678	-7%

ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
25	WSCC	902	Gatwick Road, Gatwick Rd Roundabout	1536	1004	-35%	1523	1058	-31%
26	WSCC	5719	A2011, Crawley Avenue	3503	2113*	-40%	3859	2729*	-29%
27	WSCC	38	A283, Bramber	1850	1251	-32%	2001	1599	-20%
28	WSCC	4266	B2139, School Hill	685	597	-13%	616	593	-4%
29	WSCC	4475	A24, Horsham Rd	2292	2256	-2%	3109	2885	-7%
30	WSCC	378	A280, Long Furlong	1260	1228	-3%	1548	1474	-5%
31	WSCC	253	A259, Brighton Rd	1467	1313	-10%	1427	1369	-4%
32	WSCC	5014	A259, Richmond Rd	1152	1032	-10%	1159	1016	-12%
33	WSCC	5035	A270, Shoreham Rd	1676	1695	1%	2022	1992	-1%
34	Webtris	5990/2	A27, within A2038 junction - WB	1563	1693	8%	1938	2182	13%
35	Webtris	M25/4432A	M25, between J6 and J7 - CW	5174	5529	7%	4287	4489	5%
36	Webtris	M25/4435B	M25, between J6 and J7 - ACW	4252	4102	-4%	5947	5861	-1%
Total (Mid Sussex District & Buffer within 10 mile buffer)				**57928**	**51349**	**-11%**	**63302**	**56909**	**-10%**
ID	**Source**	**Site#**	**Site Location**	**AM Peak 2019**	**AM Peak 2023**	**AM % Diff**	**PM Peak 2019**	**PM Peak 2023**	**PM % Diff**
37	WSCC	20	A285, Station Rd	600	450	-25%	623	457	-27%
38	WSCC	184	A29, Bury Hill	979	869	-11%	1154	977	-15%
39	WSCC	1524	Ford Road	564	461*	-18%	550	487*	-11%
40	WSCC	61	A259, Charles Purley Lane	1515	1599	6%	1754	1806	3%
41	WSCC	33	A259, Rowan Rd	1651	1712	4%	2033	2017	-1%
42	WSCC	3	A259 Bognor Rd	1870	1817	-3%	1981	1933	-2%
43	WSCC	9	B2178, St Pauls Rd, Chichester	982	999*	2%	1067	928*	-13%
44	WSCC	208	A259, Fishbourne Rd West	1047	792	-24%	956	731	-24%
45	WSCC	461	A286, Birdham Rd	1175	1156	-2%	1259	1190	-5%
46	Webtris	30360298	A3 between A3M and B2070	2423	2751	14%	1587	1779	12%
47	Webtris	30360299	A3 between B2071 and A3M	1629	1532	-6%	2801	2507	-10%
48	Webtris	A27/9472A	A27, Havant Bypass - EB	5072	4594	-9%	5621	5099	-9%
49	Webtris	A27/9476B	A27, Havant Bypass - WB	5258	5152	-2%	4850	4894	1%
50	Webtris	A3/0419B	A3, near Thursley National Nature Reserve - NB	2123	2271	7%	1298	1352	4%

ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
51	Webtris	A3/0419A	A3, near Thursley National Nature Reserve - SB	1219	733	-40%	2441	1325	-46%
52	Webtris	A3M/5049B	A3(M) near Waterlooville Golf Course - NB	2400	2397	0%	2423	2363	-2%
53	Webtris	A3M/5049A	A3(M) near Waterlooville Golf Course - SB	2551	2310	-9%	2903	2753	-5%
54	Webtris	M27/9415B	M27, between J11 and J12	4902	3432	-30%	5288	3941	-25%
55	Webtris	M275/9902B	M275, Portsmouth	3709	3184	-14%	3639	3436	-6%
Total (Outside 10 mile buffer)				**41669**	**38211**	**-8%**	**44228**	**39975**	**-10%**
TOTAL ALL SITES				**99597**	**89560**	**-10%**	**107530**	**96884**	**-10%**

Data marked with an * uses some or all of 2022 data within the 2022/23 count data.

Figure 2-1 AM Flow Difference between 2019 and 2023 (or 2022)

