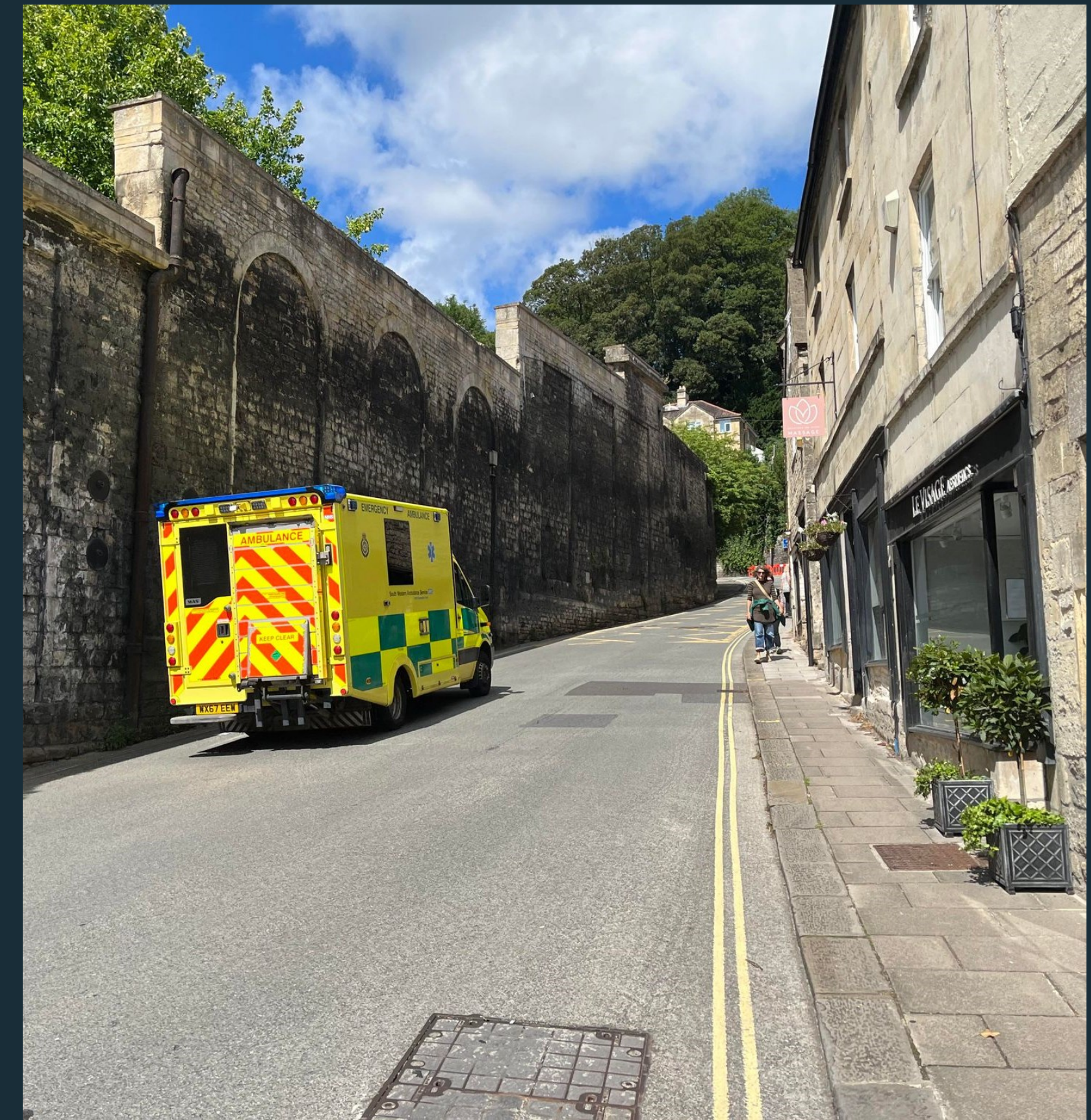


Bradford on Avon Traffic Study

The following slides explain how AtkinsRéalis reviewed and then tested a selection of traffic management schemes for Bradford on Avon.

It shows how the study came to recommend Option C as the option that should be taken forward to the next stage of scheme design by Wiltshire Council.

You can find out more as you look at the slides to follow.



What is the Traffic Study?

In 2021, Bradford on Avon Town Council consulted residents of the town regarding the 'Future of Transport' – to understand local priorities to improve transport within the town.

The consultation highlighted three key issues which local people want to see addressed;

- Pedestrian and cyclist safety
- Traffic volumes
- Air quality

This Traffic Study has looked at options for a traffic management arrangement that can address the issues in the town on a long-term basis. The aims of this study are based on the three key issues identified in the Future of Transport consultation.

Traffic Study aims:

