Technical Note

Project Title:	LATIS: Support to Planning Reform
MVA Project Number:	C3A03000
Subject:	TAYplan Do Minimum Plus Traffic Routing Analysis
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1 Introduction

1.1 In June 2010, TAYplan commissioned MVA to undertake a transport assessment of alternative spatial development plans for the TAYplan area using the National Models within the LATIS service. This work has been undertaken in partnership with TACTRAN and Transport Scotland and is described in the TAYplan Strategic Development Plan LATIS Assessment Final Report (MVA Consultancy, September 2010). That Report should be read in conjunction with this Technical Note to provide further background and explanations relating to the specification and outcomes from model runs, planning scenarios and reasoning & appropriateness in the use of the National models.

1.2 This Note provides further information on the modelled traffic routing impacts of the Do Minimum Plus transport intervention scenario that has been considered in the assessment.

2 Transport Scenarios

2.1.1 Two transport scenarios have been considered when assessing the impact of the spatial development plans, viz:

- LATIS Do Minimum; and
- Do Minimum Plus.

2.1.2 The specification of the transport schemes included in the Do Minimum can be found at the following web link:

http://www.latis.org.uk/services/modelling/library/download_reports/TMfS07_DoMinSchemesAssumptions_13012010.pdf

2.2 The Do Minimum Plus comprises the LATIS Do Minimum network with the addition of the following interventions:

- Upgrading of the A90 through Dundee along the Kingsway, which is a theoretical representation of the STPR Project 29;
- The A9 to A94 link road, north of Perth; and
- The Tactran Park and Ride strategy.

2.3 The Do Minimum Plus intervention scenario was combined with the TAYplan Spatial Plan A (LU2) demographic scenario and a model run undertaken for the 2032 visionary year. The model forecast data was compared with the equivalent Do Minimum LU2 model run (which is presented in the Final Report) for the AM Peak Hour only.

2.4 The following sections of this Note describe the comparison of the two transport scenarios in terms of traffic routing on the TAYplan strategic road network and in and around Dundee.

3 Strategic Traffic

3.1 Table 3.1 presents AM Peak hour Do Minimum and Do Minimum Plus vehicle flows at key locations on the TAYplan boundary. This table also details the proportion of vehicles which are strategic through trips (ie an origin and destination outwith the TAYplan area). Figures 3.1 to 3.3 provide a summary of this data.

Table 3.1 Strategic Travel Movements (AM peak hour)

Corridor and Direction	Inbound / Outbound	2032 LU2 Do Minimum			2032 LU2 Do Minimum Plus			Difference		
		Volume	Strategic Through Trips	% Strategic Through Trips	Volume	Strategic Through Trips	% Strategic Through Trips	Volume	Strategic Through Trips	% Strategic Through Trips
A92 North of Glenrothes - Northbound	Inbound	1,780	50	3%	1,770	40	2%	-10	-10	-1%
A92 North of Glenrothes - Southbound	Outbound	1,440	30	2%	1,430	20	1%	-10	-10	-1%
M90 between Jct 4 and Jct 5 - Northbound	Inbound	1,980	640	32%	1,990	640	32%	10	0	0%
M90 between Jct 4 and Jct 5 - Southbound	Outbound	1,820	370	20%	1,820	380	21%	0	10	1%
A9 North of Dunblane - Eastbound	Inbound	1,030	450	30%	1,030	430	29%	0	-20	-1%
A9 North of Dunblane - Westbound	Outbound	940	180	16%	950	180	16%	10	0	0%

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Corridor and Direction	Inbound / Outbound	2032 LU2 Do Minimum			2032 LU2 Do Minimum Plus			Difference		
		Volume	Strategic Through Trips	% Strategic Through Trips	Volume	Strategic Through Trips	% Strategic Through Trips	Volume	Strategic Through Trips	% Strategic Through Trips
A9 South of Dalwhinnie – Southbound	Inbound	320	180	56%	300	160	53%	-20	-20	-3%
A9 South of Dalwhinnie - Northbound	Outbound	410	330	80%	410	330	80%	0	0	0%
A90 North of Brechin - Southbound	Inbound	420	210	50%	420	220	52%	0	10	2%
A90 North of Brechin - Northbound	Outbound	1,380	790	57%	1,380	790	57%	0	0	0%
Tay Bridge - Northbound	Internal	2,720	50	2%	2,690	40	1%	-30	-10	0%
Tay Bridge - Southbound	Internal	2,040	20	1%	1,980	10	1%	-60	-10	0%
A90 between Perth and Dundee – Eastbound	Internal	2,130	600	28%	2,190	520	24%	60	-80	-4%
A90 between Perth and Dundee - Westbound	Internal	1,750	170	10%	1,860	200	11%	110	30	1%