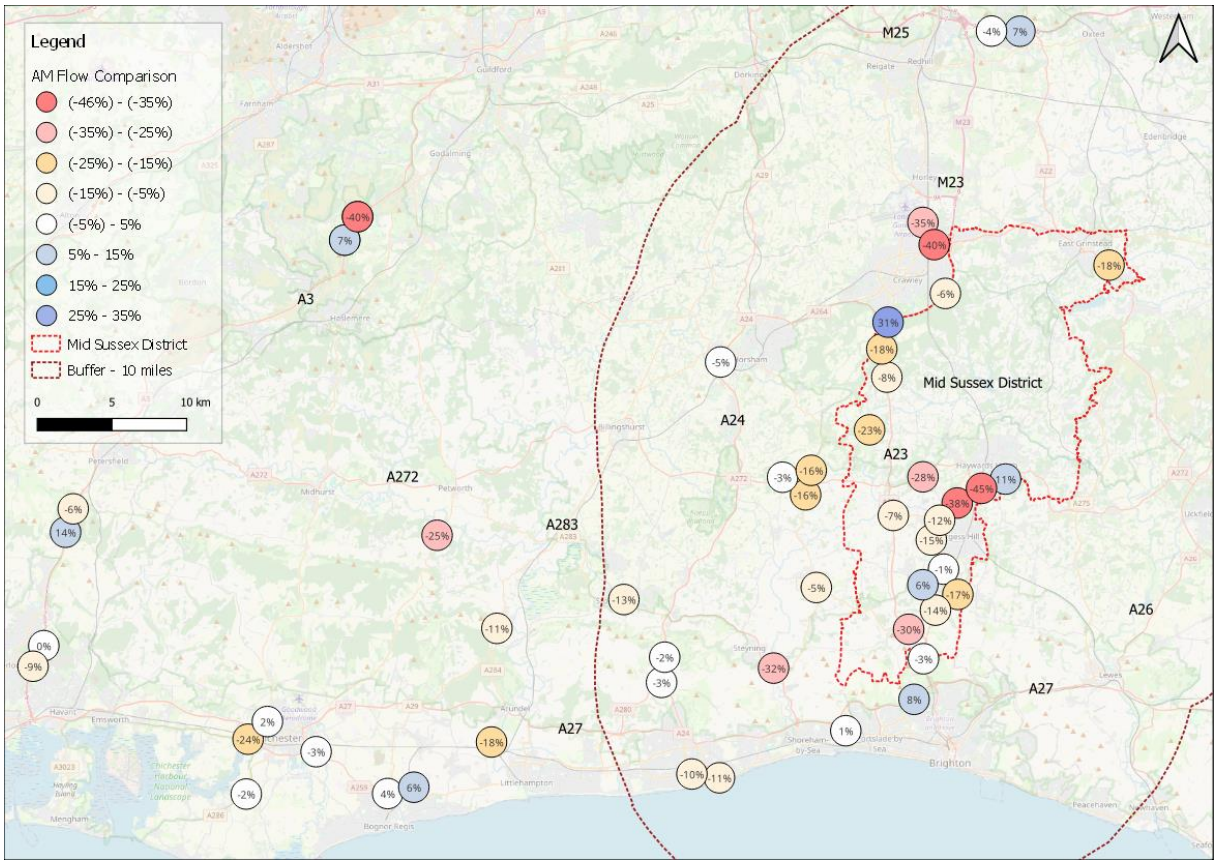
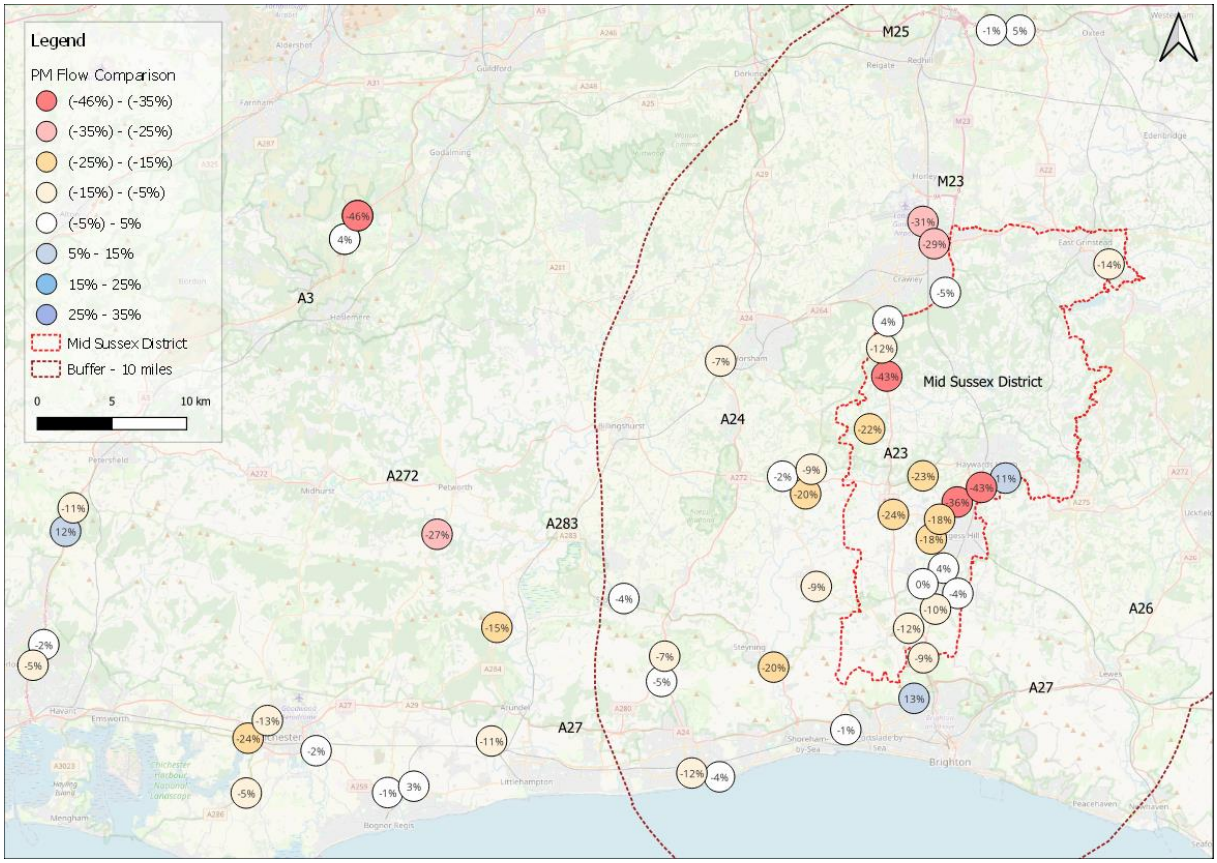


Figure 2-2 PM Flow Difference between 2019 and 2023 (or 2022)



3. RESULTS

3.1 Summary

3.1.1 At a headline level, the comparison confirms there has been a reduction in traffic flow between 2019 to 2023. The underlying assumption is that this is predominantly the result of behavioural change following the Covid pandemic but for individual sites it may also account for local changes impacting on network capacity (e.g. transport scheme implementation or roadworks).

3.1.2 Within Mid Sussex, for the sites included, there is a 14% reduction in total flow in the AM peak hour and 13% reduction in the PM peak hour. For individual sites the changes range from +31% to -45 %.

3.1.3 For counts with within or within a 10km buffer of Mid Sussex, there is a 11% reduction in total flow in the AM peak hour and 10% reduction in the PM peak hour. For individual sites the changes range from +31% to -45 %.

3.1.4 Within the wider data analysis area (including Mid Sussex data), for the sites included, there is a 10% reduction in total flow in both the AM and PM peak hours. For individual sites the reduction ranges from 31% to -46 %.

3.1.5 Flow pattern changes indicate that there is a higher percentage reduction within Mid Sussex District compared to surrounding areas outside the district. This may be an indicator of the types of trips being taken in the district being more susceptible to post covid flow change patterns such as home working.

3.1.6 It should be noted that whilst Covid can be considered a driver of flow pattern change in the local and wider area, there are a number of transport infrastructure schemes, development and other factors that may also be influencing flow pattern change. These factors are already accounted for in the forecast models.

3.2 Excluding 2022 Count Data

3.2.1 Additional analysis around the exclusion of the 2022 data has been undertaken, to understand if this inclusion of 2022 count data may be providing a higher reduction in % change in flow.

3.2.2 Below in appendix A, Table 3 details an updated count comparison list which excludes sites that use part or all the post covid count data from 2022 data. The results indicate:

- Within Mid Sussex the AM has an 11% reduction, whilst the PM has a 12% reduction.
- Within Mid Sussex and 10 mile buffer, the AM and PM both have an 8% reduction

3.2.3 It can be concluded that there is still a notable percentage reduction in trips on the network post-covid. The percentage reduction when only considering sites with 2023 data is lower than when using a combination of both 2023 and 2022 data, however there remains a greater reduction within Mid Sussex than the surrounding area.

APPROVAL					
Version	**Name**		**Position**	**Date**	**Modifications**
1	Author	Sam Carr	Associate	30/05/2024	Version 1
	Checked by	Chris Whitehead	Director	30/05/2024	
	Approved by	Chris Whitehead	Director	30/05/2024	
2	Author	Sam Carr	Associate	03/07/2024	Version 2
	Checked by	Ian Burden	Director	03/07/2024	
	Approved by	Ian Burden	Director	03/07/2024	
3	Author	Sam Carr	Associate	24/07/2025	Version 3
	Checked by	Chris Whitehead	Director	02/08/2024	
	Approved by	Chris Whitehead	Director	02/08/2024	

Table 3. Total average peak hour vehicle flows for the 2019 and 2023only, and % change between years. Excluding any 2022 data for the post covid count data.

ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
2	WSCC	12	A273, Sussex Way, Burgess Hill	1195	1050	-12%	1231	1014	-18%
6	WSCC	55	A272, Rocky Lane	866	960	11%	871	967	11%
7	WSCC	56	A272, Haywards Heath, Rocky Lane	1350	747	-45%	1357	769	-43%
8	WSCC	57	A273, Hassocks, London Rd	1183	1173	-1%	1191	1239	4%
11	WSCC	60	B2116, Hassocks, Hurst Rd	574	610	6%	585	587	0%
12	WSCC	72	B2114, Handcross, Staplefield Rd	344	317	-8%	293	166	-43%
13	WSCC	99	B2115, Warninglid	411	315	-23%	403	315	-22%
15	Webtris	30360504	A23, London Rd, between A273 and A27	2812	2715	-3%	3614	3282	-9%
16	Webtris	5997/1	A23, London Rd between B2110 and M23/A264	3498	2869	-18%	3057	2682	-12%
17	Webtris	5881/2	A23, London Road within the A2300 junction	2004	1855	-7%	2925	2232	-24%
18	Webtris	5884/2	A23 within the A281 junction	2704	1882	-30%	2093	1849	-12%
19	Webtris	5996/1	M23 within J11 (off-slip) - SB	1258	1644	31%	2151	2230	4%
Total (Mid Sussex District)				**18199**	**16137**	**-11%**	**19771**	**17332**	**-12%**

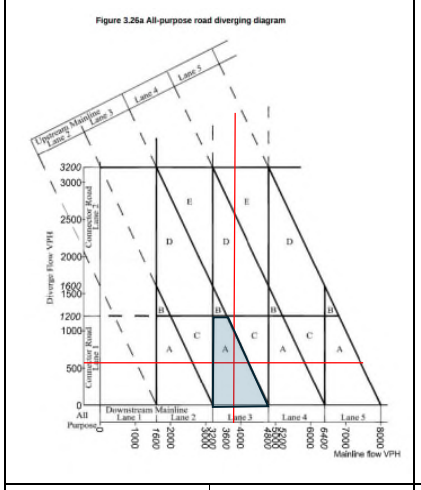
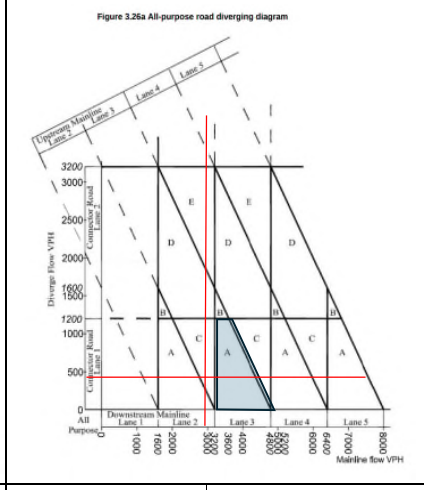
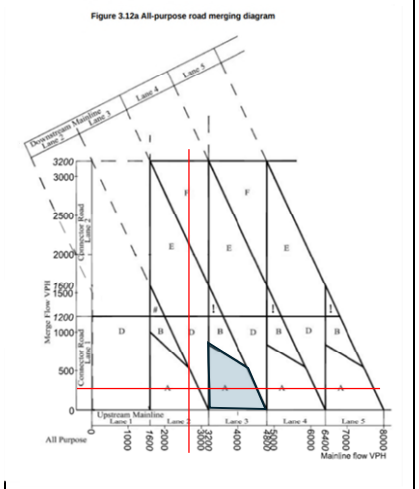
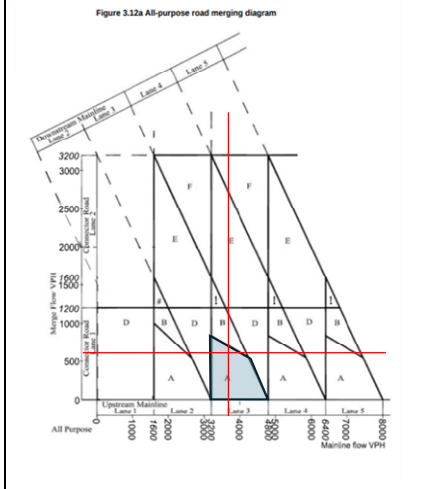
ID	Source	Site#	Site Location	AM Peak 2019	AM Peak 2023	AM % Diff	PM Peak 2019	PM Peak 2023	PM % Diff
2	WSCC	12	A273, Sussex Way, Burgess Hill	1195	1050	-12%	1231	1014	-18%
6	WSCC	55	A272, Rocky Lane ((East of B2112 Roundabout)	866	960	11%	871	967	11%
7	WSCC	56	A272, Haywards Heath, Rocky Lane (West of B2112 Roundabout)	1350	747	-45%	1357	769	-43%
8	WSCC	57	A273, Hassocks, London Rd	1183	1173	-1%	1191	1239	4%
11	WSCC	60	B2116, Hassocks, Hurst Rd	574	610	6%	585	587	0%
12	WSCC	72	B2114, Handcross, Staplefield Rd	344	317	-8%	293	166	-43%
13	WSCC	99	B2115, Warninglid	411	315	-23%	403	315	-22%
15	Webtris	30360504	A23, London Rd, between A273 and A27	2812	2715	-3%	3614	3282	-9%

16	Webtris	5997/1	A23, London Rd between B2110 and M23/A264	3498	2869	-18%	3057	2682	-12%
17	Webtris	5881/2	A23, London Road within the A2300 junction	2004	1855	-7%	2925	2232	-24%
18	Webtris	5884/2	A23 within the A281 junction	2704	1882	-30%	2093	1849	-12%
19	Webtris	5996/1	M23 within J11 (off-slip) - SB	1258	1644	31%	2151	2230	4%
20	WSCC	44	A281 Cowfold, Henfield Rd	519	434	-16%	562	450	-20%
23	WSCC	5	A281, Hensfield Common Rd	453	430	-5%	488	446	-9%
24	WSCC	45	A24, High Wood Hill Interchange	1560	1483	-5%	1809	1678	-7%
25	WSCC	902	Gatwick Road, Gatwick Rd Roundabout	1536	1004	-35%	1523	1058	-31%
27	WSCC	38	A283, Bramber	1850	1251	-32%	2001	1599	-20%
28	WSCC	4266	B2139, School Hill	685	597	-13%	616	593	-4%
29	WSCC	4475	A24, Horsham Rd	2292	2256	-2%	3109	2885	-7%
30	WSCC	378	A280, Long Furlong	1260	1228	-3%	1548	1474	-5%
31	WSCC	253	A259, Brighton Rd	1467	1313	-10%	1427	1369	-4%
32	WSCC	5014	A259, Richmond Rd	1152	1032	-10%	1159	1016	-12%
33	WSCC	5035	A270, Shoreham Rd	1676	1695	1%	2022	1992	-1%
34	Webtris	5990/2	A27, within A2038 junction - WB	1563	1693	8%	1938	2182	13%
35	Webtris	M25/4432A	M25, between J6 and J7 - CW	5174	5529	7%	4287	4489	5%
36	Webtris	M25/4435B	M25, between J6 and J7 - ACW	4252	4102	-4%	5947	5861	-1%
Total (Mid Sussex District & Buffer within 10 mile buffer)				**43638**	**40184**	**-8%**	**48207**	**44424**	**-8%**
ID	**Source**	**Site#**	**Site Location**	**AM Peak 2019**	**AM Peak 2023**	**AM % Diff**	**PM Peak 2019**	**PM Peak 2023**	**PM % Diff**
37	WSCC	20	A285, Station Rd	600	450	-25%	623	457	-27%
38	WSCC	184	A29, Bury Hill	979	869	-11%	1154	977	-15%
40	WSCC	61	A259, Charles Purley Lane	1515	1599	6%	1754	1806	3%
41	WSCC	33	A259, Rowan Rd	1651	1712	4%	2033	2017	-1%
42	WSCC	3	A259 Bognor Rd	1870	1817	-3%	1981	1933	-2%
44	WSCC	208	A259, Fishbourne Rd West	1047	792	-24%	956	731	-24%
45	WSCC	461	A286, Birdham Rd	1175	1156	-2%	1259	1190	-5%
46	Webtris	30360298	A3 between A3M and B2070	2423	2751	14%	1587	1779	12%
47	Webtris	30360299	A3 between B2071 and A3M	1629	1532	-6%	2801	2507	-10%