To safely reallocate space to provide high-quality walking and cycling routes

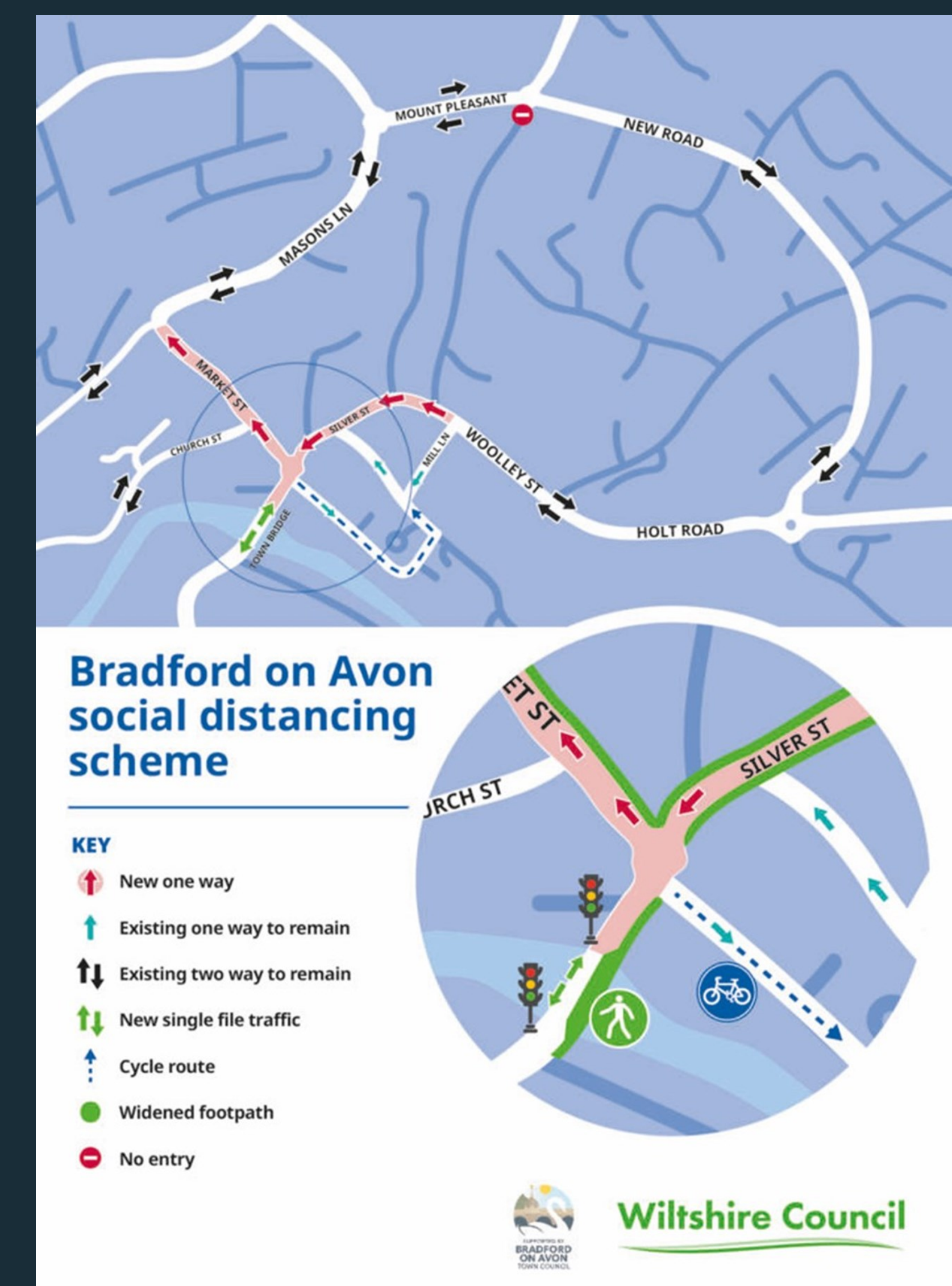
To improve air quality in the town

To facilitate slow but steady traffic movements in the town*

* This Traffic Study hasn't considered measures to reduce through traffic – that is a wider issue that must be considered at a regional level.



Traffic at the top of Silver Street (Source: AtkinsRéalis, 2023)



Bradford on Avon social distancing scheme (Source: Bradford on Avon Town Council, 2020)

What have we done?

We've tested options using a traffic (microsimulation) model

Traffic microsimulation models simulate individual vehicle behaviour on the road network. Options for managing traffic in the town can be programmed into the model, and the changes in how the road network operates can be seen.

General traffic levels are forecast to grow over time. To assess how the different options would operate in the future, we chose 2041 (to represent about 15 years after any potential changes) and factored up traffic based on Government forecasts.

Five model scenarios were tested as part of this study:

2023 Base

Reflects the current situation. Current road network and 2023 traffic – to validate the model.

2041 Do Nothing

No changes to the road network but uses forecast traffic demand for 2041.

2041 Option A

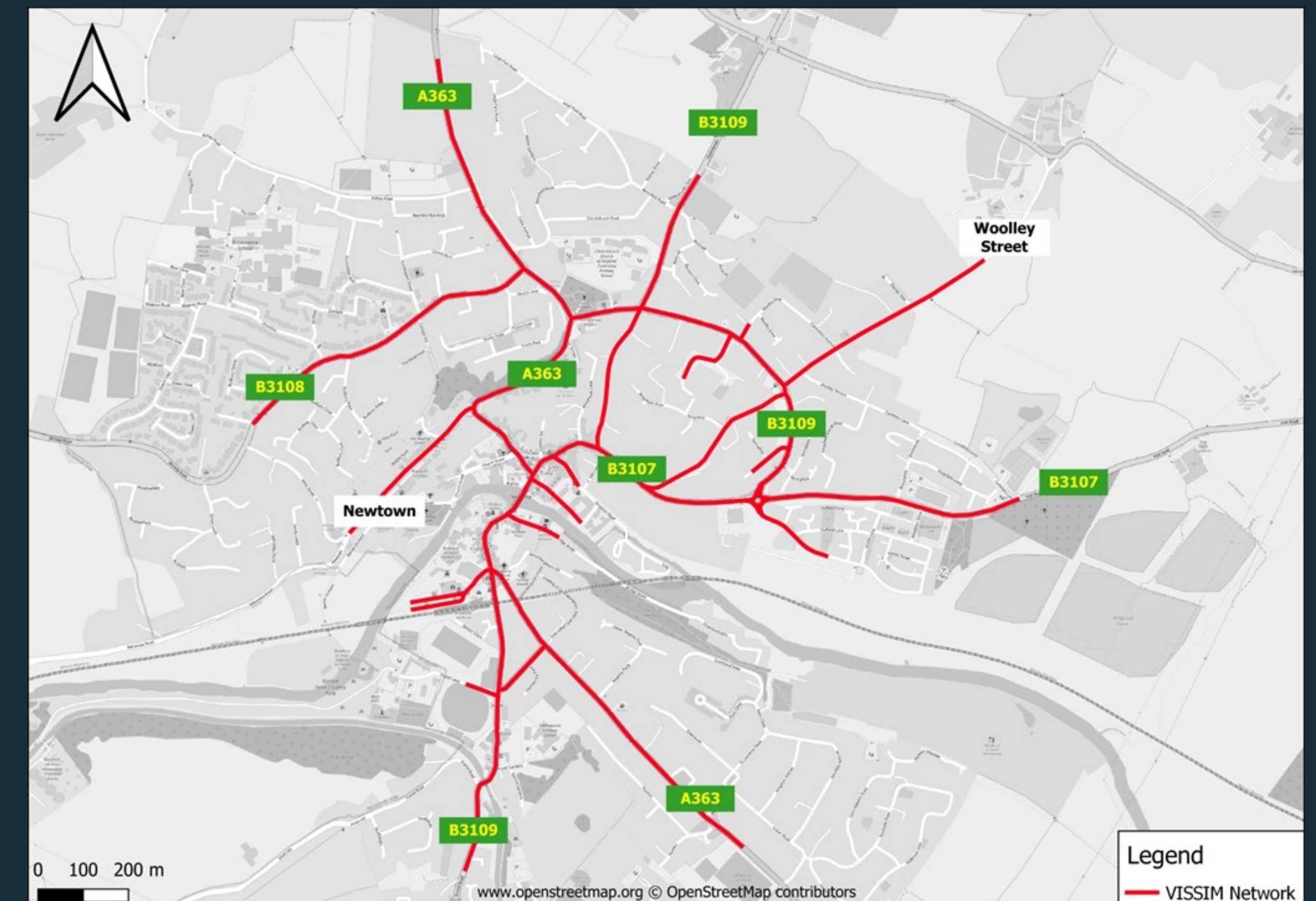
Option A network changes with forecast traffic demand for 2041.

2041 Option B

Option B network changes with forecast traffic demand for 2041.

2041 Option C

Option C network changes with forecast traffic demand for 2041.