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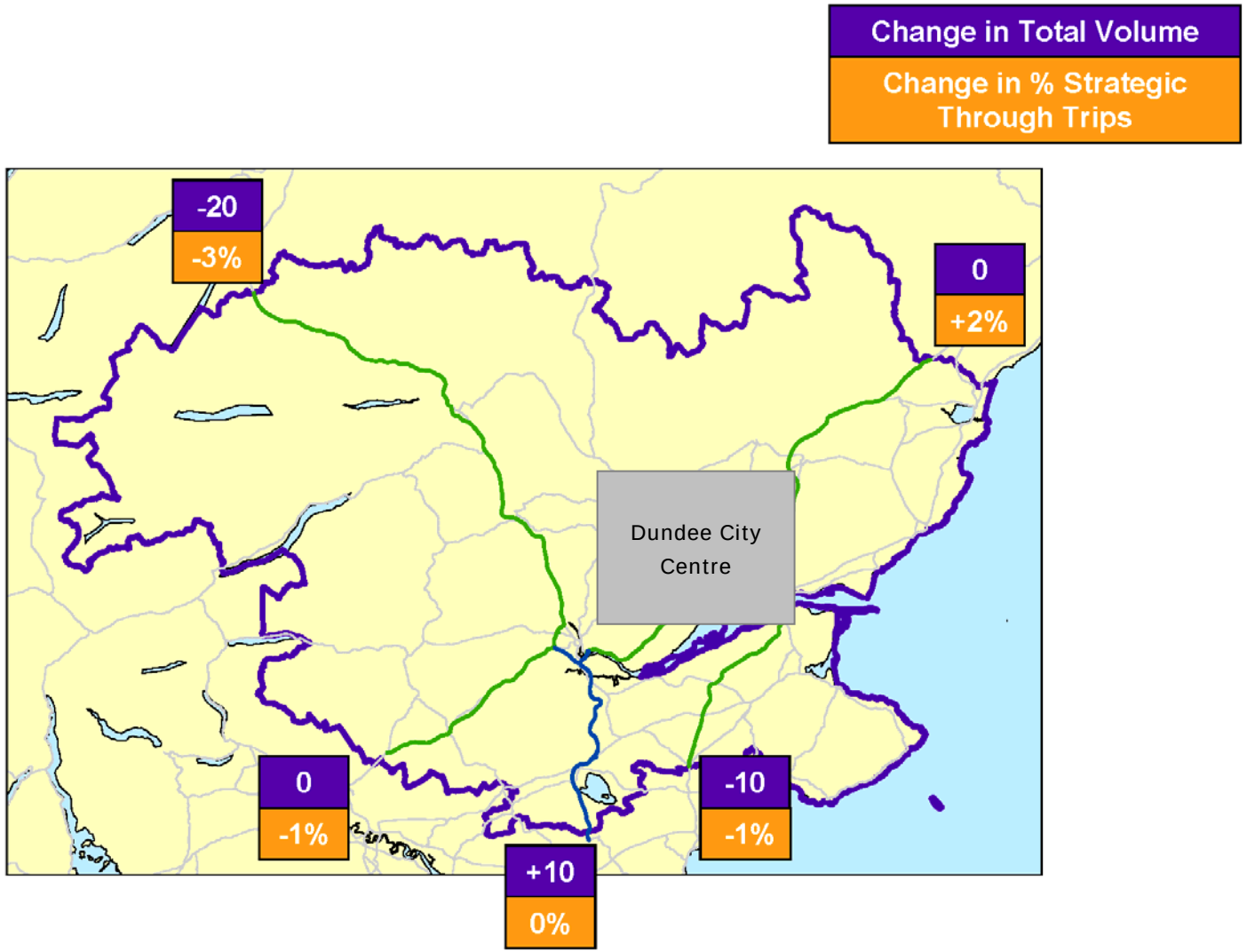

Figure 3.1 Change in Strategic Traffic Routing – TAYplan Boundary - Inbound

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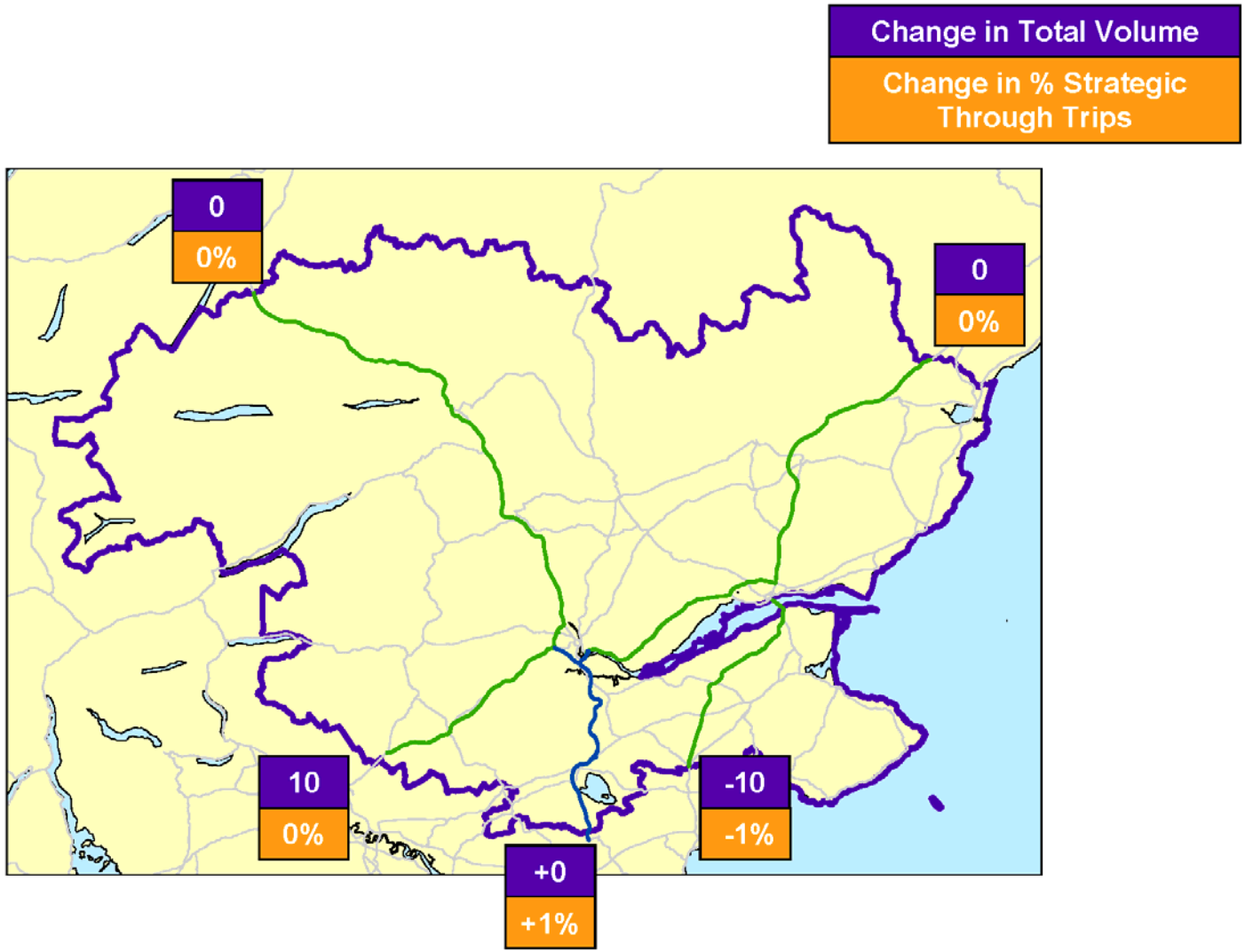

