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Snow Hill Phase Two

Project Report

12 February 2021

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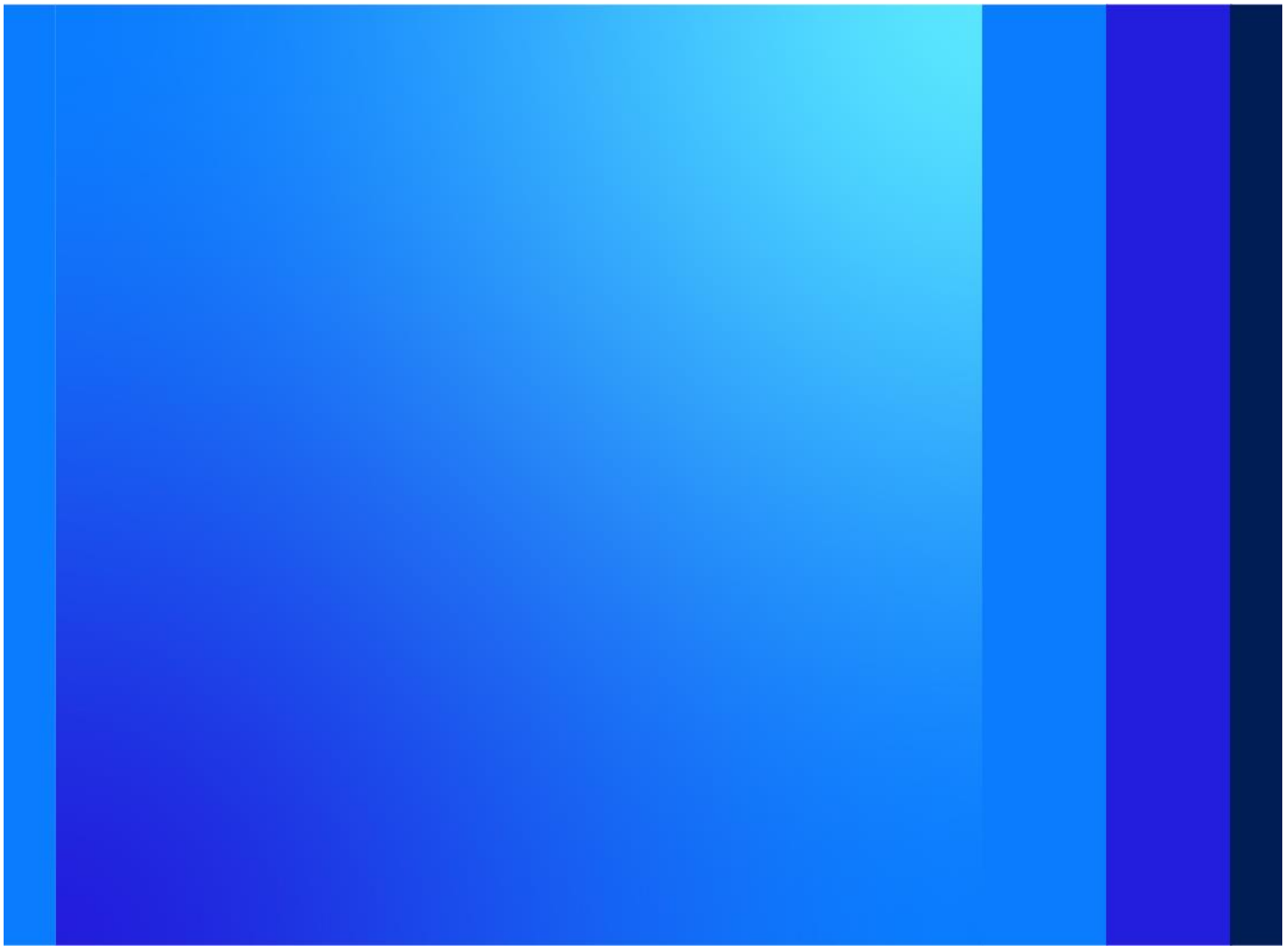

Snow Hill Phase Two

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Project Manager:	Goktug Tenekeci
Prepared By:	Neil Davies/Geoff Smith/Alain Chandler-Hurst
Approved By:	Goktug Tenekeci
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Jacobs U.K. Limited

7th Floor, 2 Colmore Square
38 Colmore Circus, Queensway
Birmingham, B4 6BN
United Kingdom

T +44 (0)121 237 4000
F +44 (0)121 237 4001
www.jacobs.com

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1. Introduction

1.1 Background and Context

Snow Hill Strategic Outline Business Case (SOBC) was produced in 2020 to set out a high-level list of measures to address the drivers around the station through provision of sustainable and transformational changes. Since the production of the SOBC, a number of questions remained unanswered and a need to address these through a more robust platform, namely the Birmingham City Model[1] which has since been developed. In addition, the publication of the Draft Birmingham Transport Plan 2031 (DBTP) (published in Draft in January 2020) with a changing emphasis towards sustainable modes (rather than large scale highway improvements to the ring road) has also helped to inform this commission and requires a refresh of the options tested to ensure compliance.

The DBTP considers a set of principles that will guide investment in transport, so that it serves more people and is able to serve a future Birmingham in which everyone can live and work irrespective of age, disability or income. The measures identified in the plan are:

- Reduce transport's damaging impact on the environment, supporting Birmingham's commitment to becoming a carbon neutral city by 2030;
- Eliminate road danger particularly in residential areas;
- Connect people with new job and training opportunities;
- Reconnect communities by prioritising people over cars;
- Revitalise the city centre and local centres.