Bradford on Avon microsimulation model network
(Source: AtkinsRéalis, 2023)

Data Collection

In order to calibrate and validate the model, the following data was sourced:

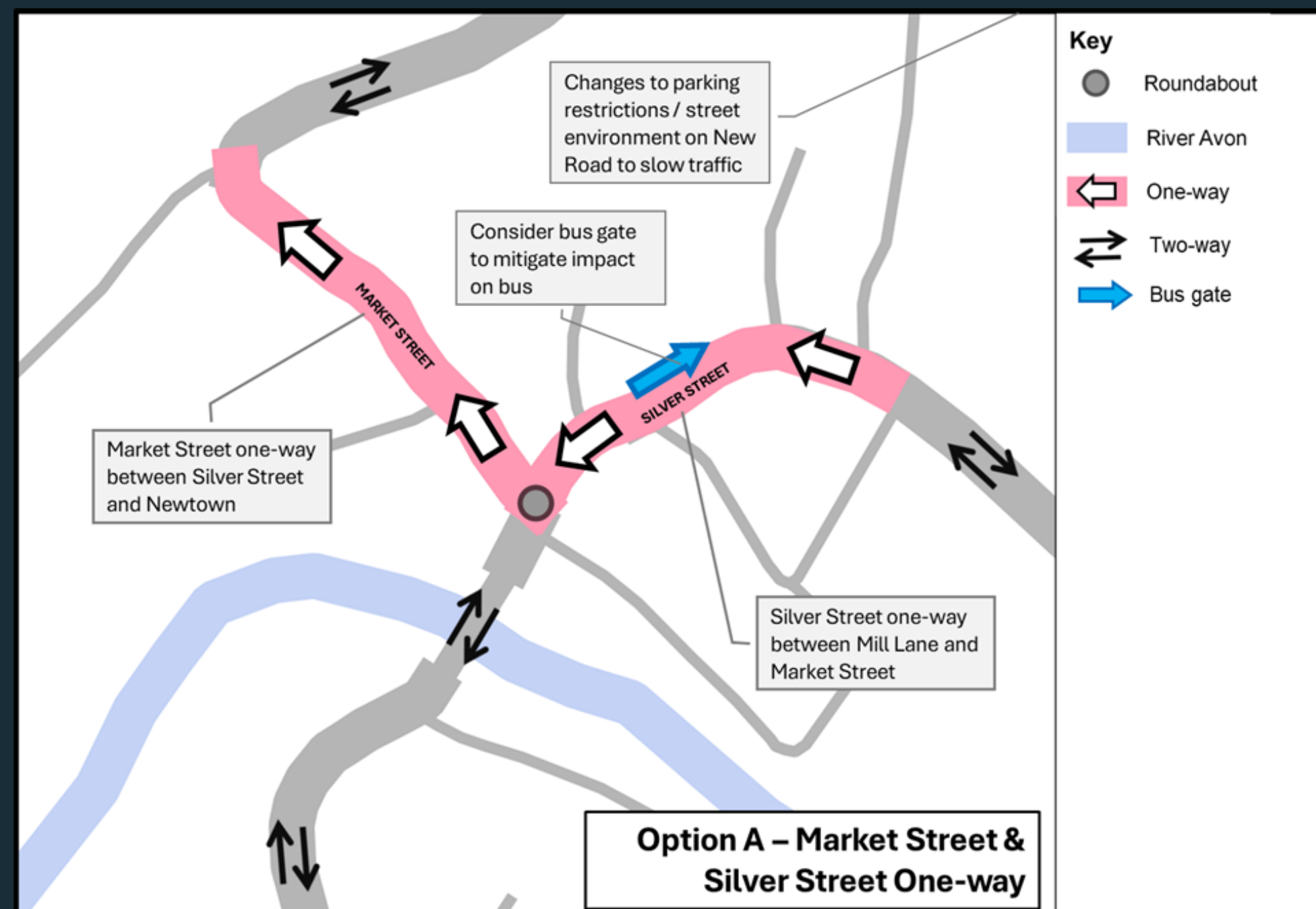
- Traffic count data
- Journey time data
- Bus service information.
- Signalised crossing usage.

Cyclist and pedestrian collision data was also obtained and analysed to understand areas where safety improvements for cyclists and pedestrians would be most beneficial.

What options were tested?

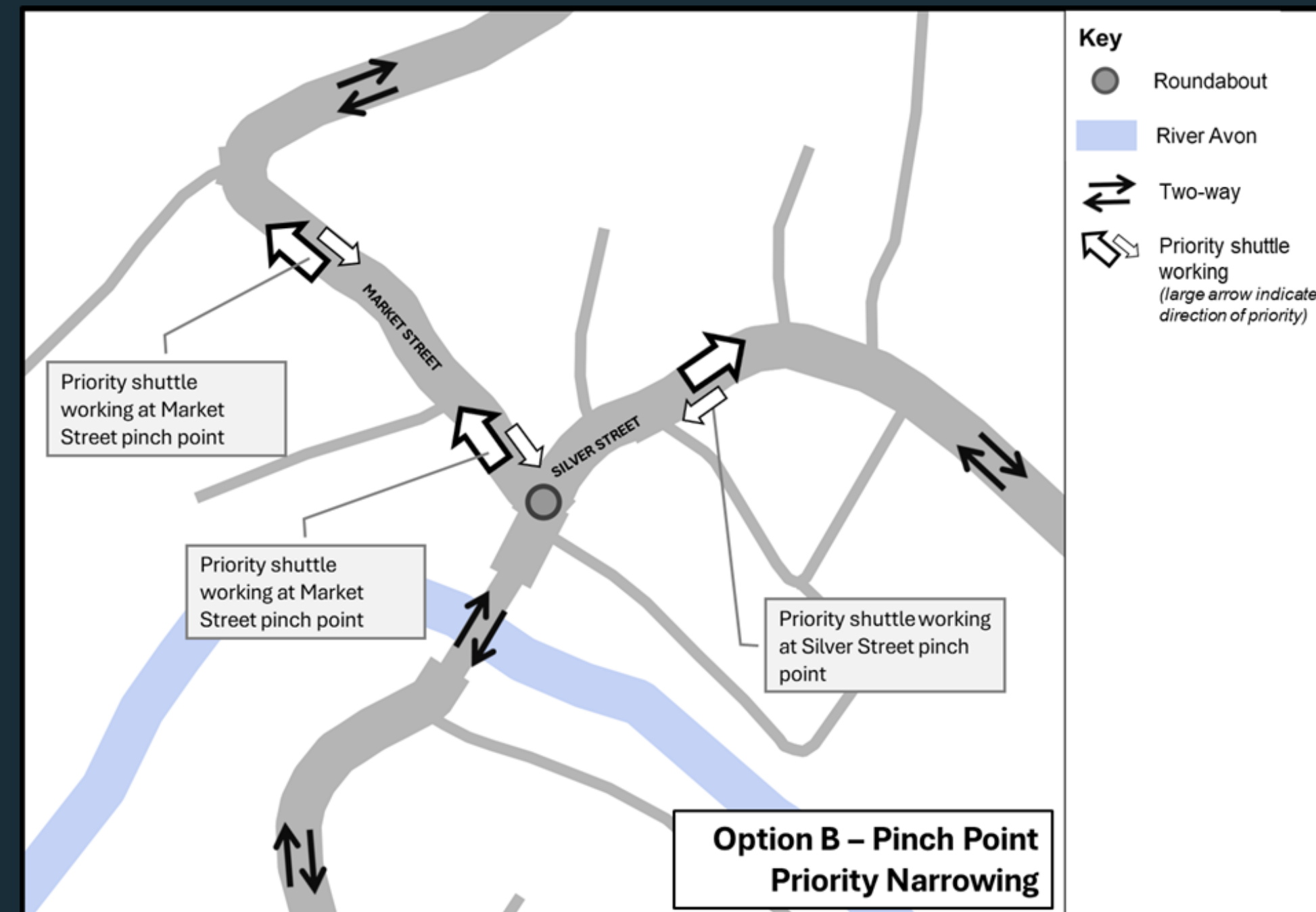
Through initial assessments and discussions with Bradford on Avon Town Council and Wiltshire Council, a long list of options was narrowed down to a shortlist of two to be assessed using the traffic model. The tests showed weaknesses with both options, therefore a third option (Option C – a hybrid of Options A and B) was identified and tested in the traffic model.