Figure 3.2 Change in Strategic Traffic Routing – TAYplan Boundary - Outbound

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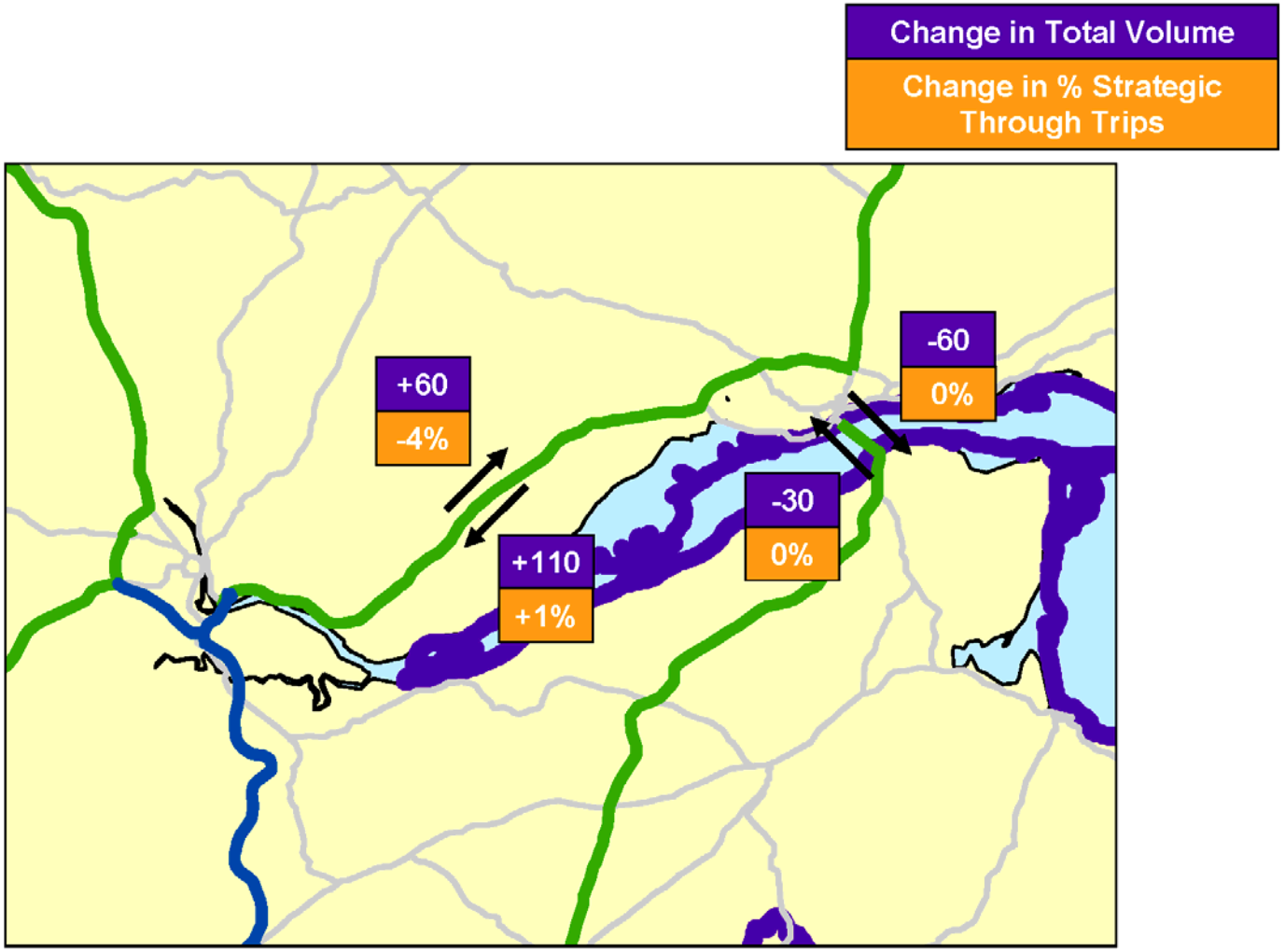

Figure 3.3 Change in Strategic Traffic Routing – TAYplan Internal

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3.2 Examination of Table 3.1 and Figures 3.1 to 3.2 reveals the following key points.

- There is relatively minor change in the volume of traffic and the proportion of strategic through traffic on road links at the TAYplan boundary. The model effects of destination choice and mode choice are represented in these model runs, but the impacts of Land Use changes is not. It is likely that, as the inclusion of the A90 upgrade at Dundee would provide improved accessibility to 'the North East' it could have a greater impact on uptake of housing and development to the north of Dundee – consequently increasing the level of strategic movements through the TAYplan area. In this analysis, the assumption is that there is no overall change in the planning data between tests for this 2032 forecast either within the TAYplan area or outwith.
- There is a small reduction in traffic on the TAY road bridge (-30 (-1%) northbound, -60 (-3%) southbound), however, there is no change in the proportion of strategic through traffic. The reduction in traffic is due to reassignment onto the A90 resulting from the capacity relief on the Kingsway in the Do Minimum Plus, which reduces journey times and makes it a more attractive route. There is a corresponding reduction in strategic through traffic on the TAY road bridge with no change in the composition of local versus strategic through traffic. This is not unexpected given the very low proportion in strategic through traffic in the Do Minimum network, reflective of the bridge primarily providing a connection between Fife and Dundee.
- There is an increase in traffic on the A90 between Perth and Dundee (+60 (+3%) eastbound, +110 (+6%) westbound). This is reflective of two factors: reassignment of traffic from parallel routes (principally the A92 through Fife) and redistribution of travel demand with more traffic destined for Dundee with a decrease in outlying areas. These factors both arise from the capacity relief on the Kingsway in the Do Minimum Plus, which reduces journey times and makes it a more attractive route and Dundee a more attractive destination.
- There is a reduction in the volume (-80 (-13%)) and proportion (-4%) of strategic through traffic on the A90 eastbound between Perth and Dundee, to the west of the B953. This is a result of the reassignment of strategic through traffic onto the A94 through Angus via the new A9-A94 link road combined with an increase in traffic generated within TAYplan destined for Dundee. These two factors change the composition of local versus strategic through traffic on the A90 eastbound.
- There is relatively small increase in the volume (+30 (+18%)) and proportion (+1%) of strategic through traffic on the A90 westbound between Dundee and Perth. This is largely a result of the reassignment of traffic from parallel routes (the A92 through Fife and the A94 through Angus) which marginally changes the composition of traffic.

4 Impact in Dundee

4.1 Previous analysis of the Do Minimum Plus assigned traffic network indicated that the upgrade of the A90 at Dundee along the Kingsway has a significant impact on traffic routing in the area. In particular there was a significant increase in modelled vehicle kilometres on the A90 at Dundee resulting from the additional capacity associated with the upgrade. There was also evidence of a reassignment of traffic away from routes in Dundee city due to the A90 upgrade.