The plan sets out a series of policies to improve transport, ensuring inclusive growth for the city and setting out 'big moves' - where no single mode of transport will be dominant. The travelling public will have a choice between a range of modes of transport, accessible, viable and sustainable. The plan sets out policies to address the Climate challenge; air quality accommodating future growth; improving road and rail capacity and providing improved network resilience; promoting public transport use. There is also a short-term opportunity to boost the profile of the City and support the economy through hosting the 2022 Commonwealth Games (CWG). The plan identifies future challenges related to network management and travel demand management and the need for 'big moves' focused on:

- Reallocating Road Space (from cars to more sustainable modes of transport and to more economically productive or community use of space);
- Transforming the city centre – the focus for the majority of economic growth in the Big City Plan;
- Prioritising active travel in local neighbourhoods;
- Managing demand through parking measures in key centres..

The moves are aimed at supporting improved quality of life, increasing road efficiency, reducing levels of air pollution/improving air quality, supporting inclusive growth, supporting housing growth and improving health and wellbeing. The DBTP sets out a Delivery Plan for city wide and city centre schemes including the Snow Hill Growth Strategy, including the A38 / Ring Road project to be delivered within the Transport Plan period (2031).

In addition, as part of the regeneration and city centre major developments, the Birmingham City Economic Recovery Plan sets the Snow Hill scheme centred on the major redevelopment and transformation of Snow Hill station and its immediate environs. The scheme is considered to play a significant role in contributing to the delivery of the growth agenda for the City by both improving the railway station and transport connectivity within the Snow Hill area and to/from surrounding areas and creating 112,000sqm of new office-led development accommodating over 7,700 jobs and 200 homes.

[1] SATURN Model

1.1.1 Project Background

There are local transport and connectivity issues / barriers within the Snow Hill district, together with solutions being considered, these are to date:

- Preparation of the **SOBC** for the **Snow Hill Connectivity Study** to Birmingham City Council (BCC) in 2019, which influenced the development of the Draft Birmingham Transport Plan; and
- Development of the TAG compliant **Birmingham City (SATURN) Model (BCM)**, which brings the evidence base as a key tool in modelling options and undertaking assessment of the efficiency of the transport network and supporting package delivery.

The A38 is currently a barrier to free movement in the Snow Hill Masterplan area. Pedestrian access across the A38 is restricted to grade separated links including unattractive bridge and subways, and at-grade crossings where the road is in tunnel at Newhall Street and at St Chads Circus. Figure 1.1 shows the A38 passing through the city centre and the A4540 Middleway around the wider city centre.

Figure 1.1 A38 through Birmingham city centre, and wider highway network

Figure 1.2 shows the wide high capacity carriageway with the difference in height of development on the City Centre side and outer area which is related to poor connectivity.

Figure 1.2 A38 Merge / Diverge Between Tunnels on Snow Hill Queensway, showing disparity in development

The proposed connectivity project aims to facilitate city-wide expansion, particularly in areas such as the Gun Quarter and Jewellery Quarter and will result in a step change in travel behaviour across the city, improving health and air quality.

Figure 1.3 shows the potential developable areas that could be released by the scheme including existing highway land in blue and available car parking land in green.

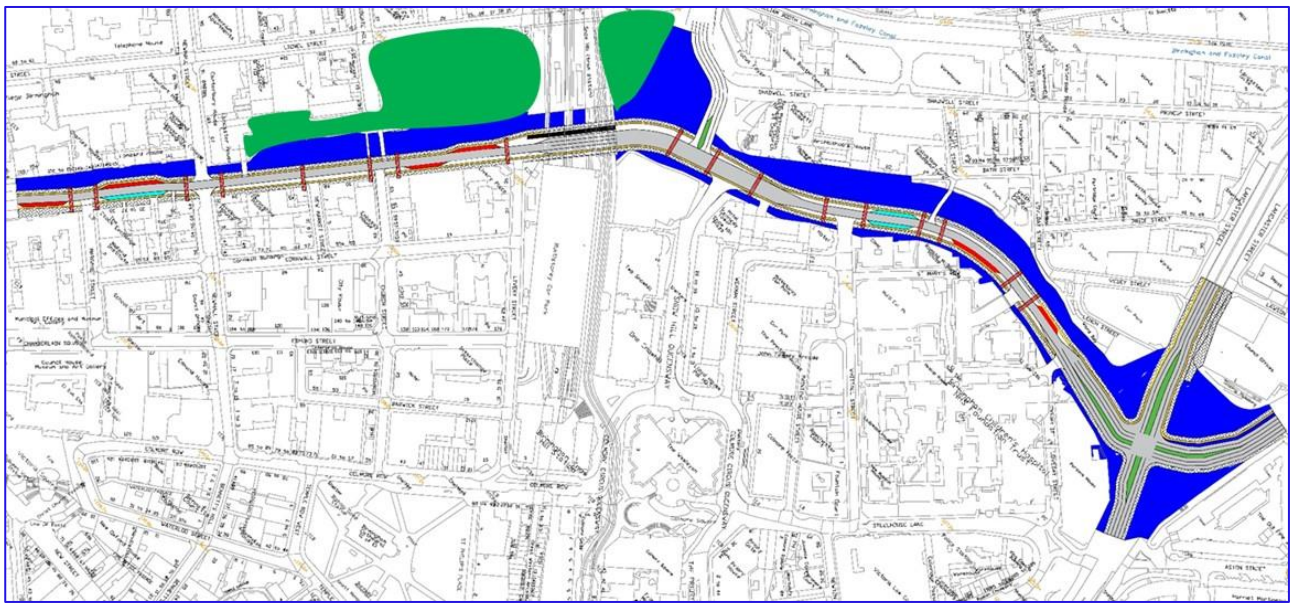


Figure 1.3: Developable Land Potential within Snow Hill Masterplan Area resulting from the Scheme.

The Snow Hill Connectivity Study considered three broad packages of interventions to support the closure of the A38 tunnels through the city centre, from Dartmouth Circus on the northern side through to Belgrave Interchange in the south. The removal of this through route, with associated reconfiguration of the surface roads, would support the expansion of the city centre core as part of the identified Snow Hill Area of Transformation.