Option A



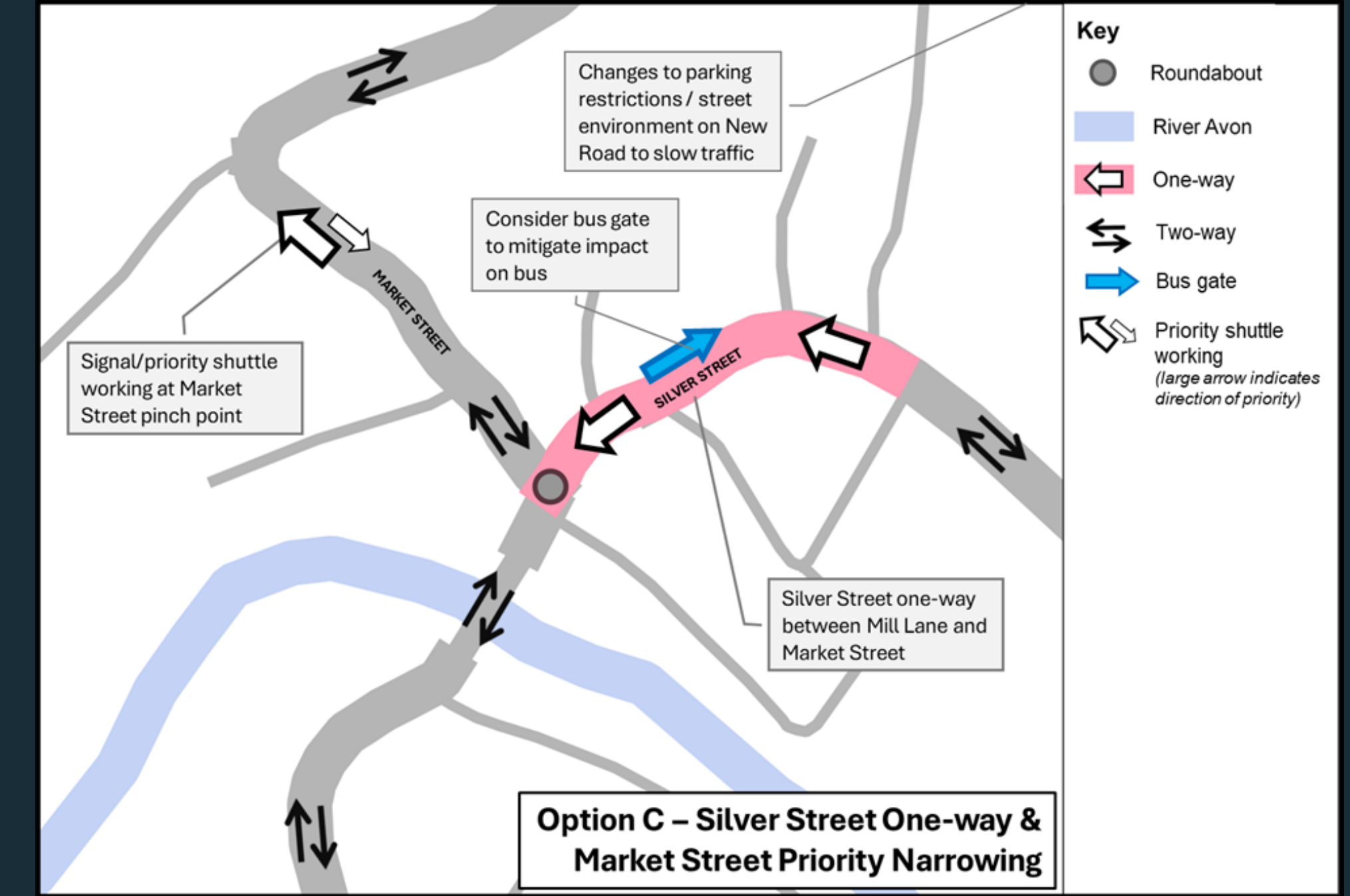
- One-way operation on Silver Street (westbound) and Market Street (northbound).
- Bus gate on Silver Street allowing buses to travel northbound. This avoids the need to divert the bus from Silver Street / New Road.
- Traffic calming measures to be developed on New Road / Springfield loop to mitigate against increased traffic flows.

Option B



- Priority narrowing at key pinch points on Market Street and Silver Street.
- Signage and widened footways at pinch points to formalise shuttle working.
- Uphill traffic given priority.

Option C



- One-way operation on Silver Street (westbound), and priority narrowing at the top of Market Street.
- Bus gate on Silver Street allowing buses to travel northbound.
- Priority narrowing at the top of Market Street to formalise shuttle working (uphill traffic given priority)
- Traffic calming measures to be developed on New Road / Springfield loop to mitigate against increased traffic flows.

How does Option C reallocate space for pedestrians and cyclists?