4.2 In order to better explain this modelled behaviour, a process called 'Select link analysis' has been undertaken for the Do Minimum and Do Minimum Plus networks. This process reveals the volume of traffic on each link throughout the network that is associated with travelling along a specific selected link on the transport network. Figures 4.1 to 4.5 show the change in select link flows in both directions for key locations on a schematic representation of the Dundee modelled road network revealing the change in traffic routing arising from the schemes included in the Do Minimum Plus. Throughout these figures, red denotes an increase in traffic volume (in the Do Minimum Plus) while green denotes a reduction in volume. Appendix A shows the select link flows on the A90 Kingsway for the Do Minimum and Do Minimum Plus networks for information purposes.

4.3 As noted previously, the analysis of the model forecasts focuses on the strategic transport network and does not aim to represent analysis of the more local transport network such as the urban areas of Dundee or Perth and within urban\suburban areas throughout TAYplan. This level of detail should be borne in mind when assessing and interpreting the following figures where more emphasis should be placed in the strategic movements rather than local movements in Dundee.

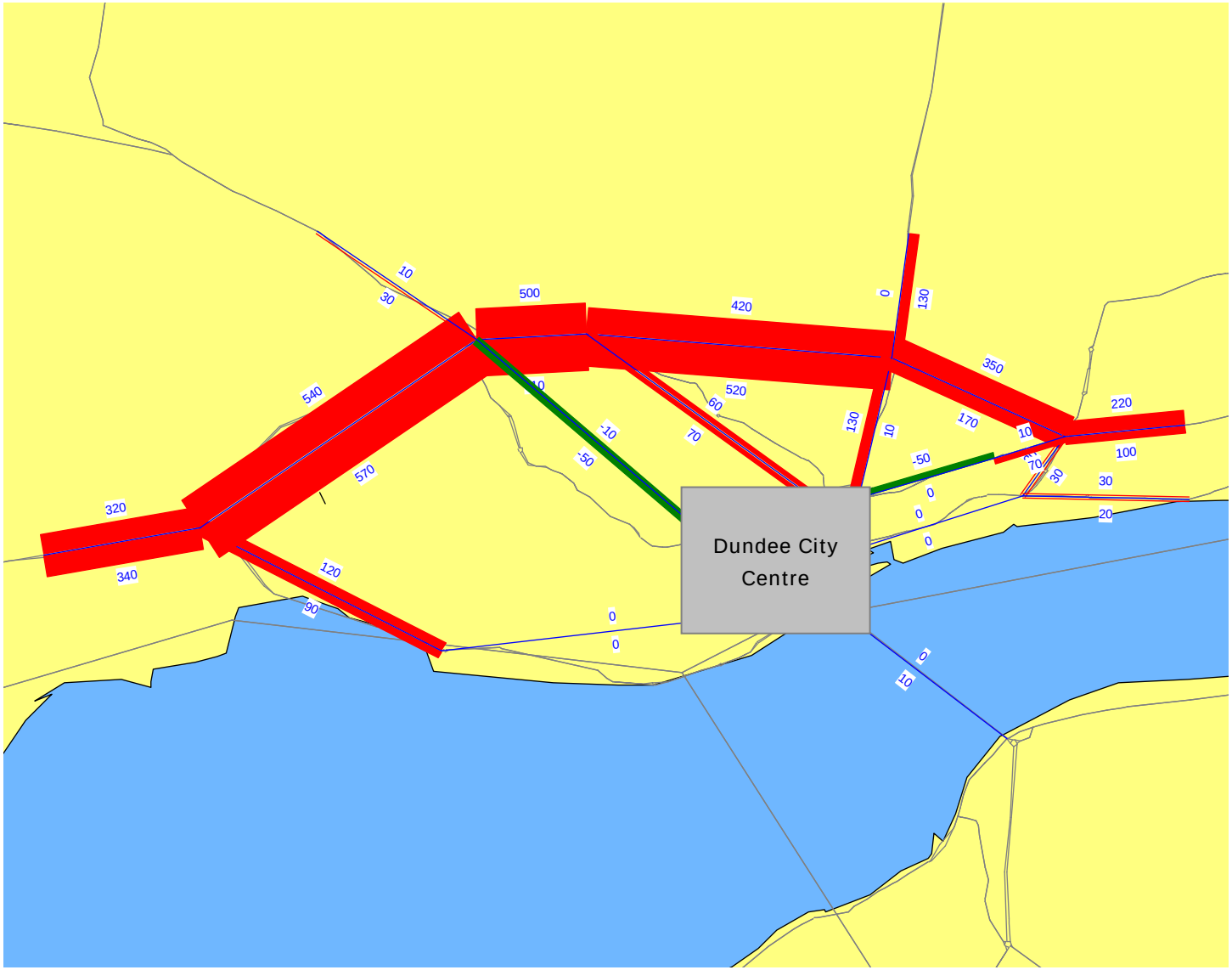

Figure 4.1 Change in Traffic Routing – A90 Kingsway West between Myrekirk Road and A923 (AM peak hour)