The packages assessed were high-level combinations of highway, public transport and active mode interventions, to provide alternative transport opportunities for journeys destined for the city centre. Through traffic mostly re-routed from the A38 via the A4540 Middleway, with some re-assignment to other orbital roads including the motorway box.

Assessment outputs identified that a shift in emphasis away from private car traffic for trips to the City Centre could be supported with suitable interventions (such as increased parking capacity at stations, improved public

transport connectivity), and that further evolutions of financial, policy and appraisal techniques would demonstrate wider benefits to the city's economy and hence produce a positive business case.

1.1.2 Project Context

Jacobs have been commissioned to develop the options for Snow Hill Transport and Connectivity Package, following on from those assessed in the Connectivity Study outlined above and building from the Public Transport / Active Modes scenario. The remit of this current study encompasses:

- Redeveloping the long list of options and alternatives to support the transport / economic plan;
- Refining the appraisal tool to sift the options to a short list utilising DfT EAST tool and emerging Birmingham Draft Transport Plan;
- Develop options packages for Snow Hill;
- Using the developed Birmingham City Model (BCM) to test the effectiveness of option packages in terms of the efficiency of the highway network; and
- Recommend solutions compliant with the emerging transport plan and an action plan for implementation.

The project aimed to build on the earlier produced Snow Hill Connectivity Strategic Outline Business Case (SOBC) establishing an added layer of evidence base and focusing on recommendations for schemes to be taken forward to support the emerging Birmingham Transport Plan 2031 objectives, with a policy led approach for achieving housing and employment growth through improved connectivity. It also considers the impact of policy changes from Birmingham City Council, particularly in light of the 2020 Emergency Transport Plan and the evolution of these into a revised Birmingham Transport Plan.

1.2 Building on Previous Work

The Snow Hill Connectivity Study SOBC, utilising PRISM modelling, highlighted that the key issues and challenges were around the proposed closure of the A38 tunnels, creating major re-assignment of traffic, resulting in increased journey times. However, it was identified that a further level of desegregation of operational assessment at local level in the modelling was needed to address the questions raised at the earlier work stage to accurately represent network efficiency resulting from such major change. The SOBC focussed on options for the A38 through the City Centre, investment in public transport and A4540 Middleway changes to mitigate traffic impacts and constraints on connectivity. Meanwhile the Birmingham City Model has been developed with capacity constraining and modal shift / demand changes out to the motorway box and beyond to the north.

The earlier study concluded that the proposed A38 tunnels closure would produce significant journey time dis-benefits. High-level modelling with PRISM (Regional Policy Model) re-assigned the traffic to other alternative links, (mainly the A4540 Middleway). This resulted in increased journey times and distances travelled and with far less modal shift. As a result, it forecast that re-assigned highway demand would increase travel costs and hence provide negative highway benefits. This led to the requirement of further detailed testing and options re-consideration associated with detailed modelling results analysis.

The DfT provided positive recommendations to this SOBC, including the need to explore air quality, noise, amenity and severance impacts. They also agreed that there was a need for testing new scenarios including the critical definition of the project's Do Minimum scenario, where the A38 declassification and tunnels closure could potentially form the reference case, with the value for money proposition focused on traditional plus new impact categories such as wider economic impacts, including associated land value uplifts, and other elements such as reduction in maintenance costs.

With the knowledge of DfT input at the previous stage of the work, the necessity to develop the evidence-based case further to further support the initial SOBC work was necessitated.

2. Approach to Project

2.1 Introduction

The approach to the project has been split into three distinct sections, with the tasks undertaken highlighted in the workflow diagram (Figure 2.1).

- Review Stage
- Strategic Modelling Stage
- Analysis Stage

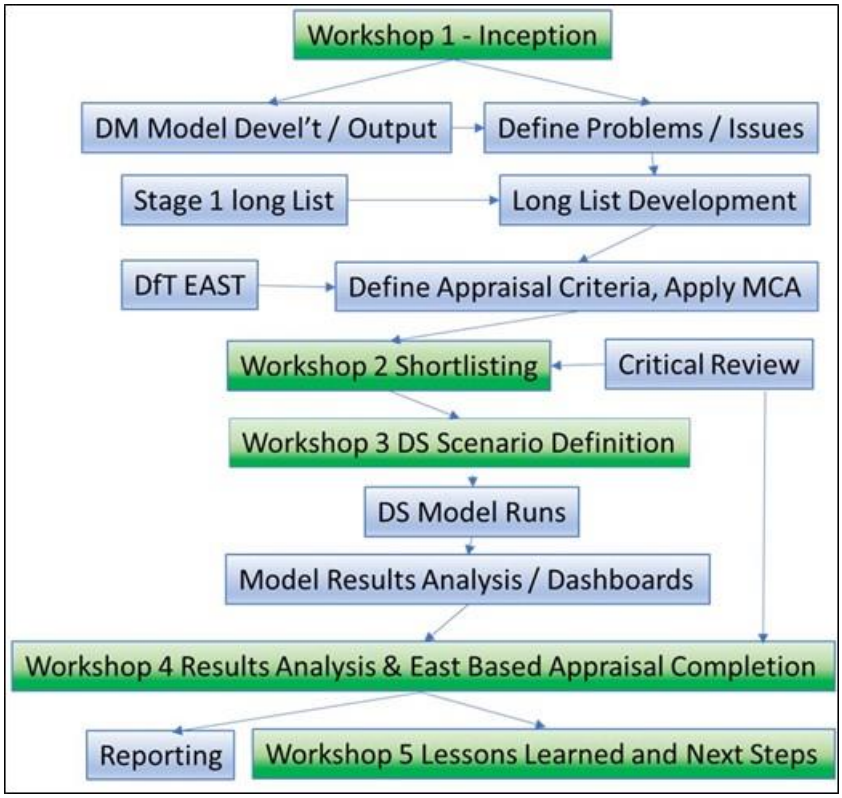


Figure 2.1: Study Workflow Diagram

2.1.1 Review Stage

The review stage[2] was required to:

- review previously tested options and introduce enhancements required for further robust modelling to define and refine options / investment packages;
- review and incorporate the Draft Birmingham Transport Plan and subsequently Economic Recovery;
- identify current multi-modal network operations of the Snow Hill area, challenges and opportunities.