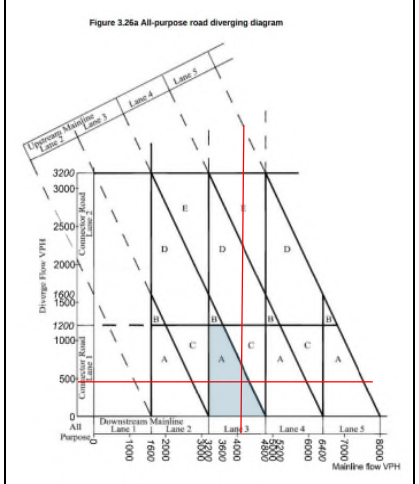
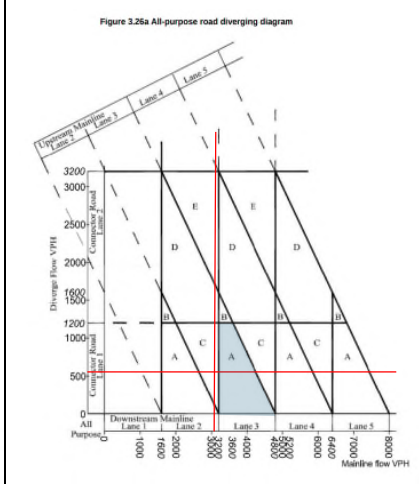
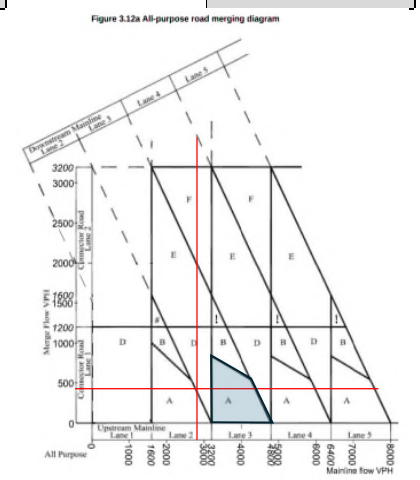
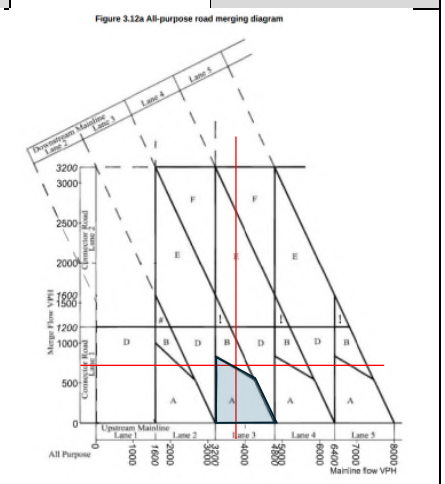
48	Webtris	A27/9472A	A27, Havant Bypass - EB	5072	4594	-9%	5621	5099	-9%
49	Webtris	A27/9476B	A27, Havant Bypass - WB	5258	5152	-2%	4850	4894	1%
50	Webtris	A3/0419B	A3, near Thursley National Nature Reserve - NB	2123	2271	7%	1298	1352	4%
51	Webtris	A3/0419A	A3, near Thursley National Nature Reserve - SB	1219	733	-40%	2441	1325	-46%
52	Webtris	A3M/5049B	A3(M) near Waterlooville Golf Course - NB	2400	2397	0%	2423	2363	-2%
53	Webtris	A3M/5049A	A3(M) near Waterlooville Golf Course - SB	2551	2310	-9%	2903	2753	-5%
54	Webtris	M27/9415B	M27, between J11 and J12	4902	3432	-30%	5288	3941	-25%
55	Webtris	M275/9902B	M275, Portsmouth	3709	3184	-14%	3639	3436	-6%
Total (Outside 10 mile buffer)				**40123**	**36751**	**-8%**	**42611**	**38560**	**-10%**
TOTAL ALL SITES				**83761**	**76935**	**-8%**	**90818**	**82984**	**-9%**

A23 A272

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

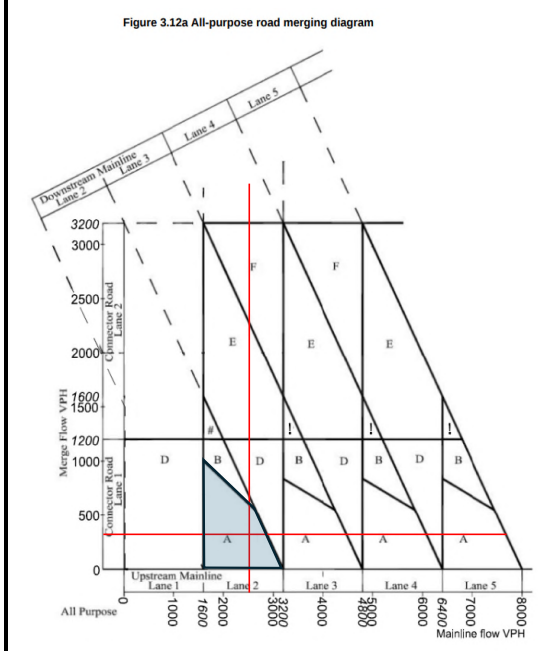
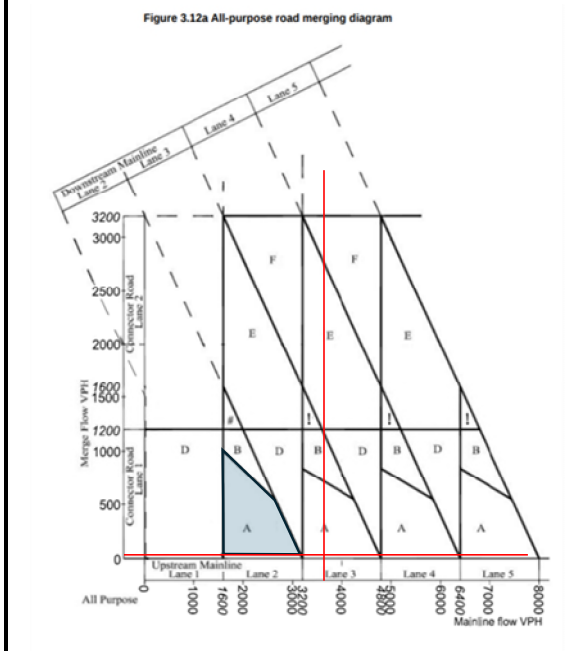
Junction Name	Northbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM	
	Intermain	3764	Intermain	2901	Intermain	2770	Intermain	3729
	Northbound Off-Slip Diverge	539	Northbound Off-Slip Diverge	445	Southbound On-Slip Merge	405	Southbound On-Slip Merge	624
A23 / A272								
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	No as there is sufficient capacity on both the existing mainline and merge
Comments								