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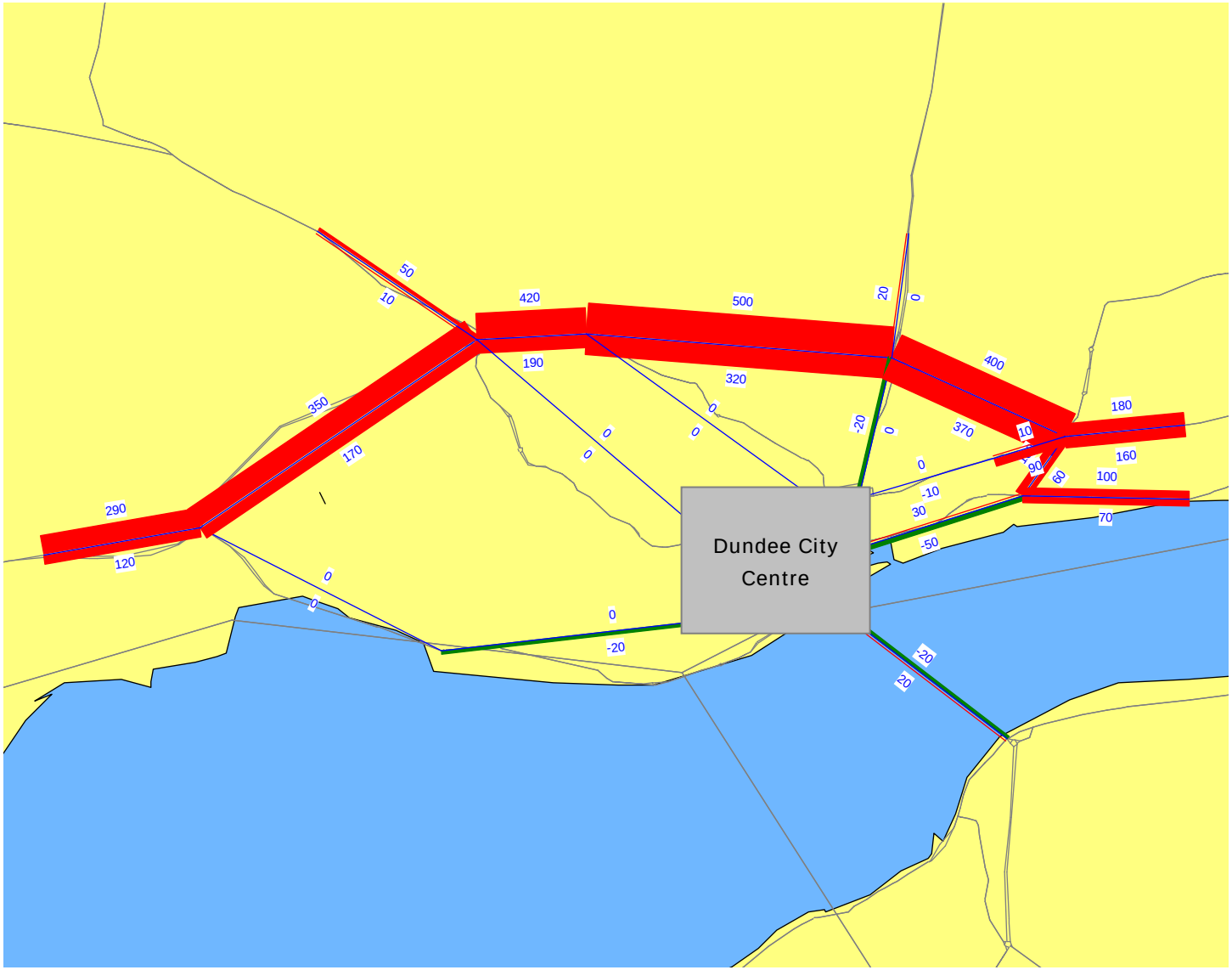

Figure 4.2 Change in Traffic Routing – A972 Kingsway East between Pitkerro Road and B961 Douglas Road (AM peak hour)

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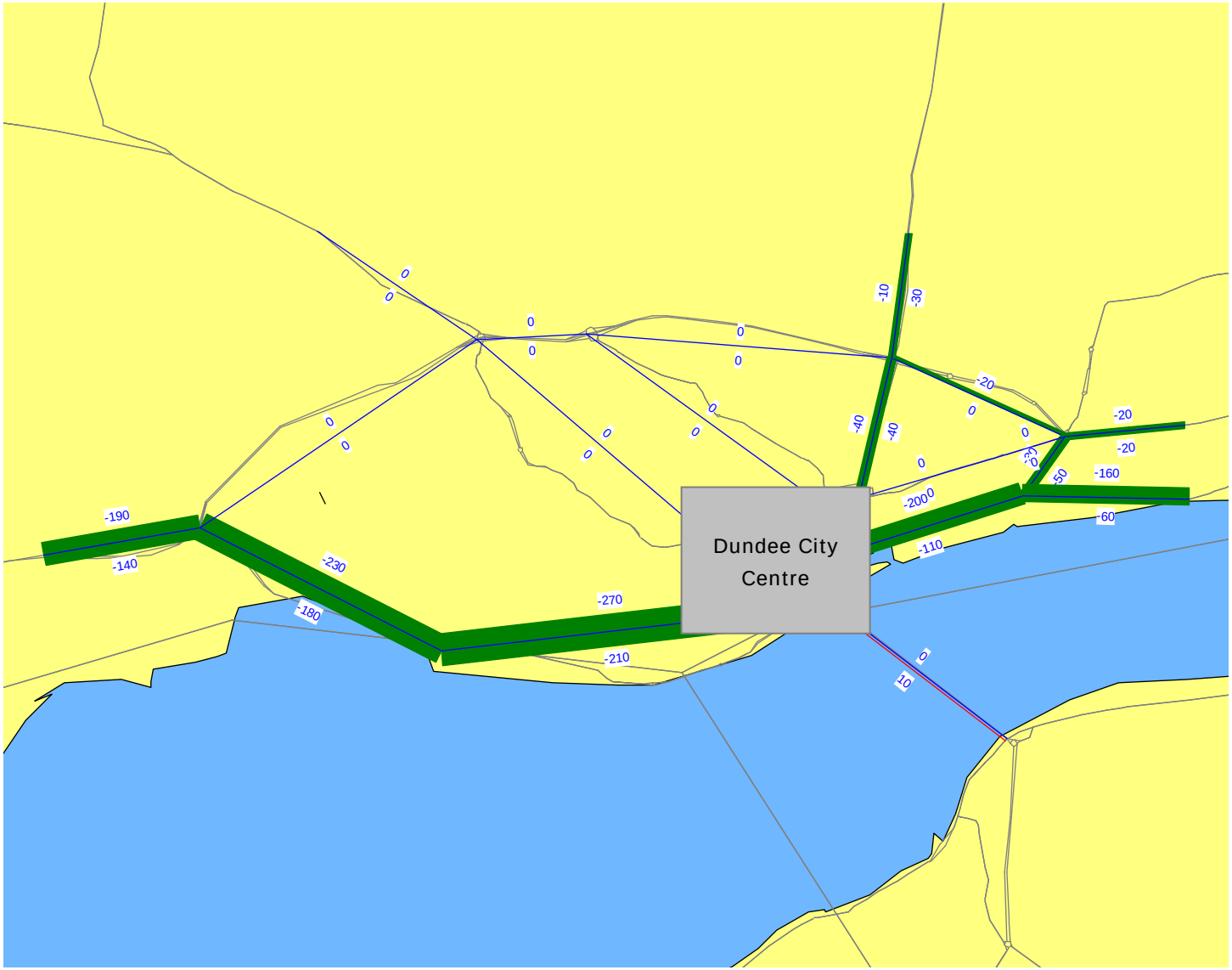