The new expanded BCC SATURN model demonstrated and ensured a thorough understanding in the appraisal of various scenarios as laid out in the draft Birmingham Plan ('Big Moves').

The review stage led to the development of long and short listing of options to be tested in the model, leading to the appraisal of the options, emerging towards a preferred scenario and an action plan for implementation.

A workshop was conducted to establish the issues identified in the earlier study. This led to the completion of the review stage in the light of this understanding, working together with Birmingham City Council, West Midlands Combined Authority and Department for Transport (DfT). DfT has informed that they were party to the project to support and inform with any requirements that BCC might have.

Refreshed appraisal criteria were informed by the Birmingham City Model (BCM) on the location and scale of issues, to add rigour to the assessment of Value for Money (VfM) for the package of investment. Key proposals from the Transport Plan incorporated into the modelling included the Clean Air Zone (CAZ); future charging options; servicing and access restrictions ("traffic cells"); and improved public transport.

The review process involved identification of previously tested measures but also the emerging Transport Plan measures, WMCA planned investment and any additional measures leading to a revised Long List of Interventions.

To sift the options to a short list of deliverable, policy-compliant and effective packages, achieving DfT appraisal requirements, the emerging DRAFT Birmingham Transport Plan policies and 'moves', coupled with the principles of the Early Appraisal and Sifting Tool (EAST) based approach were developed in the form of a Multi-Criteria Assessment (MCA) Options Assessment Framework (OAF).

This approach has built on the EAST's strengths and developed additional assessment criteria to ensure the MCA is more relevant to the study scope (such as policy, local objectives, viability, deliverability, constructability, affordability, finance and funding). This process has supported the production of the OAF, more likely to enable appropriate scheme selection.

The resulting short-list of schemes have then been packaged to be taken forward for scenario modelling within the simulated Birmingham City Model, coupled with a demand model element which has been employed to help develop the scenarios with targeted and timely public transport interventions which are introduced in the Strategic Modelling section.

2.1.2 Strategic Modelling Stage

Do Minimum Scenario (Reference Case) Network, Demand and Assignments

The BCM Do-Minimum (DM) scenario and forecast scenarios[3] were employed to test the effectiveness of options. However, given the scheme location and the Area of Influence (AoI),(beyond the Middleway Ring Road onto other radial and orbital routes), a necessity was borne to improve the calibration and validation of the model,

[2] All stages of the project were undertaken before the Covid Pandemic impacts on transport and assumed a return to pre-Covid levels and patterns after lockdown.
[3] All models and forecast scenarios were developed pre-Covid Pandemic.

specific to the Snow Hill Transport and Connectivity study. Following which the changes to the network since the model was developed had to be incorporated into the reference case, to ensure that the Uncertainty Log was updated to reflect recent completions and the revised programme of investment. These were considered to be critical to assess the Do Minimum (Reference case) against which the Do-Something (DS) scenarios would be compared.

Updating the Base and Reference Case: The BCM (with SATURN and CUBE elements) was expanded from the previous Birmingham City Centre Model, incorporating detailed junction simulation between the A4540 ring road to the M5 and M42 motorways in the west, south and east of Birmingham, and incorporated the Sutton Coldfield model and further northern expansion.