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

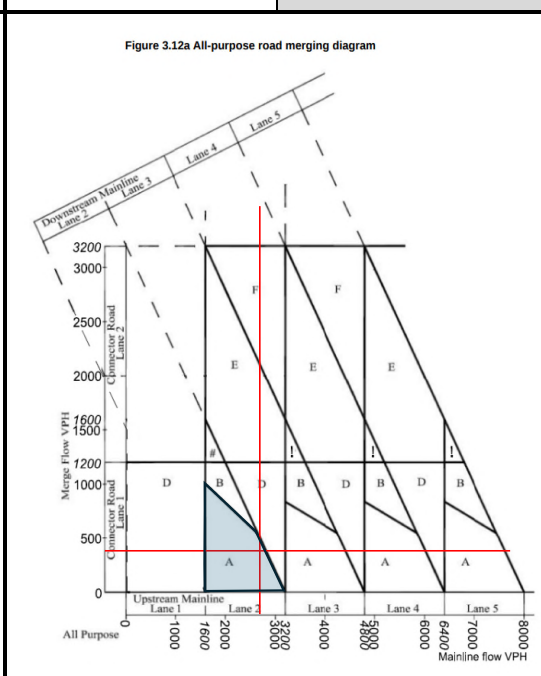
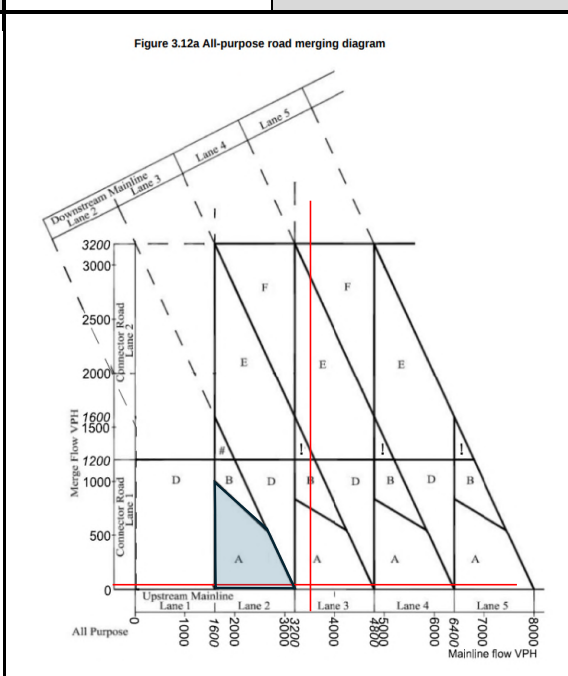
Junction Name	Northbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM	
	Intermain	4046	Intermain	3014	Intermain	2834	Intermain	3827
	Northbound Off-Slip Diverge	489	Northbound Off-Slip Diverge	541	Southbound On-Slip Merge	440	Southbound On-Slip Merge	691
A23 / A272								
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream Improvement over pre-covid assessment	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream	Assessed Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream Improvement over pre-covid assessment
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	No as there is significant capacity on both the existing mainline and merge	Change required?	Yes - The merge type needs to be upgraded to a Type B
Comments							Merge will be close to capacity with predicted on-flows	

A23 A281

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

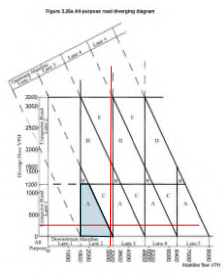
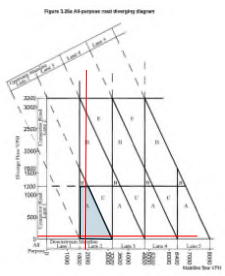
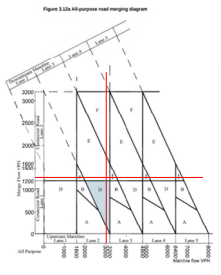
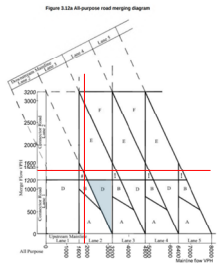
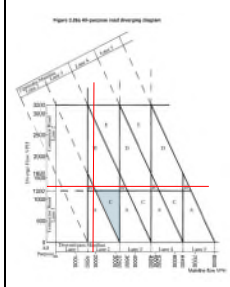
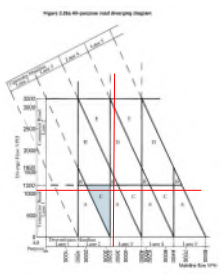
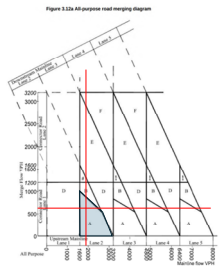
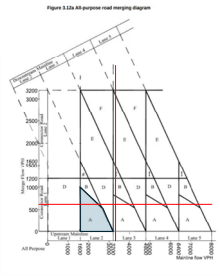
Junction Name	Southbound On-Slip Merge			
	AM		PM	
	Intermain	2545	Intermain	3632
	Southbound On-Slip Merge	284	Southbound On-Slip Merge	12
A23 A281				
	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream. No change over pre-covid scenario	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream No change over pre-covid scenario
	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments				

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

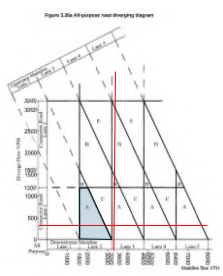
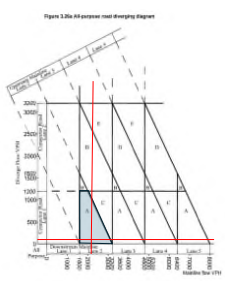
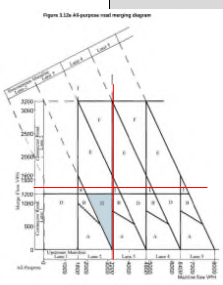
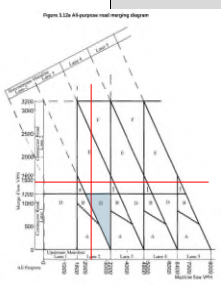
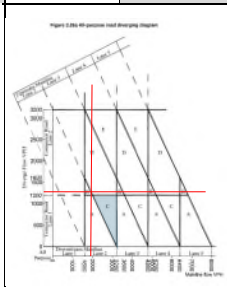
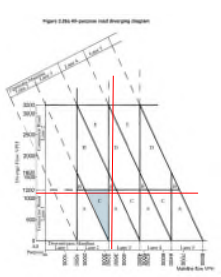
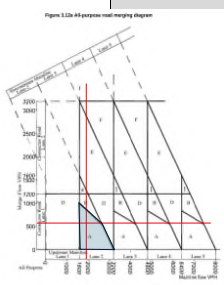
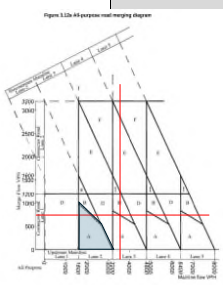
Junction Name	Southbound On-Slip Merge			
	AM		PM	
	Intermain	2778	Intermain	3624
	Southbound On-Slip Merge	317	Southbound On-Slip Merge	12
A23 A281				
	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream Improvement over pre-covid scenario	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream No change over pre-covid assessment
	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	No as there is sufficient capacity in both existing mainline and diverge	Change required?	Yes - The slip road merge has sufficient capacity, however the mainline requires a 3rd lane
Comments				