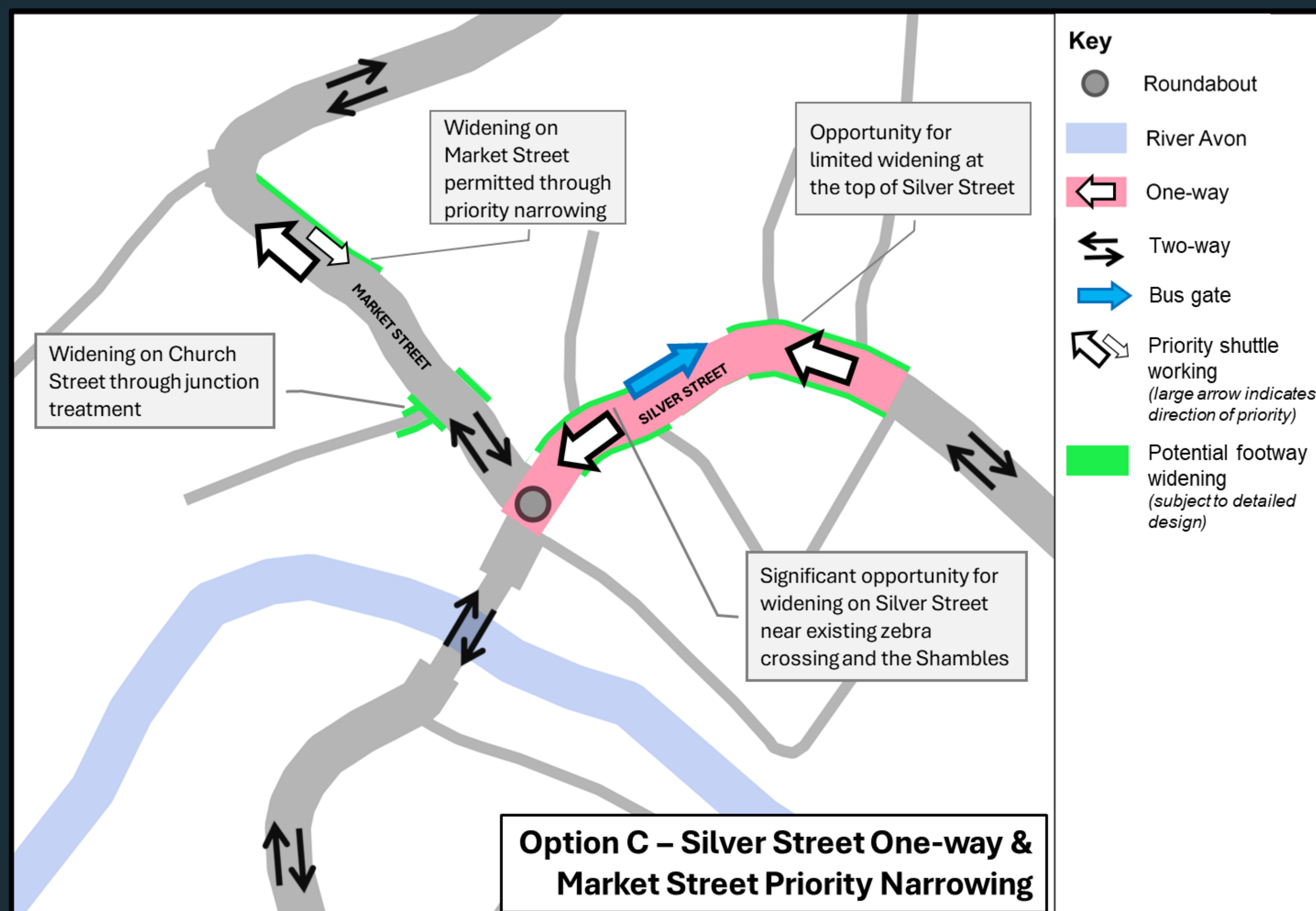
Market Street

- Footway widening at the top of Market Street where the current footway at this location is extremely narrow.
- No widening at the bottom of Market Street (between The Shambles and Silver Street) as two-way vehicle operation would remain at this location.

Silver Street

- Significant footway widening near Coppice Hill / The Shambles.
- More limited widening along the length of Silver Street due to width constraints and the bus gate.

Option C - Potential footway widening on Market Street and Silver Street



Other options

Option A has similar widening opportunities to Option C, but also enables widening at the south of Market Street.

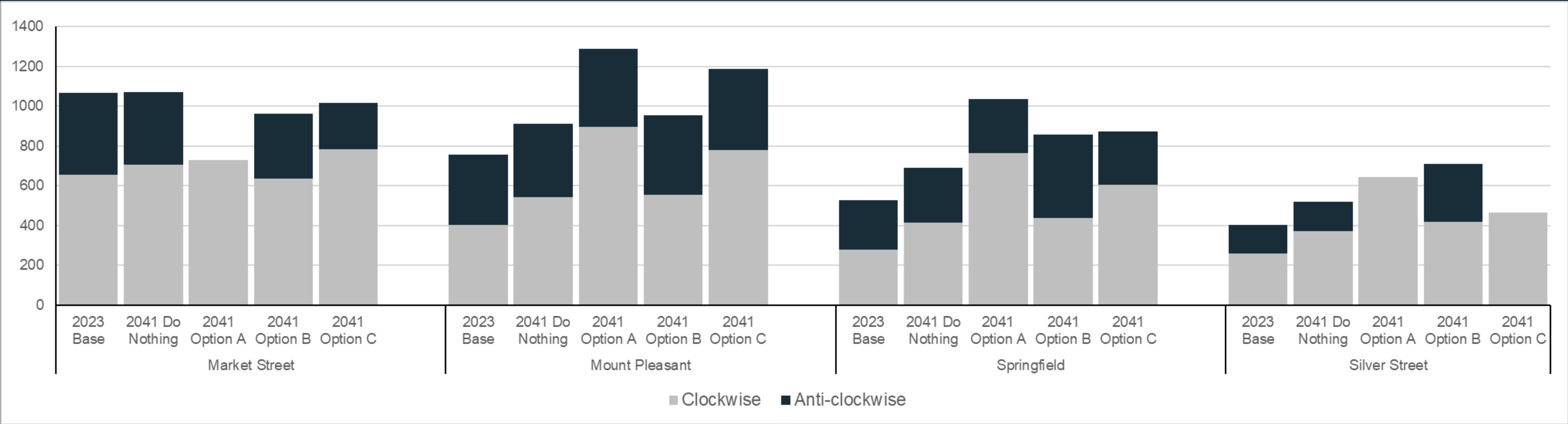
Option B only allows limited widening at pinch points on Market Street. On Silver Street where pedestrian flows are highest, Option B enables much less opportunity for widening than Option A and Option C.

Cycle facilities

There is not space for, coherent, dedicated cycle facilities within the town centre streets (Market Street and Silver Street), even with traffic restrictions and reallocation of road space. Improvements for cycling will focus on making on-road cycling safe and comfortable.

How do the options impact traffic flows in the town?

AM-peak*
modelled
traffic flows at
key locations



Change in
comparison
to 2041 Do
Nothing

	Market Street	Mount Pleasant	Springfield	Silver Street
2041 Option A	↓ ↓ ↓	↑ ↑ ↑	↑ ↑ ↑	↑ ↑
2041 Option B	↓	↑	↑ ↑	↑ ↑ ↑
2041 Option C	↓	↑ ↑ ↑	↑ ↑	↓ ↓

Compared to the 2041 Do Nothing scenario;