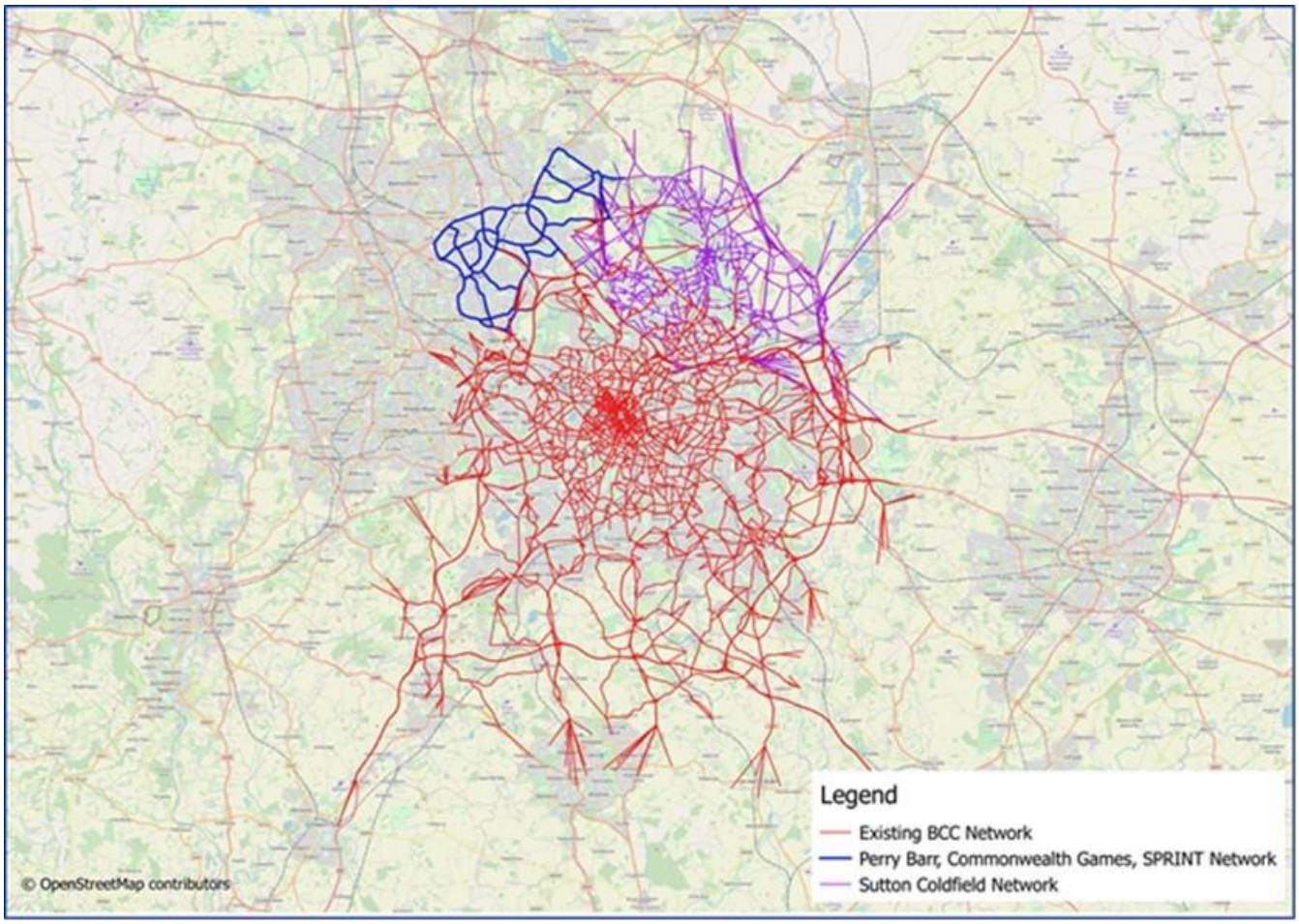


Figure 2.2: Revised Scope of the Birmingham Transport Model

A review of the existing BCC SATURN model in the Snow Hill area highlighted the necessity for improvements to the network calibration and validation specific to this project. Although this was minimal in the consideration of the extent of the model, the model improvements were brought in to improve the reliability of the model for accuracy of the forecasts for the schemes.

The model calibration and validation (both Highways and Demand Model) has achieved the TAG criteria following the local calibration and validation exercise. The TAG guidance compliant statistics are presented in Table 2.1.

Table 2.1 Base Model Flow Calibration / Validation % Pass Statistics

	AM Peak	Interpeak	PM Peak
Link Calibration 2016	85%	85%	85%
Link Validation 2016	85%	85%	86%
Local Area link Calibration (within A4540)	87%	84%	87%
Journey Time Validation	85%	79%	78%

For the Interpeak and PM Peak journey time validation, the previous model was validated. This model has a significant number of journey times that are marginally out from being validated. However, given the variable nature of traffic in the PM peak in Birmingham the model was considered sufficiently robust.

The DM (reference case) scenario included all committed highway changes, public transport provision and planned developments for the forecast years of 2022, 2026, and 2036 for the AM peak, average interpeak period (IP) and PM peak models.

The 2016 model base calibration and validation have been conducted and has improved the links shown in Figure 2.3 in relation to the Snow Hill Transport and Connectivity study.