A23 A2300

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

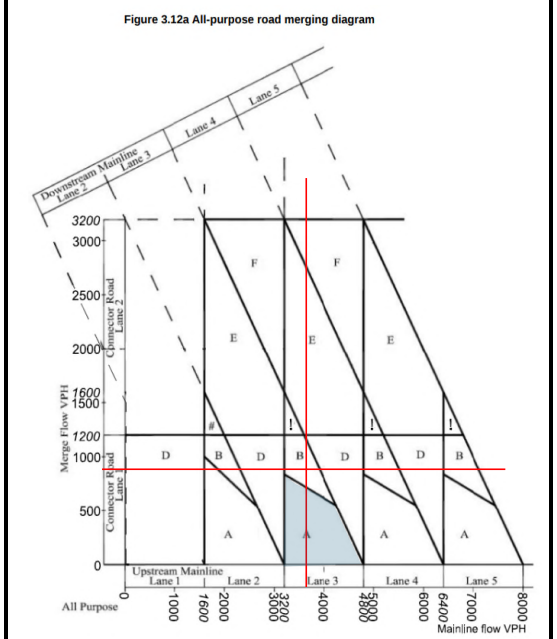
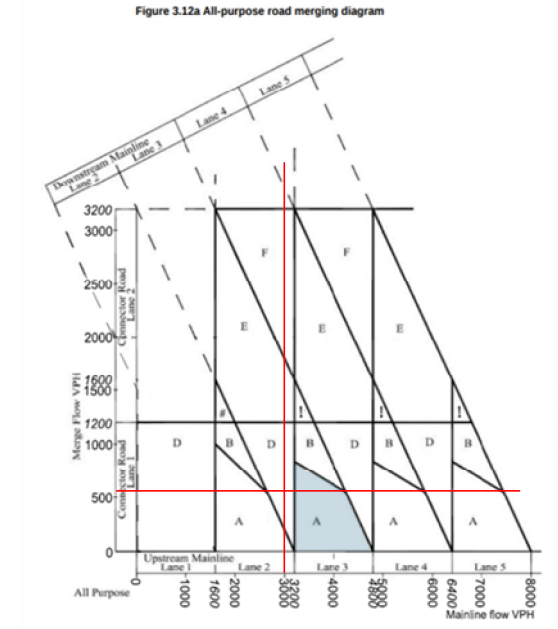
	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
Junction Name	Intermain	3038	Intermain	1909	Intermain	3038	Intermain	1909	Intermain	1867	Intermain	3304	Intermain	1867	Intermain	3304
	Northbound Off-Slip Diverge	214	Northbound Off-Slip Diverge	61	Northbound On-Slip Merge	1266	Northbound On-Slip Merge	1436	Southbound Off-Slip Diverge	1307	Southbound Off-Slip Diverge	1049	Southbound On-Slip Merge	665	Southbound On-Slip Merge	662
A23 / A2300 Hickstead Lane																
	Assessed Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream Improvement over pre-covid assessment	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream	Assessed Layout =	Type B layout with 2 lanes downstream and 2 lanes upstream Improvement over pre-covid assessment	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Assessed Layout =	Type A layout with 3 lanes upstream and 3 lanes downstream Improvement over pre-covid assessment
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - The layout type requires upgrading to a Type C	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - the upstream mainline requires upgrading to 3 lanes and the merge requires to be upgraded to Type E	Change required?	Yes - there is capacity in the existing mainline but the merge requires to be upgraded to Type E	Change required?	No as there is sufficient capacity in both existing mainline and diverge	Change required?	Yes - the downstream mainline require upgrading to 3 lanes	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - the existing mainline requires upgrading to 3 lanes upstream
Comments																

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

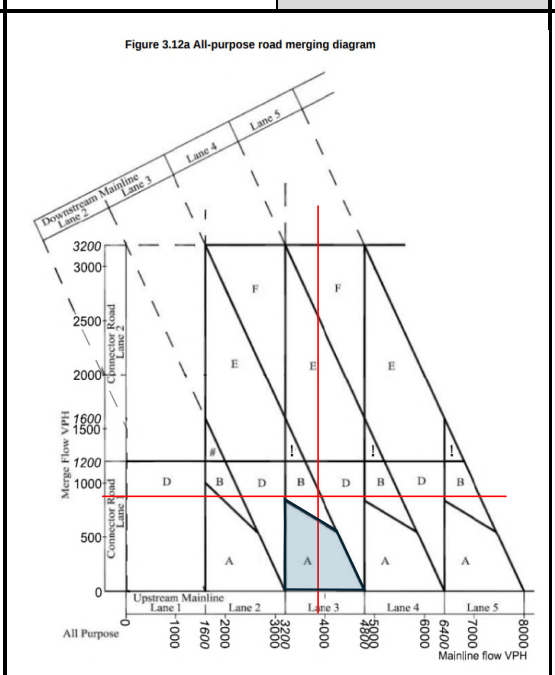
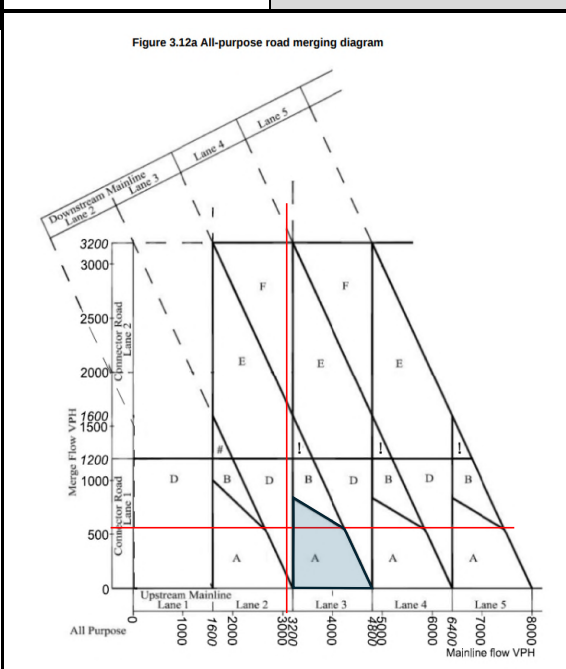
	Northbound Off-Slip Diverge				Northbound On-Slip Merge				Southbound Off-Slip Diverge				Southbound On-Slip Merge			
	AM		PM		AM		PM		AM		PM		AM		PM	
Junction Name	Intermain	3203	Intermain	2125	Intermain	3203	Intermain	2125	Intermain	1966	Intermain	3425	Intermain	1966	Intermain	3425
	Northbound Off-Slip Diverge	282	Northbound Off-Slip Diverge	70	Northbound On-Slip Merge	1333	Northbound On-Slip Merge	1429	Southbound Off-Slip Diverge	1308	Southbound Off-Slip Diverge	1093	Southbound On-Slip Merge	704	Southbound On-Slip Merge	736
A23 / A2300 Hickstead Lane																
	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream Improvement over pre-covid assessment	Assessed Layout =	Type E layout with 2 lanes upstream and 3 lanes downstream No change over pre-covid scenario	Assessed Layout =	Type B layout with 2 lanes downstream and 2 lanes upstream Improvement over pre-covid assessment	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream Improvement over pre-covic assessment	Assessed Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream Improvement over pre-covid assessment	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream No change over pre-covid assessment
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type D layout with 2 lanes upstream and 3 lanes downstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type C layout with 2 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream	Ex. Layout =	Type A layout with 2 lanes upstream and 2 lanes downstream
	Change required?	Yes - the existing mainline needs to be upgraded to 3 lanes downstream and 3 lanes upstream but the diverge Type can remain	Change required?	No as there is significant capacity in both existing mainline and diverge	Change required?	Yes - the existing mainline needs upgraded to 3 lanes upstream	Change required?	Yes - there is capacity in the existing mainline but the merge requires to be upgraded to Type E	Change required?	No as there is significant capacity in the existing mainline and the diverge remains within capacity	Change required?	Yes - the existing mainline need upgraded to 3 lanes downstream and 4 lanes upstream and the diverge to Type D	Change required?	No as there is significant capacity in both existing mainline and merge	Change required?	Yes - the existing mainline requires 3 lanes upstream and downstream and the merge requires to be upgraded to Type B
Comments																