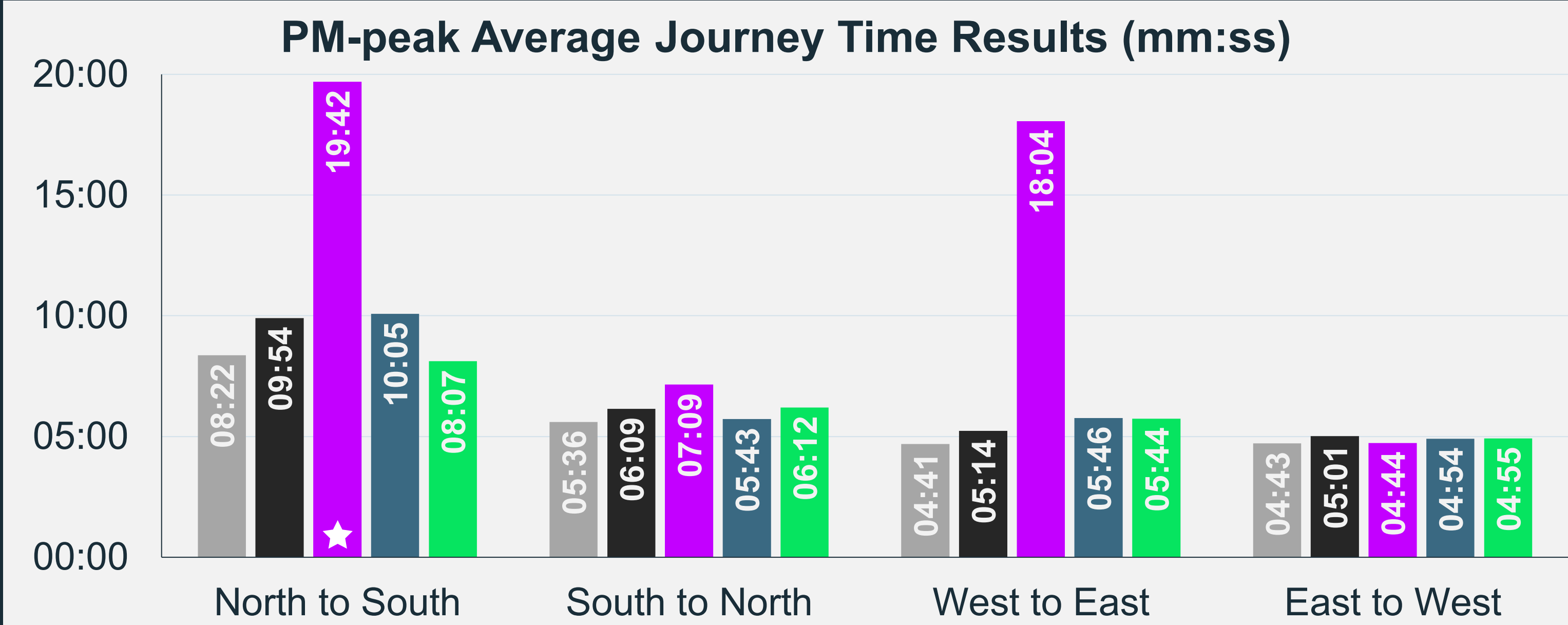
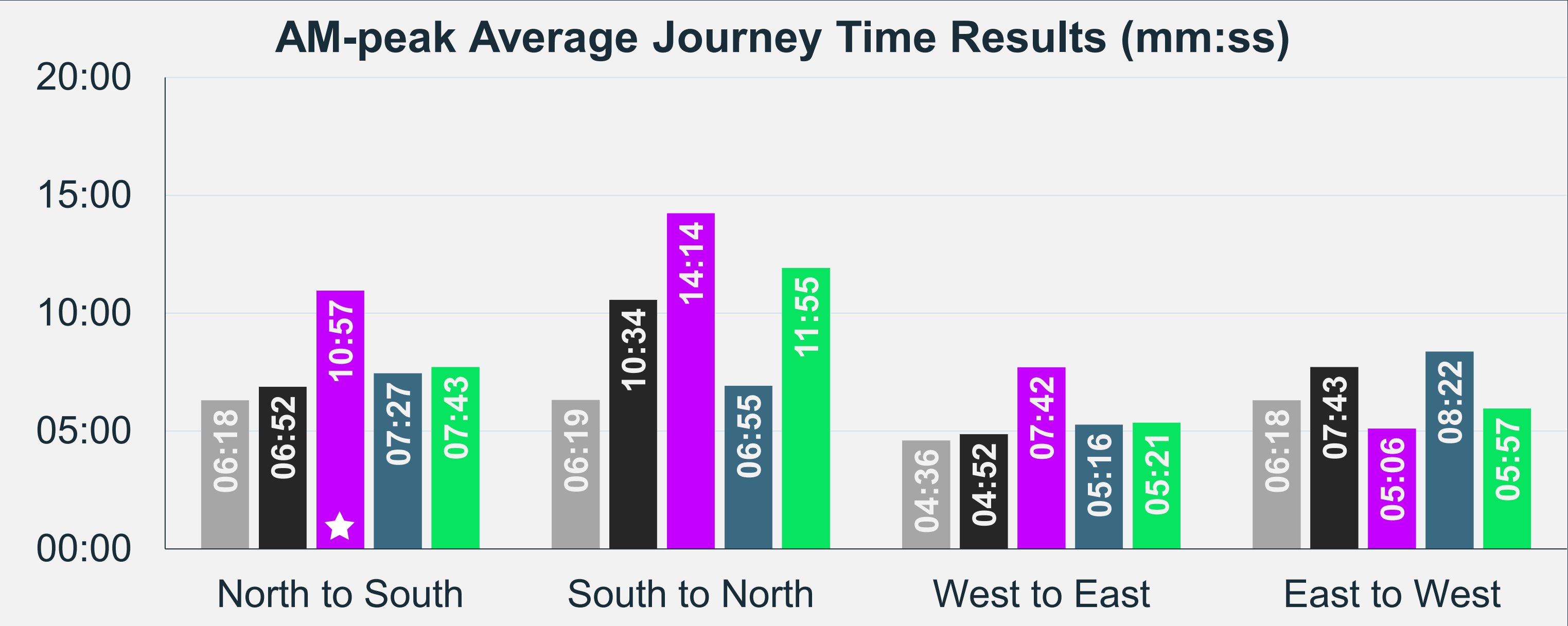
- Option A has the biggest impact on traffic flow - greatly increasing flows on Mount Pleasant and Springfield in both the AM and PM peak periods.
- Option B greatly increases traffic on Silver Street and Springfield.
- Option C reduces overall traffic on Market Street and Silver Street, but increases flows on Mount Pleasant and Springfield in comparison to the Do Nothing scenario.

*PM-peak total model flows are largely similar to the AM-peak



What are the impacts on journey times?

★ North to south alternative route journey time used due to one-way system on Market Street.



Journey times will increase between 2023 and 2041 due to increased traffic.

Compared to the 2041 Do Nothing scenario:

- Option A results considerable journey time increases for almost all trips due to congestion in the north of the town. Very large impact on North to South buses in the PM-peak, to the extent that the bus schedule cannot be maintained.
- Option B has little impact on journey times, (except for northbound trips in the AM-peak where journey times are improved significantly).
- Option C also has little impact on journey times (with the exception of South to North trips in the AM-peak).