Figure 4.3 Change in Traffic Routing – A85 Riverside Drive between near Dundee Airport (AM peak hour)

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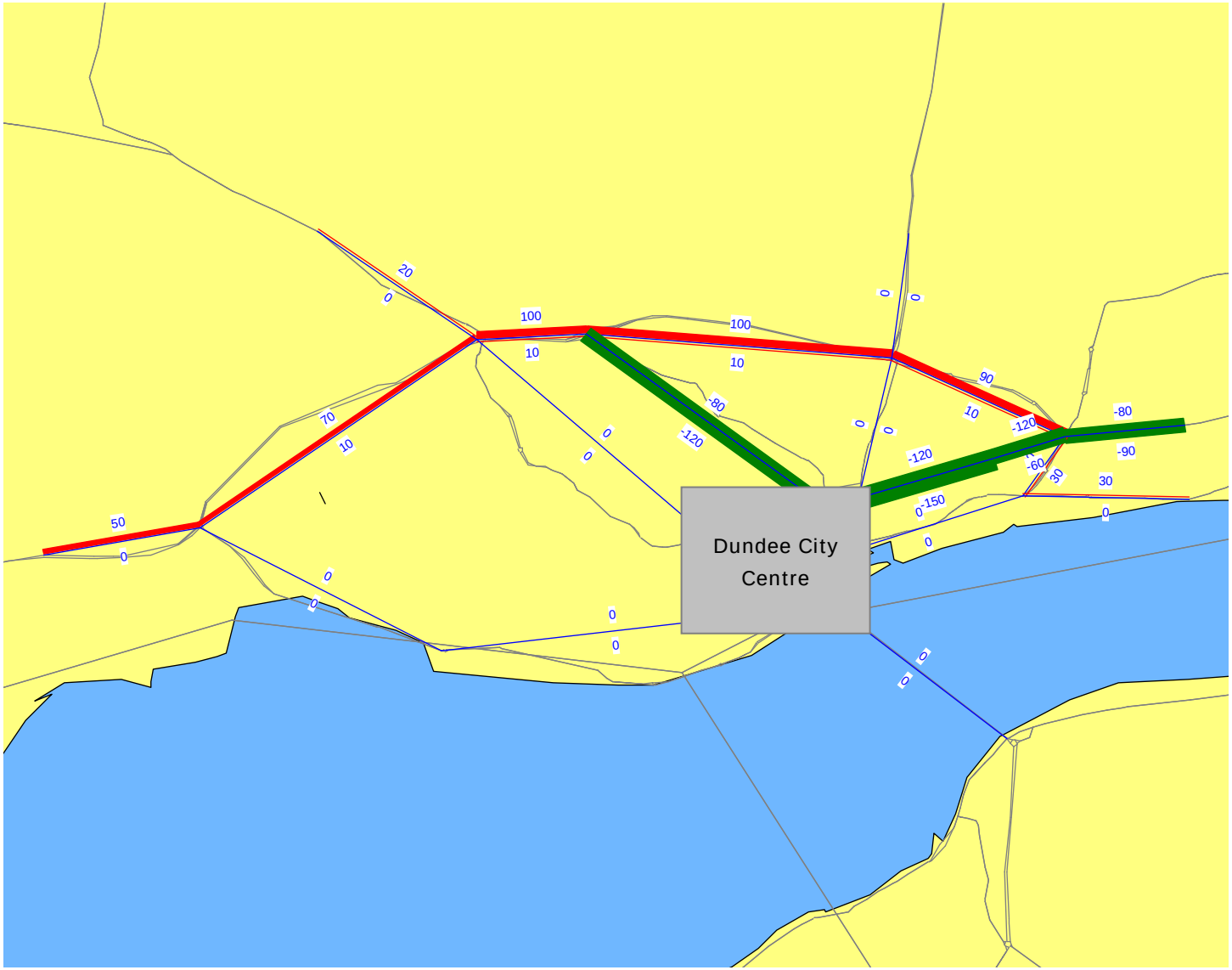

Figure 4.4 Change in Traffic Routing – B959 Arbroath Road west of A972 Kingsway East (AM peak hour)

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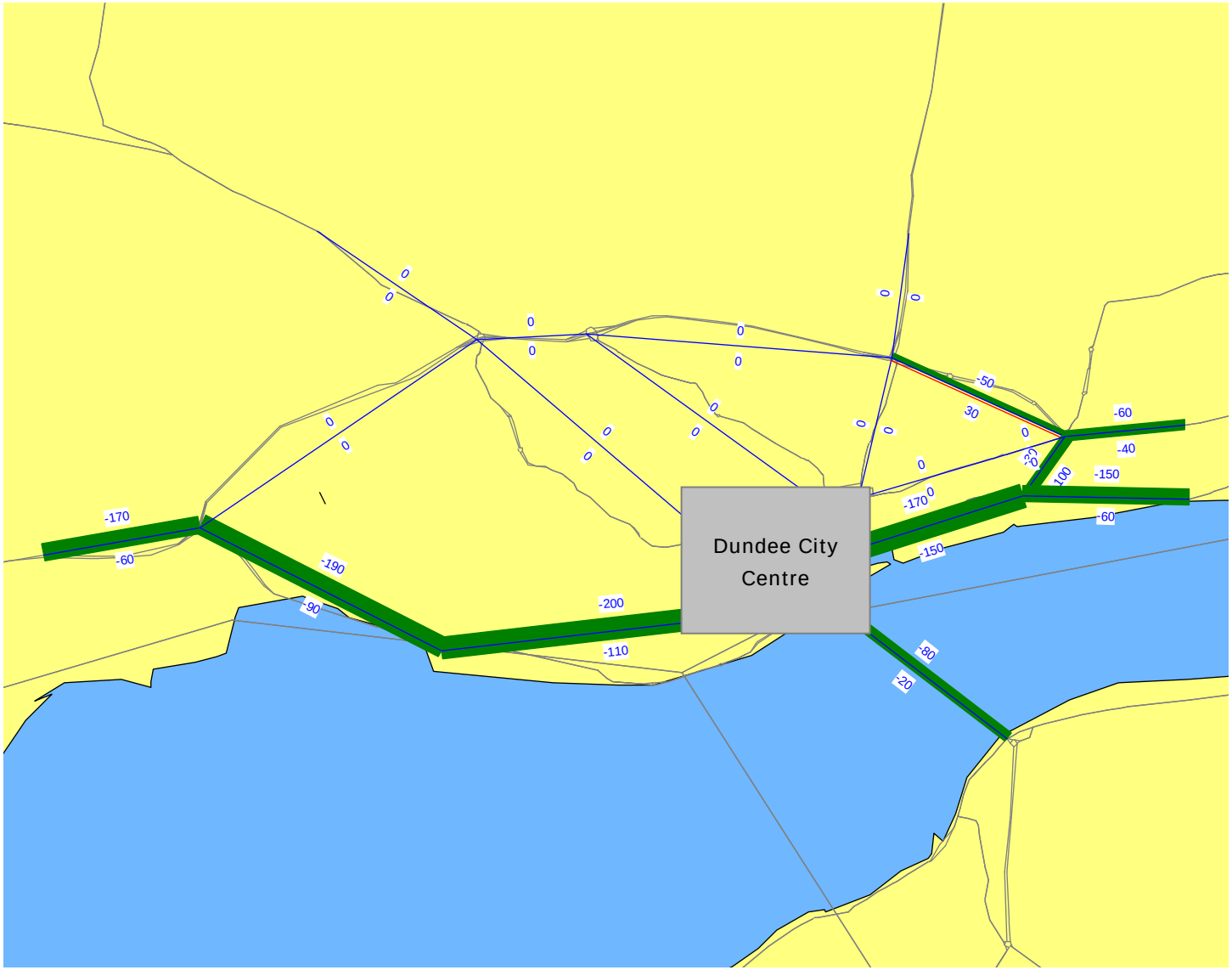