A23 B2110

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

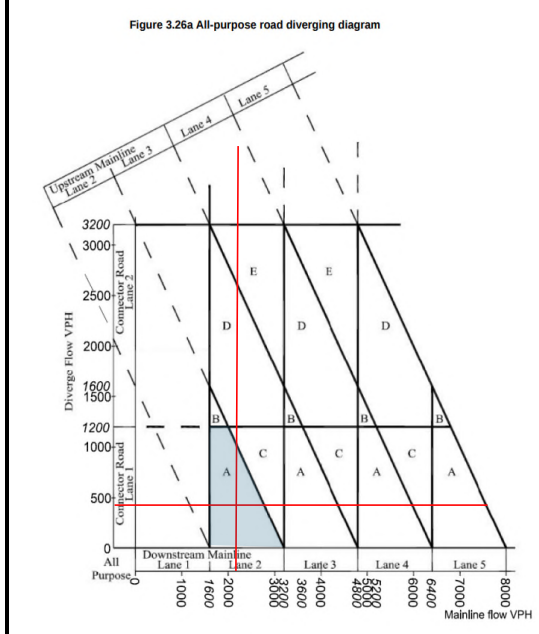
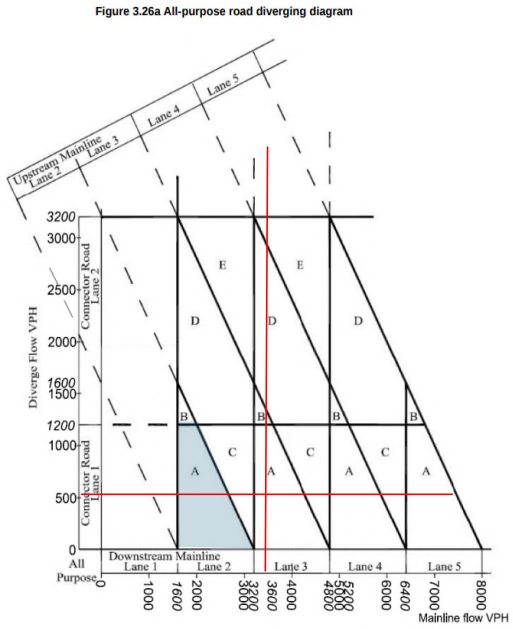
	Northbound On-Slip Merge			
	AM		PM	
Junction Name	Intermain	3687	Intermain	2986
	Northbound On-Slip Merge	899	Northbound On-Slip Merge	549
A23 B2110				
	Assessed Layout =	Type B layout with 3 lanes upstream and 3 lanes downstream	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	Yes - the mainline has sufficient capacity but the the slip road merge requires an upgrade to Type B	Change required?	No as there is significant capacity on both the existing mainline and merge
Comments				

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

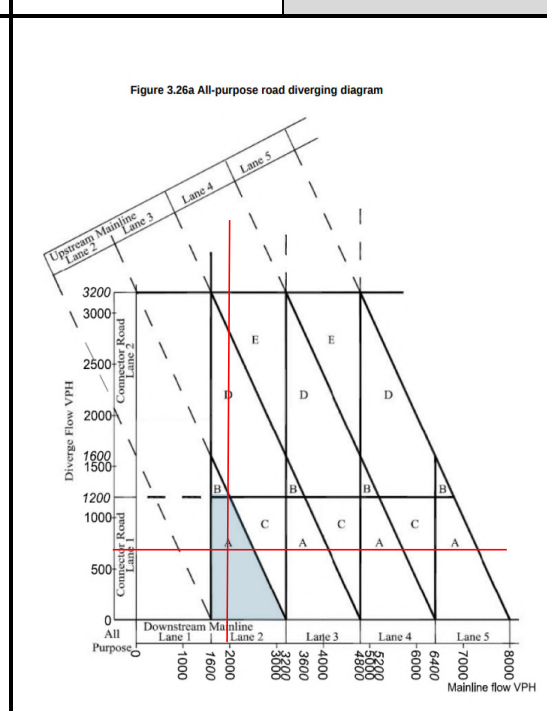
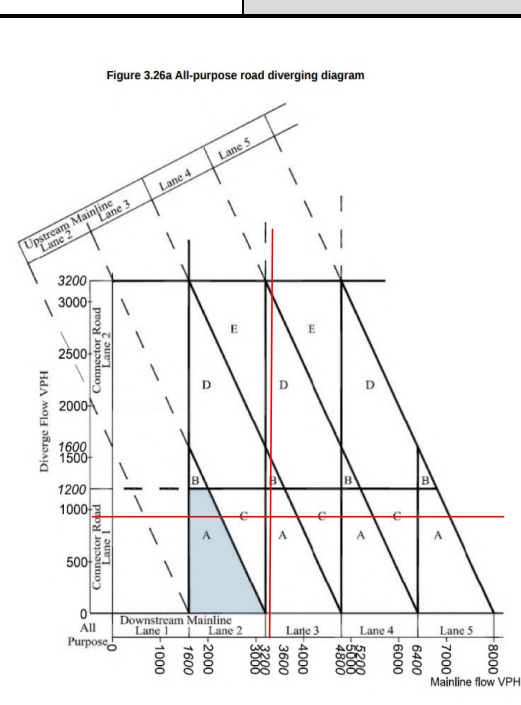
	Northbound On-Slip Merge			
	AM		PM	
Junction Name	Intermain	3924	Intermain	3072
	Northbound On-Slip Merge	880	Northbound On-Slip Merge	523
A23 B2110				
	Assessed Layout =	Type B layout with 3 lanes downstream and 3 lanes upstream Reduced requirement over pre-covid assessment	Assessed Layout =	Type D layout with 3 lanes downstream and 2 lanes upstream Reduced requirement over pre-covid assessment
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	Yes - The merge requires to be upgraded to Type B	Change required?	No as there is significant capacity on both the existing mainline and diverge
Comments	Type B layout will be close to limit of capacity for projected flows			