KEY

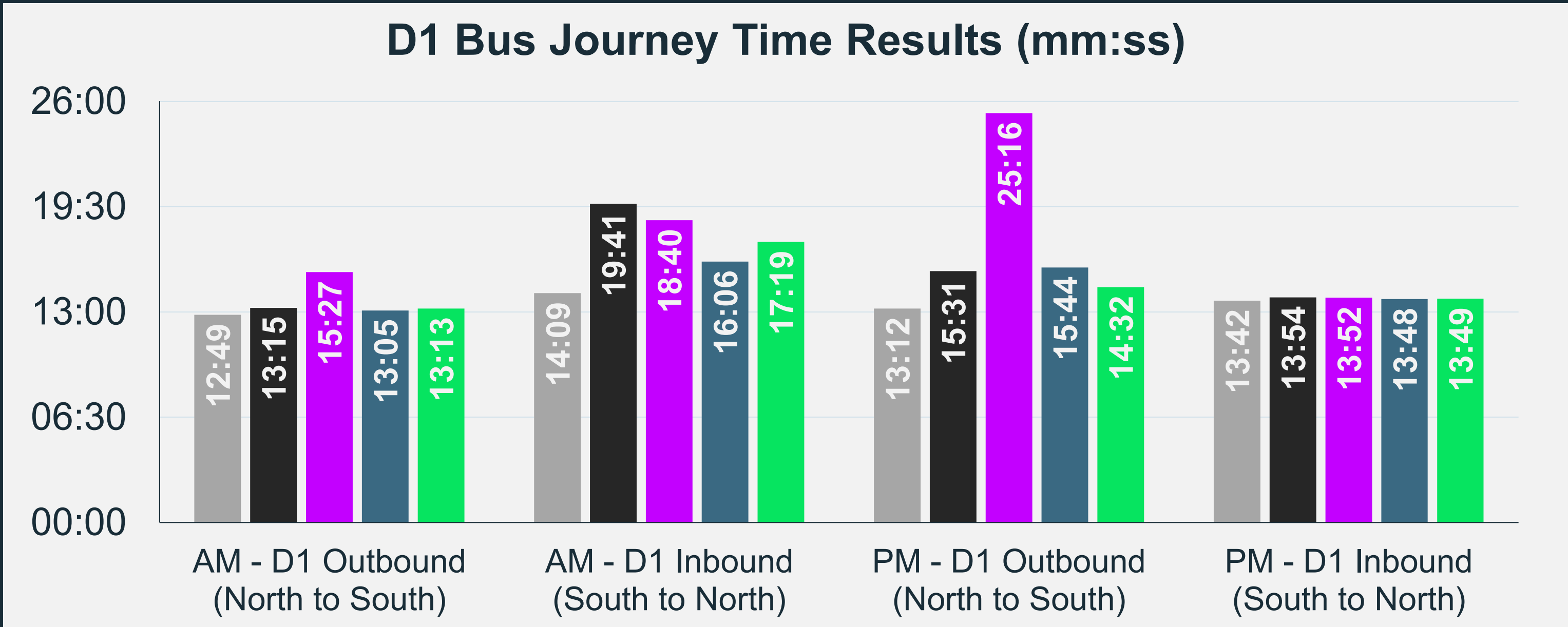
2023 Base

2041 Do Nothing

2041 Option A

2041 Option B

2041 Option C

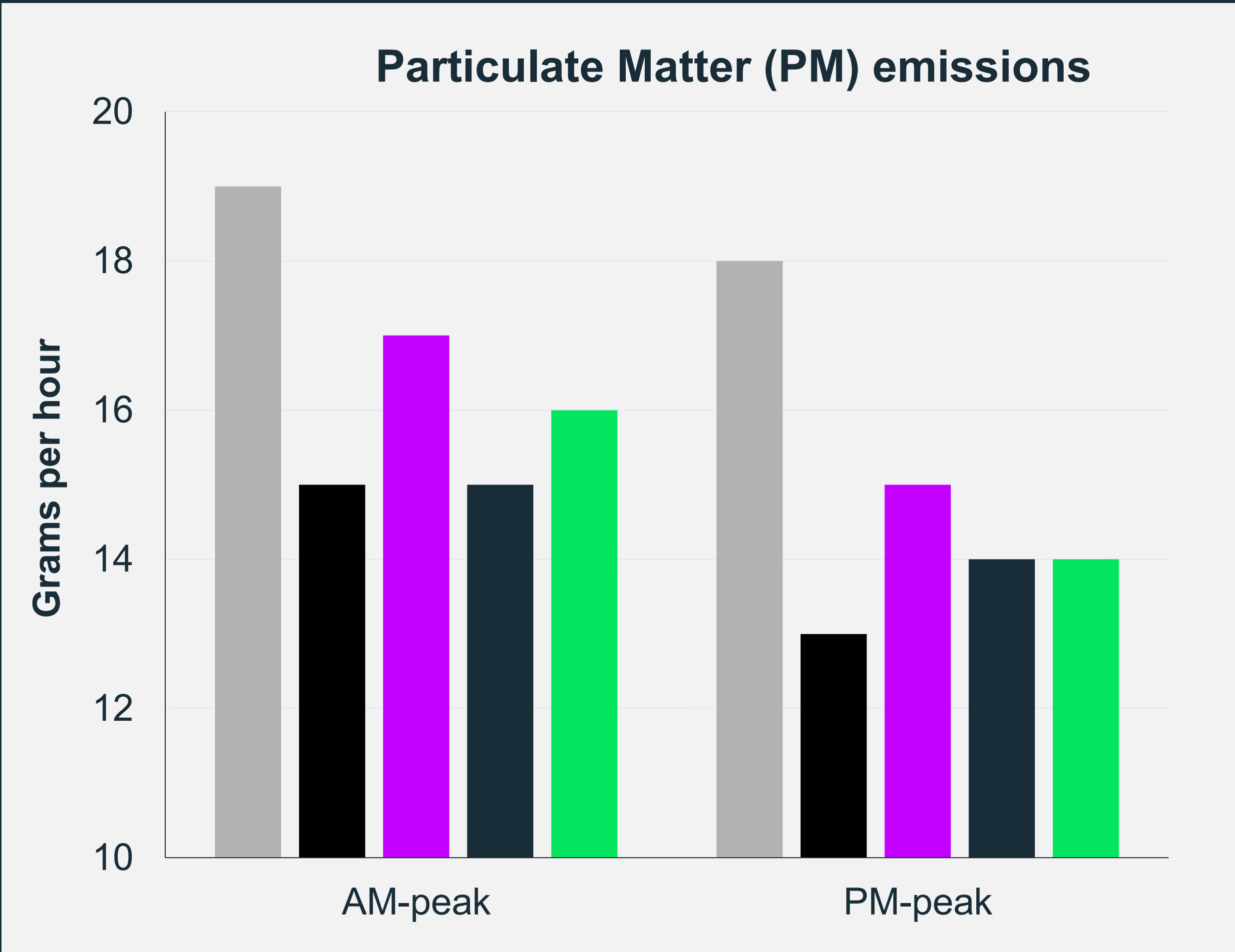
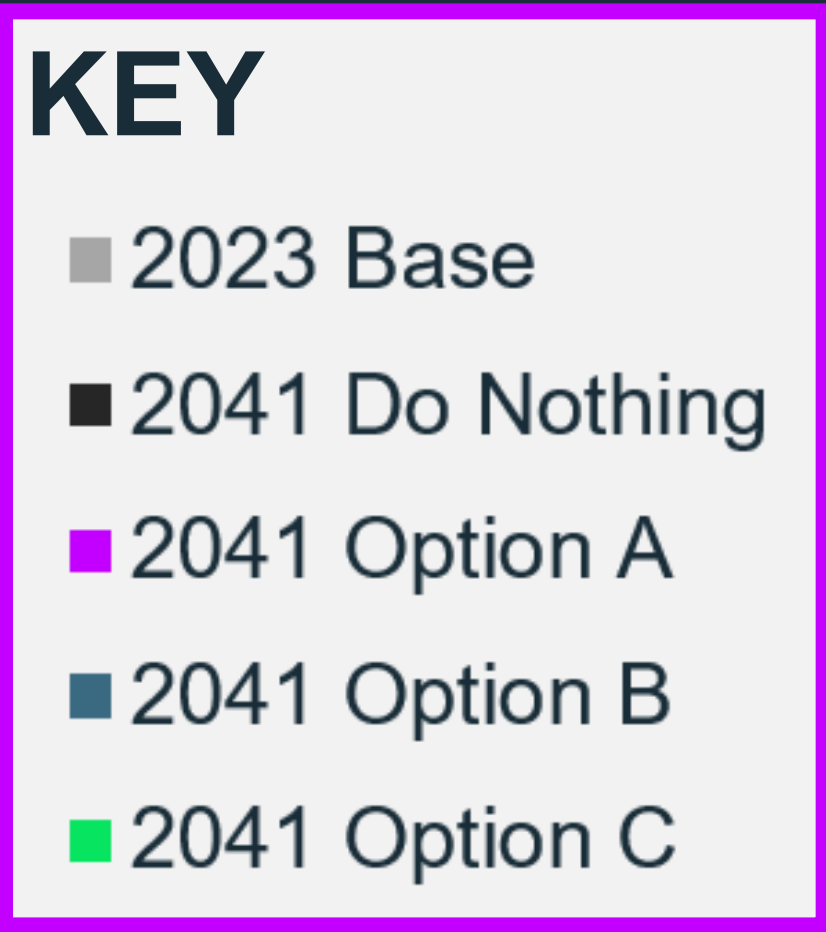
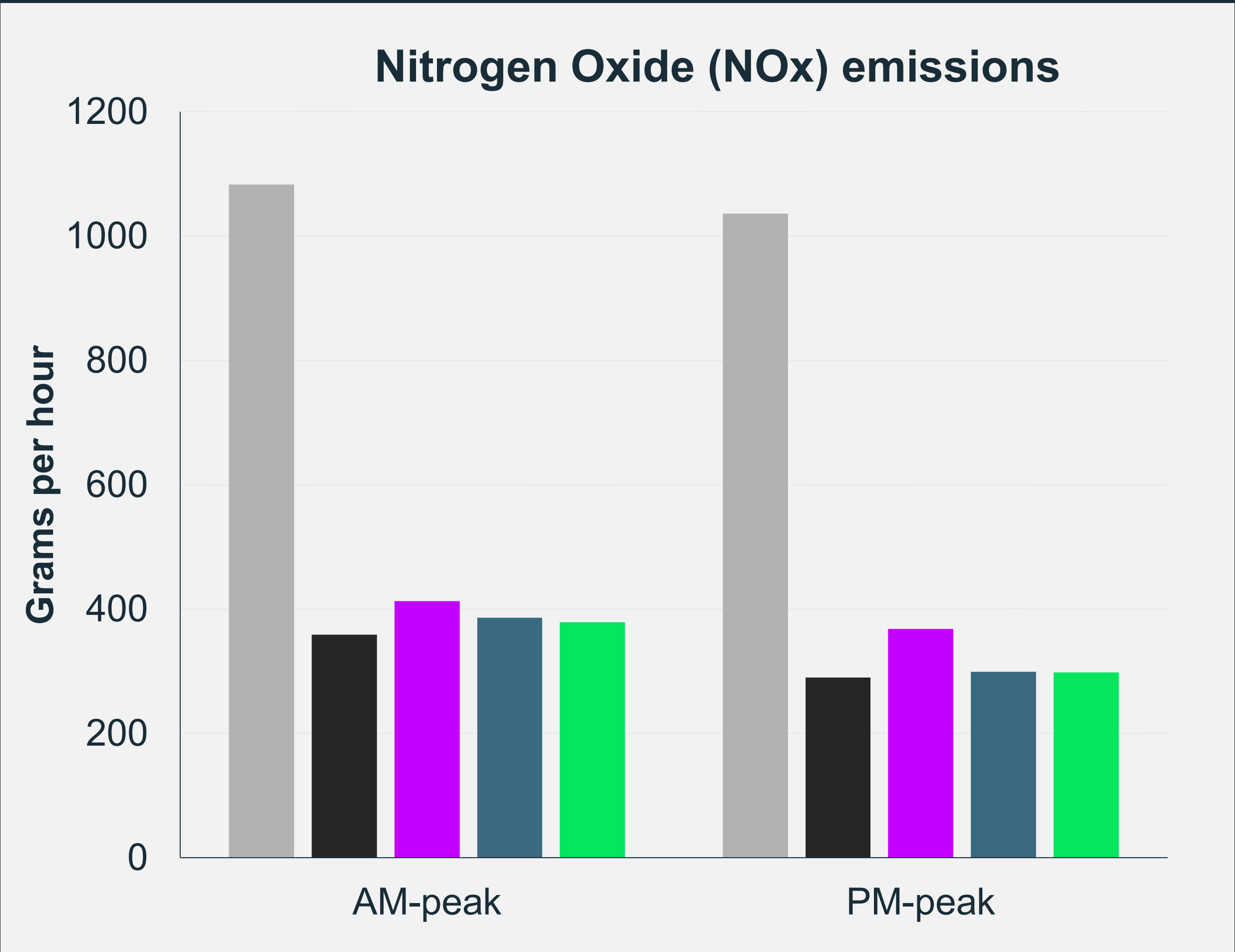