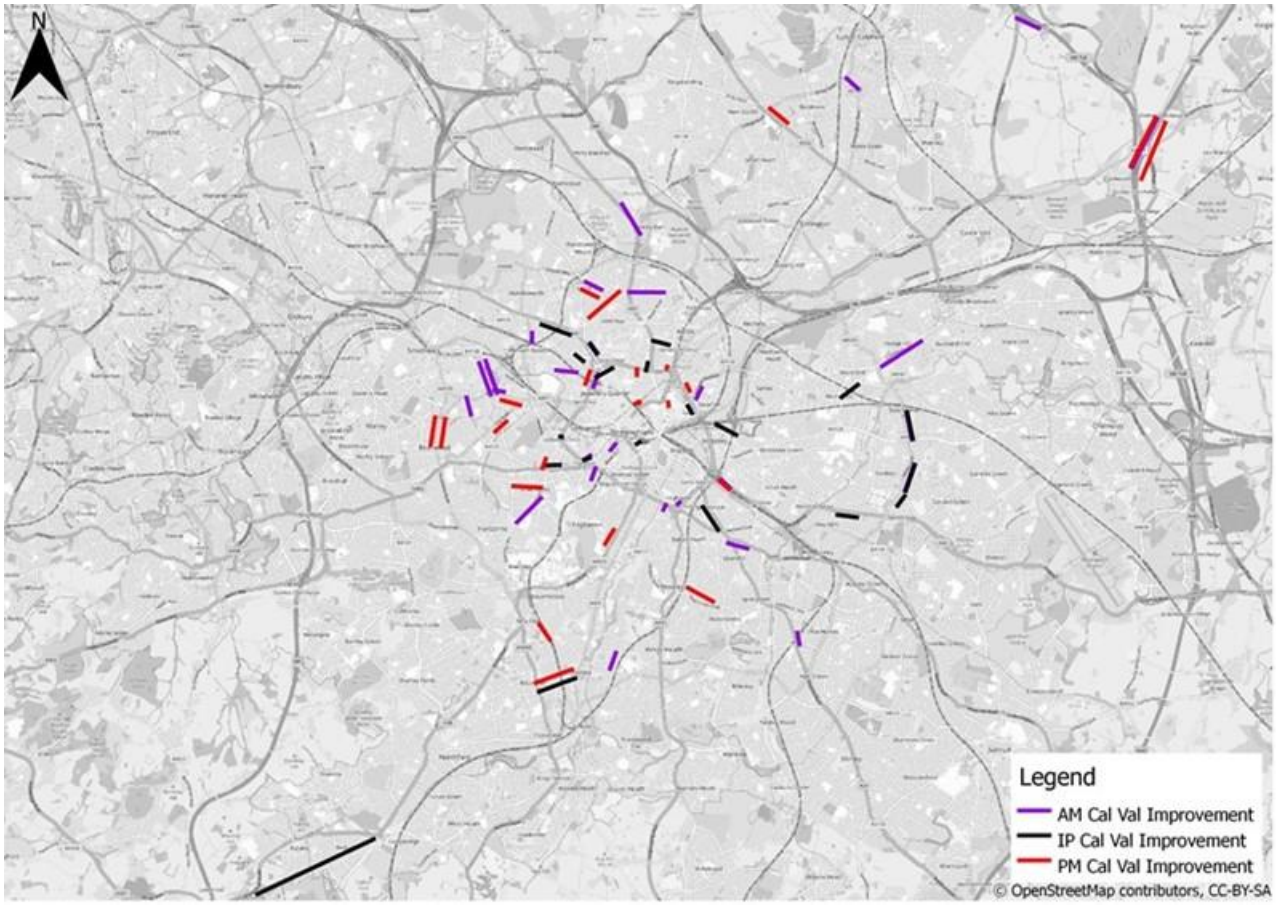


Figure 2.3: Location of Improved Links in the Highway Model

The models converged to the TAG criteria, and therefore the base and reference case models have been successfully prepared for the testing of the options. Appendix A provides more information on the improvements made to the model and graphics on the calibration pass and fail results across the study area.

The reference case has then been updated to include the recent completed changes and revised programmed activity for 2022, 2026 and 2027. These changes have been made with appropriate coding to the networks and matrices for the assignments. The full details of the Uncertainty Log (UL) are introduced in Table 2.2.

Table 2.2 Reference Case Uncertainty Log

Scheme Promoter	Scheme Name	Probability	Construction Start	Opening Year
BCC	Birmingham Cycle Revolution (BCR) A34N	Complete	2017	2018
BCC	BCR A38S	Complete	2017	2018
BCC	Ashted Circus A4540	Complete	2017	2018
BCC	Tyseley Energy Park Access	Complete	2017	2018
BCC	Holloway Circus	Complete	2017	2020
BCC	Battery Way Extension	Complete	2017	2020
BCC	Curzon Circus Pinchpoint	Complete	-	-
TfWM	Harborne Road Bus Lane	Complete	2018	2018
BCC / WMCA/ HS2 / NR/ National Express	Moor Street Queensway Enabling Works and Urban Realm "One Station"	More than likely	2019	2024
Highways England	M42 J6 and Clock Interchange improvements	More than likely	2019	2023
BCC	Dudley Road	More than likely	2021	2022
BCC	Bus Lane Enforcement #2	More than likely	2021	2022
BCC	Clean Air Fund	More than likely	2021	2021
Highways England	M42 J9 Access	More than likely	2018	2026
BCC	Bristol Road Downgrading	More than likely	2021	2022
BCC	Bradford Street Cycle Path	More than likely	2020	2021
BCC	A41 Soho Road BID Highway Connect and Plan	Near Certain	2020	2020
BCC	Clean Air Zone Early Measures	Near Certain	2018	2021
BCC	Perry Barr Interchange	Near Certain	2020	2020
BCC	Digbeth bus/cycle/taxi only between Floodgate Street and Chapel House Street	Near Certain	2022	2022`
BCC	Paradise Circus bus/cycle/taxi only Cambridge Street to Centenary Square	Near Certain	2022	2022

Scheme Promoter	Scheme Name	Probability	Construction Start	Opening Year
BCC	Clean Air Zone	Near Certain	2020	2022
BCC	Selly Oak Bypass Phase 1b	Under Construction	2019	2020
BCC	Iron Lane	Under Construction	2019	2020
BCC	Snow Hill Public Realm	Under Construction	2020	2021
BCC	Moor Street Queensway Bus Gate (Carrs Lane to Moor Street Station)	Under Construction	2020	2020
TfWM	Westside Metro Extension (Broad Street)	Under Construction	2020	2021
TfWM	Sprint A45	Under Construction	2020	2022
TfWM	Sprint A34N	Under Construction	2020	2022
BCC	Digbeth Controlled Parking Zone	Under Construction	2020	2021

It should be noted that the Draft Birmingham Transport Plan City Centre traffic cells scheme and 20mph zone are not treated as committed and are included within the Do-Something scenarios.

The matrix change between base and forecast is detailed in table 2.3 and 2.4 below for 2026 and 2037 respectively with a comparison with TEMPro. These growths rates have been applied directly across the network using the PRISM 5.2 forecast models. These growth rates have been constrained to TEMPro within the PRISM model, so they have not been re-constrained as part of BCM. The demand may provide higher growth than TEMPro as a result network supply and is also based upon network operational performance.

Table 2.3: 2026 Matrix Growth (AM/IP/PM) (excluding intra-zonals)

User Class	Base	2026	% Change	TEMPro
UC1: Car EB	19797/24143/18130	24129/28456/22343	21%/18%/23%	10%/9%/9%
UC2: Car Other	171001/141938/209065	205820/172354/247656	20%/21%/18%	14%/14%/12%
UC3: LGV	27762/22075/24401	33005/27180/29097	19%/23%/19%	-
UC4: HGV	22986/26823/17057	23884/27798/17656	3.9%/3.6%/3.5%	-
Total	241547/214979/268654	286839/255788/316753	19%/19%/18%	-

Table 2.4: 2037 Matrix Growth (AM/IP/PM) (excluding intra-zonals)

User Class	Base	2037	% Change	TEMPro
UC1: Car EB	19797/24143/18130	25583/30621/24231	29%/27%/34%	19%/16%/17%
UC2: Car Other	171001/141938/209065	222403/188963/268854	30%/33%/29%	26%/26%/23%
UC3: LGV	27762/22075/24401	35944/30092/32072	29%/36%/31%	-
UC4: HGV	22986/26823/17057	24222/27895/18071	5.3%/4.0%/5.9%	-
Total	241547/214979/268654	308153/277569/343228	28%/29%/28%	-

It was not possible to produce Covid scenarios as the impact on traffic patterns was not understood at the time of the study.

Do Something Scenarios Modelling

Working collaboratively with BCC and TfWM through a series of workshops, the long list was redeveloped and sifted using the MCA process to a short-list of schemes, leading to the development of the scenarios.

The network and demand modelling methodology for the DS scenarios and associated appraisal was agreed with the client. This created an efficient process for the development of the public transport and highway models and representation of other policy changes.