A23 B2118

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

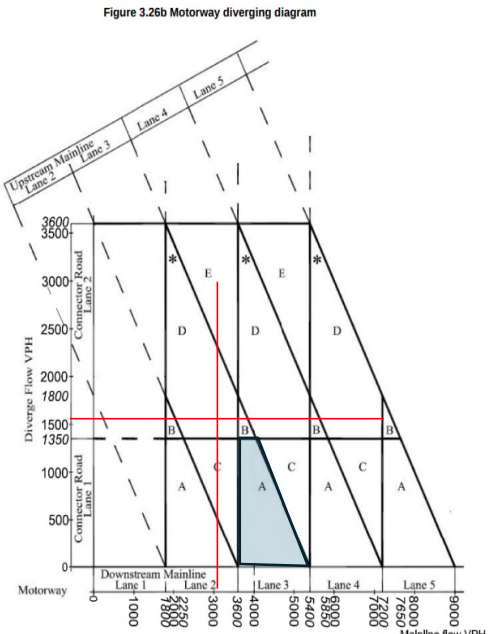
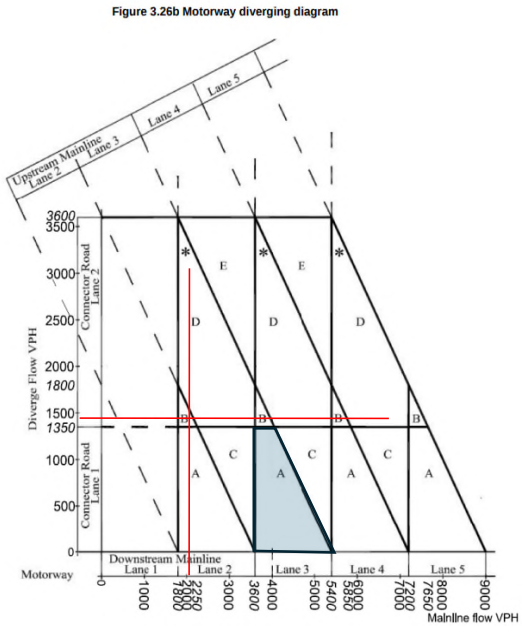
Junction Name	Southbound Off-Slip Diverge			
	AM		PM	
	Intermain	2083	Intermain	3461
	Southbound Off-Slip Diverge	450	Southbound Off-Slip Diverge	504
A23 / B2118				
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream No change over pre-covid assessment	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream No change over pre-covid assessment
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the mainline requires a 3rd lane.
Comments				

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

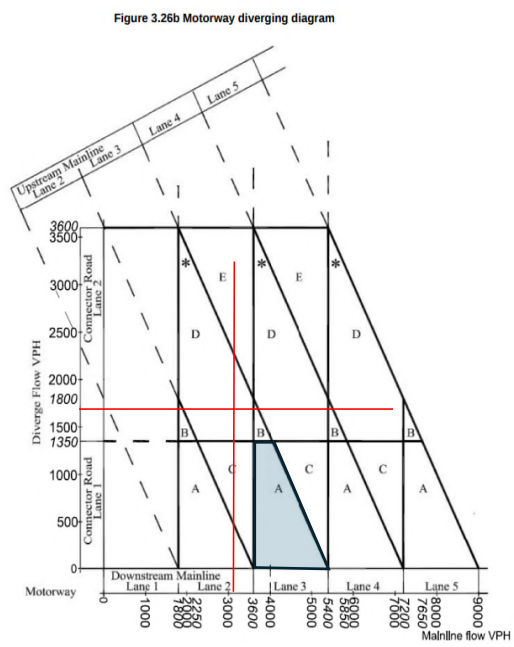
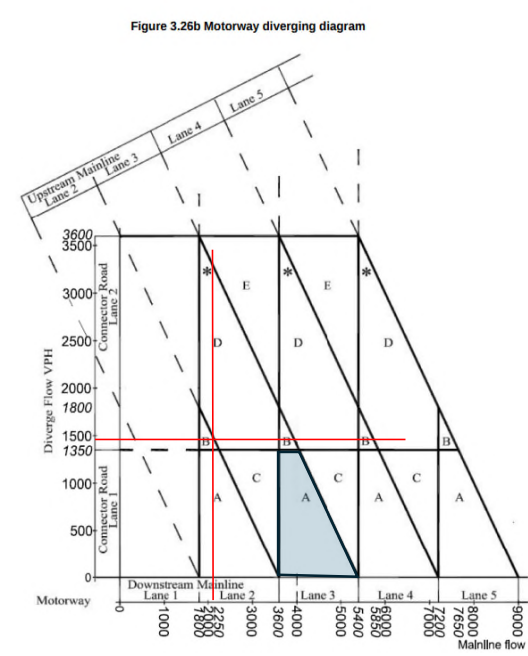
Junction Name	Southbound Off-Slip Diverge			
	AM		PM	
	Intermain	1992	Intermain	3257
	Southbound Off-Slip Diverge	680	Southbound Off-Slip Diverge	904
A23 / B2118				
	Assessed Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream No change over pre-covid assessment	Assessed Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream No change over pre-covid assessment
	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream	Ex. Layout =	Type A layout with 2 lanes downstream and 2 lanes upstream
	Change required?	No as there is significant capacity on both the existing mainline and diverge	Change required?	Yes - the mainline requires a 3rd lane.
Comments				

M23 J11

2039 Reference Case - COVID Reduction (11% AM and 10% PM)

Junction Name	Northbound Off-Slip Diverge			
	AM		PM	
	Intermain	3033	Intermain	2085
	Northbound Off-Slip Diverge	1553	Northbound Off-Slip Diverge	1451
M23 J11	Figure 3.26b Motorway diverging diagram 		Figure 3.26b Motorway diverging diagram 	
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream - Remains the same as pre-covid assessment	Assessed Layout =	Type B layout with 2 lanes downstream and 2 lanes upstream Reduced requirement over pre-covid assessment
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type B
Comments			Type B layout will be close to limit of capacity for projected flows	

Scenario 6m2 - COVID Reductions (11% AM and 10% PM)

Junction Name	Northbound Off-Slip Diverge			
	AM		PM	
	Intermain	3113	Intermain	2137
	Northbound Off-Slip Diverge	1691	Northbound Off-Slip Diverge	1458
M23 J11	Figure 3.26b Motorway diverging diagram 		Figure 3.26b Motorway diverging diagram 	
	Assessed Layout =	Type D layout with 2 lanes downstream and 3 lanes upstream	Assessed Layout =	Type B layout with 2 lanes downstream and 2 lanes upstream
	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream	Ex. Layout =	Type A layout with 3 lanes downstream and 3 lanes upstream
	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type D	Change required?	Yes - There is significant capacity on the existing mainline but the diverge requires to be upgraded to Type B
Comments			Type B layout will be close to limit of capacity for projected flows	

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