What is the impact on air quality?

Each of the options results in a marginal increase in NOx and PM emissions in comparison to the 2041 Do Nothing scenario.

However, forecast 2041 emissions are substantially lower than in 2023 due to an expected increase in electric vehicles and a cleaner vehicle fleet overall^a. Each of the three options are forecast to be significantly below existing emission levels.

This high-level emission modelling does not account for any wider mode-shift or re-routing that may be occur as a result of the options, which would result in a reduction in both NOx and PM emissions within the town.



^a The Department for Environment, Food & Rural Affairs (DEFRA) predict that the percentage of electric vehicles in Great Britain will increase from 1% of all vehicles in 2023 to 14% in 2035.



How do the three options compare against the study aims?

	Scheme Aims			Other Impacts	
Scheme options	Safely reallocate space for walking and cycling	Facilitate slow but steady traffic movements	Improve air quality in the town	Bus service impacts	Deliverability risks
Option A Silver Street and Market Street one-way	Significant opportunity to re-define the character of the whole town centre.	Less impact from traffic on Market Street and Silver Street, but increased traffic flows and congestion on New Road loop and Town Bridge.	Small adverse impact vs 2041 Do Nothing that may be offset by mode shift / re-routing. Overall significantly below existing emissions.	Unacceptable impact upon bus journey times – option is not viable if this can't be addressed through other bus priority measures.	Higher level of complexity: Side road management, deliveries, bus holding locations, network resilience, bus transponder technology, traffic calming measures
Option B Pinch Point Priority Narrowing	Addresses key pinch-points only.	Minor impacts on traffic flows but dominance of traffic remains in the town centre.	Small adverse impact vs 2041 Do Nothing that may be offset by mode shift / re-routing. Overall significantly below existing emissions.	Acceptable impacts on bus services.	Minimal deliverability risks: Compliance with priority shuttle; ensuring that vehicles have sufficient visibility of approaching traffic.
Option C Silver Street One-way & Market Street Priority Narrowing	Significant opportunity to re-define the character of Silver Street / town centre. Doesn't address all pinch points on Market Street.	Less impact from traffic on Silver Street, but increased traffic flows and congestion on New Road loop and south of the town.	Small adverse impact vs 2041 Do Nothing that may be offset by mode shift / re-routing. Overall significantly below existing emissions.	Acceptable impacts on bus services.	See all risks from Option A and Option B



What are the next steps?

Overall, Option C better fulfils the aims of this study.

This hybrid option could offer a good compromise, enabling a significant change in character in the town centre whilst not generating severe traffic congestion in the town.

We propose Option C is progressed to the next stages of scheme design.

Further work will focus on refining the design of the scheme in addition to the following considerations:

- Measures to calm traffic, reduce noise, and enhance pedestrian safety in locations such as New Road and Springfield which may experience an increase in traffic flow;
- Concept design of the town centre layout to see how pavements can be widened and other improvements incorporated;
- Refine the operation of junctions throughout the network in order to optimize the network as a whole.

The next stage of this project will be to review feedback from this consultation and discuss our findings with Wiltshire Council.

Following that the hope is to move on to the next stage of scheme design which will seek to address some of the points mentioned above.