Figure 4.5 Change in Traffic Routing – A92 Broughty Ferry Road west of Greendykes Road (AM peak hour)

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4.4 Examination of Figures 4.1 to 4.5 reveals the following key points.

- Figure 4.1 – there is an increase in traffic on the **A90 Kingsway West between Myrekirk Road and A923** in both directions. Eastbound this mostly originates from the A90 west of Dundee and also from locations near Riverside Avenue and is destined for locations to the east of Dundee city centre on the A92 and B959 Arbroath Road, and locations in Dundee city centre via the B960 Dens Road. Westbound traffic mostly originates from locations to the east of Dundee city centre on the A92 Arbroath Road and on the A90 Forfar Road as well as locations in Dundee city centre via the A929 Forfar Road and B960 Dens Road with a reduction in traffic via the A923 Coupar Angus Road. Westbound traffic is mostly destined for the A90 west of Dundee and also for locations near Riverside Avenue. The increases are as a direct consequence of the improvements to the Kingsway as part of the Do Minimum Plus.
- Figure 4.2 – there is an increase in traffic on the **A972 Kingsway East between Pitkerro Road and B961 Douglas Road** in both directions. This is nearly all traffic travelling between the A90 west of Dundee and the A92 and B959 Arbroath Road and A930 Broughty Ferry Road. As noted for Figure 4.1 above, the increases are as a direct consequence of the improvements to the Kingsway as part of the Do Minimum Plus which will attract traffic onto the Kingsway itself.
- Figure 4.3 – there is a reduction in traffic on the **A85 Riverside Drive near Dundee Airport** in both directions. This is nearly all traffic travelling between the A90 west of Dundee plus locations near Riverside Avenue and the A930 Broughty Ferry Road, A92 Arbroath Road as well as the A90 Forfar Road. From the analysis of Figures 4.1 and 4.2 above, this traffic diverts to the Kingsway for either all or part of their journey across the city.
- Figure 4.4 – there is a reduction in traffic on the **B959 Arbroath Road west of A972 Kingsway East** in both directions. This is made principally made up of two changes in traffic routing: an increase in traffic travelling between the A90 west of Dundee and locations to the east Dundee via the Kingsway and B959 Arbroath Road and a decrease in traffic between the A90 west of Dundee and the A92 Arbroath Road via the B959 Arbroath Road and B960 Dens Road.
- Figure 4.5 – there is a reduction in traffic on the **A92 Broughty Ferry Road west of Greendykes Road** in both directions. This is nearly all traffic travelling between the A930 Broughty Ferry Road plus the A92 Arbroath Road and the A90 west of Dundee as well as locations near Riverside Avenue.

4.5 Drawing together the information above indicates that there is reassignment of traffic onto the A90 at Dundee resulting from the capacity relief on the Kingsway in the Do Minimum Plus, which reduces journey times and makes it a more attractive route. As a consequence, the Kingsway would attract traffic from alternative (Riverside) routes across the city for either all or part of their journey from the Do Minimum Scenario.

4.6 It should be noted that the design of an A90 improvement at Dundee will have critical impact on the actual change in traffic routing. The provision of a bypass would have significantly different traffic volume and composition (i.e. local/strategic traffic) than the provision of an on-line upgrade solution for the A90 at Dundee. Neither option has been tested through this current work and the figures presented are indicative for 'theoretical' upgrade representation of STPR Project 29.