A key focus of core options for modelling has been included in the following table.

Table 2.5 Core Modelling Considerations

Issue	Approach
Treatment of the A38 closure	Rather than inclusion within the reference case, incremental changes to the A38 including full closure were included within the packages with agreement with stakeholders.
Traffic flows to reflect the modelled outputs for Birmingham CAZ	The CAZ costs has been modelled as half of the proposed daily cost to reflect a return trip at all locations where the CAZ charge applies. This ensures that the CAZ cost for trips going into the CAZ area is included within the VDM calculations.
A set of option tests to model outputs for Birmingham CAZ in terms of increase in 'home working', further improvements to public transport and step change in active mode travel to facilitate a significant modal shift, a 'future charge' for through traffic on A38	A series of options have been modelled through the BCM Variable demand model with associated highways supply changes in addition to some direct matrix adjustments in accordance with the scheme.
A combination of Options	Scenario development to build on previous work with refreshed considerations, reducing need for testing what's known that did not work from the PRISM Modelling results.

Appropriate coding has been conducted to test these considerations as part of the scenarios developed.

The model is capable of testing highways and highway demand scenarios. However, schemes associated with parking choice and active modes are not specifically treated within the model structure, and so careful adjustment of the demand matrices was required in the modelling of options, utilising information from other sources on the proportions of demand and locations where the measure would realistically impact. The details of the variable demand model are detailed in the Variable Demand Modelling report.

The key activities for Do-Something Scenario Coding were:

The options coding was based on an approach adopted successfully through:

- Revisiting O-D patterns and Generalised Journey Time (GJT) assumptions in light of improved public transport services and other modal shifts (e.g. active mode travel)
- The highway coding conducted in BCM to introduce severed links and road-space re-allocation as well as any highway capacity enhancements such as A4540. This led to adjustment of the highway supply and costs for the variable demand model (VDM) application. The coding principles established throughout the model development process were maintained;
- Public transport provision coded directly into the BCM SATURN Highways Model and the VDM were used to adjust the trip demand based on the resultant supply side changes.
- Model checks were conducted, and verified;

- The model results were generated for transport assessment as well as use of modelling outputs to consider future price of carbon emissions based on data sourced from the public domain (e.g. DEFRA / JAQU).

The model assessment years all converged for the scenarios tested, providing a robust platform for analysis. Model specification and scheme coding is presented in **Appendix F**.

2.1.3 Analysis Stage

Summary outputs were produced for each scenario, utilising various outputs from the BCM and producing graphical outputs to aid interpretation including overall network efficiency and scale of scheme benefits (to inform VfM considerations). These include change in the number of trips by mode; trip lengths by mode; journey time changes by mode; journey lengths; capacity constraint locations; and change in emissions.

2.1.4 Project Outputs and Deliverables

The scale of achievement of the stated objectives, coupled with value for money, delivery and fundability to suggest the preferred option(s) to take forward, are identified through the analysis of options. The technical analysis details are included in **Appendix D**. A high-level programme for the preferred scenario, with critical stages, is set out to support the recommendations.

The outcome is introduced to support the ongoing refresh of the TfWM Movement for Growth and Birmingham Transport Plan and programmed investment by BCC and TfWM.

Next steps should consider the need for further modelling approaches for DfT requirements, further review of O-D patterns and GJT assumptions based on tested Public Transport patterns and demand, and future price of Carbon based on data sourced from public domain (e.g. DEFRA / JAQU).

3. Options Development

3.1 Long List of Options

Following on from the scenarios assessed in the Snow Hill Connectivity Study (SHCS), the long list of potential schemes for consideration for this study was derived from two sources:

- Firstly, from the interventions proposed in the SHCS, with highway schemes within the BCC area (mostly on the A4540 Middleway), additional Park & Ride capacity across the West Midlands Rail network[4], along with Sprint schemes and additional bus priority corridor measures; and
- Secondly, from a review of appropriate updated regional and local policies and strategies, particularly referencing the Emergency Travel Plan, the Draft Birmingham Transport Plan and the Local Cycling and Walking Infrastructure Plan.

The long list numbered 137 potential schemes, under the following headings:

- Rail schemes – 39, including Park & Ride site expansion and new stations/services;
- Additional Bus & Sprint schemes – 13, including Sprint Park & Ride sites and bus priority corridors;
- Road schemes – 68, including options from the SHCS for junction alterations on the A4540 Middleway, many with several alternative potential interventions;
- Active Mode schemes – 10, mostly cycling schemes; and
- Other schemes – 7 including workplace parking levy and Parking SPD and charging options.

The derived long list of options was circulated to relevant client officers for consideration, with agreement that the list would be reviewed as part of the initial study workshop. Specific discussions were subsequently held with BCC's Walking and Cycling Strategy team and Transport for West Midlands' Head of Park & Ride, to review and agree their relevant potential schemes. Following these discussions, a few schemes were removed from the list as either having been superseded by other schemes on the list, or that they were no longer being pursued or supported by the relevant body.

This cleaned long list was then re-circulated for final consideration by the study technical group. The resultant long list is included at **Appendix C**.

3.2 Multi Criteria Analysis and Short-listing Process

Following from similar MCAs used on similar studies elsewhere, an initial 63 criteria were proposed grouped under ten broad themes encompassing DfT EAST and local policy objectives. These were:

- Policy fit – 7;
- Strategic – 6;
- Engineering/deliverability – 11;
- Transport Impacts – 10;
- Safety – 5;

[4] Recognising TfWM/WMCA park and ride policy and the potential impact on the levy / requirement revenue transfer from train operations.

- Environmental – 9;
- Managerial – 3;
- Financial/Economic – 4;
- Development Impacts – 4;
- Commercial – 4

The detailed criteria are listed in **Appendix C**.