Appendix A – A90 Kingsway Traffic Routing

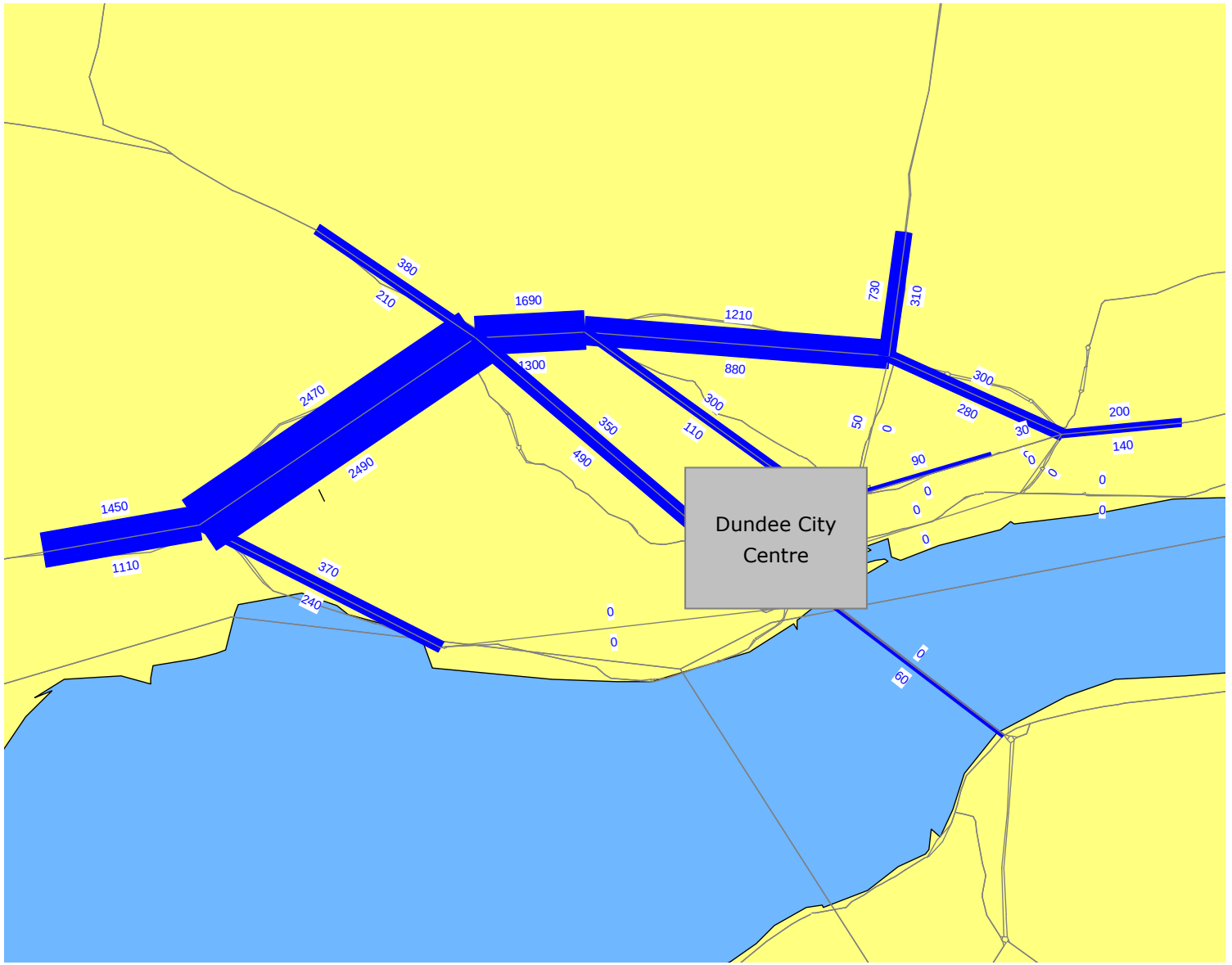

Figure A1 Do Minimum Traffic Routing – A90 Kingsway West between Myrekirk Road and A923 (AM peak hour)

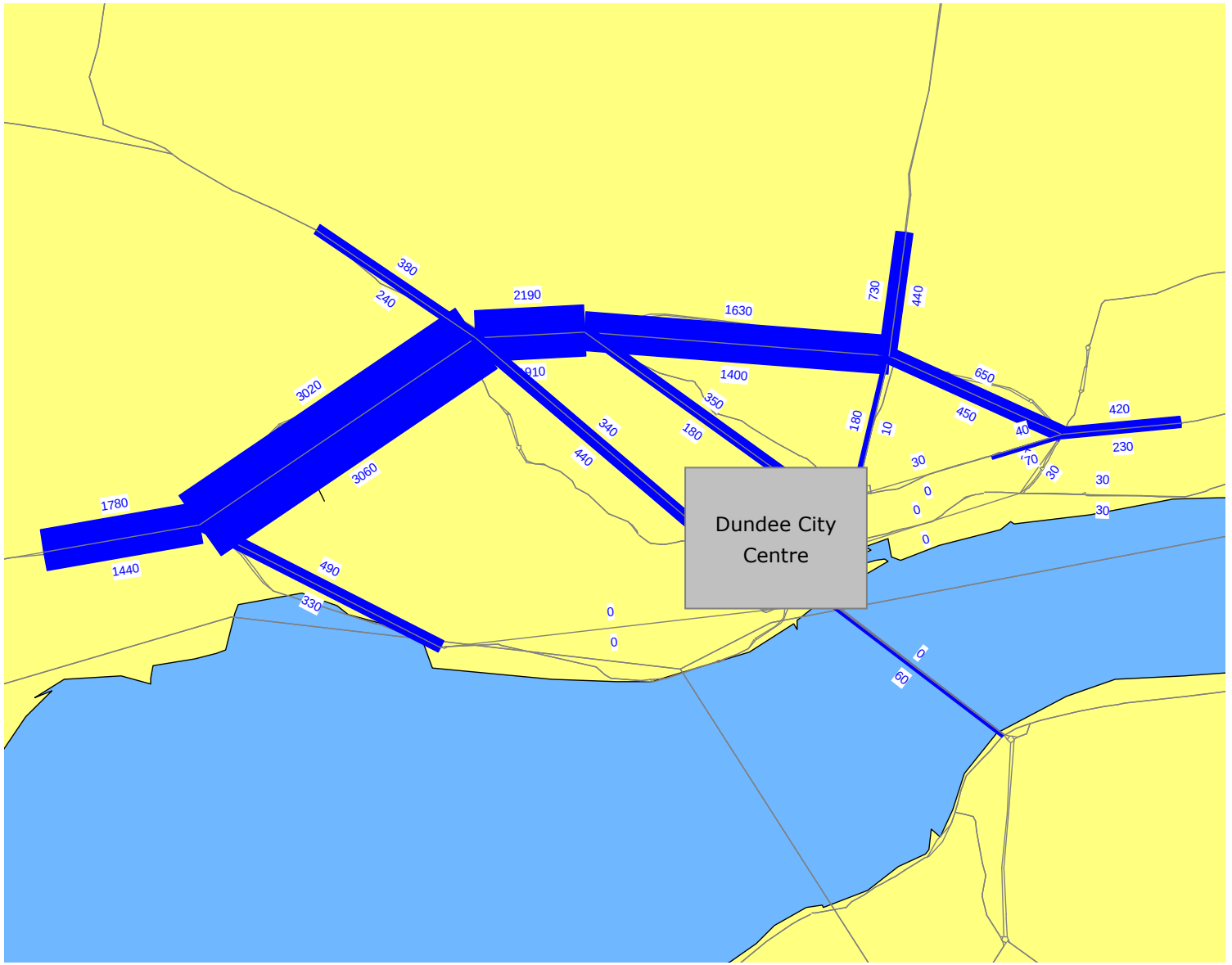

Figure A2 Do Minimum Plus Traffic Routing – A90 Kingsway West between Myrekirk Road and A923 (AM peak hour)