For discussion at the first workshop, the MCA table was circulated to the relevant client officers, with sample scoring included for each of the mode categories. This allowed the client group to review how the criteria scoring was proposed to be undertaken, including the consultant's interpretation of the criteria and its application to the scheme under consideration.

A seven-point Likert scale was used, as Beneficial Large / Medium / Slight. Neutral, Adverse Slight / Moderate / Large. These were given the numerical values of +3 to -3, which was subsequently used during shortlisting and option development. The completed MCA is enclosed at **Appendix D**.

During the workshop, it was suggested that a more streamlined approach could be taken to the long list scoring, with an initial sift of schemes on the basis of Policy Fit and Strategic themes. If a scheme failed to score positively on any of the thirteen criteria under these two themes, then it should not be progressed for more detailed scoring. A further refinement was suggested, being that if any scheme scored a Large Adverse (-3) score, assessment should stop and the scheme dropped.

Applying these refined methodology elements reduce the time required to undertake the analysis of the schemes. The scoring reduced the list from the initial 137 to 116. The changes were as follows:

- Rail schemes – 38, reduced by one from 39;
- Bus & Sprint schemes – 13, no change;
- Road schemes – 48, reduction of 20 from original 68;
- Active Mode schemes – 10, no change; and
- Other schemes – 7, no change.

The most significant reduction is schemes was under the road category. These were mostly significant reconstructions of junctions on the A4540 Middleway, which would have increased severance, visual intrusion and impacted negatively on active mode crossings of the Middleway. Overall, many of the road schemes had negative scores, due to their impacts on the surrounding communities.

3.3 Short List of Options

A further sifting was then applied to produce the final short list of options to be used within packages for testing in the BCM.

A preliminary assessment of the sifted list of schemes against the four broad Birmingham Transport Plan policy themes of Reallocating Road Space; Transforming the city centre; Prioritising active travel in local neighbourhoods; and Managing demand through parking measures, reiterated the perceived fit against these objectives and hence their likelihood of being supported by BCC officers and Members.

The review identified that many of the road schemes did not support the renewed strategic direction for Birmingham's transport. As mentioned previously, many of the road schemes achieved negative overall scores, indicating their poor fit with policy.

By applying a final filter of receiving a score greater than 0, the final short list of schemes was derived. The numbers of short-listed schemes under the five headings were:

- Rail schemes – 11
- Metro schemes - 5
- Bus & Sprint schemes – 11;
- Road schemes – 5;
- Active Mode schemes – 10; and
- Other schemes – 5.

The detailed short-listed scheme list is shown in Table 3.1.

Table 3.1 Shortlisted Scheme Options

Schemes
Rail: P & R Blake Street
Rail: P & R Butlers Lane
Rail: P & R Four Oaks
Rail: P & R Sutton Coldfield
Rail: P & R Chester Road
Rail: P & R Aston
Rail: P & R Selly Oak
Rail: P & R Bournville
Rail: P & R Kings Norton
Rail: Birmingham International Integrated Transport Hub
Rail: Dudley Road new station
Metro: East Birmingham & Solihull Metro
Metro: Connection Livery Street to St Paul Metro stop
Metro: Extend Metro from Edgbaston Terminus
Metro: Southern Gateway Metro (Eastside to University of Birmingham/University Hospitals Birmingham)
Metro: City wide/regional
Bus & SPRINT: Sutton-Langley
Bus & SPRINT: Bristol Road
Bus & SPRINT: Hagley Road

Bus & SPRINT: Sprint P&R - A34 M6J7
Bus & SPRINT: Sprint P&R - Hagley Road M5J3
Bus & SPRINT: Sprint P&R - Sutton M6J5
Bus & SPRINT: Bus Improvement Corridor - A435 Alcester Road
Bus & SPRINT: Bus Improvement Corridor - A441 Pershore Road
Bus & SPRINT: Bus Improvement Corridor - A41 Holyhead Road/Soho Road
Bus & SPRINT: Bus Improvement Corridor - A5127 Sutton
Bus & SPRINT: Cross-city centre bus services
Road: Birchley Island M5J2 Improvement
Road: M5J1 Improvement
Road: Traffic cells (city centre)
Road: 20mph across city centre (inside A4540)
Road: Options to address A4540 Crossings
AM: Local centres walking and cycling access
AM: Bham cycle revolution - phase 1 Soho Road
AM: Bham cycle revolution - phase 1 Alcester Road
AM: Bham cycle revolution - phase 1 Lichfield Road
AM: Bham cycle revolution - phase 2 Tyburn Road
AM: Bham cycle revolution - phase 3 outer connections
AM: Middleway cycle routes
AM: Last mile cycle routes
AM: Cross-city cycle routes
AM: Development of Active mode measures
Other: Workplace Parking Levy (WPL)
Other: Birmingham parking SPD (inside A4540 reductions/CPZ/RPZ etc)
Other: CM750 Selly Oak/Edgbaston and Uni/Hospitals area wide parking scheme
Other: Low Traffic Neighbourhood (Places for People)
Other: Options for the use of the former A38 through the City Centre

Two considerations when shortlisting, but not used as assessment factors, were the likely delivery date of the potential scheme (required for scenario testing in the BCM) and also likely body responsible for delivery. Most of the road, active mode and other schemes were determined to be within BCC's remit, and so more easily delivered within anticipated timescales, whereas the rail and bus/Sprint schemes would more likely be led by Transport for West Midlands and would also require further stakeholder engagement and support (for example with Network Rail or other West Midlands authorities) to secure delivery.

The collaborative approach taken to the development of the long list of schemes, along with the agreement of the assessment criteria and the methodology for their application, meant that the sifting of schemes from long

to short list was efficiently undertaken and produced a meaningful list of schemes for inclusion under the scenario tests.

Drawing many of the initial long list from adopted policy documents further strengthens the likelihood of delivery, as these are schemes that are already in the public domain and have been subject to initial considerations and deliverability assessments.

The anticipated delivery dates, in line with BCM future assessment years, gives a broad indication of likely timescales required to develop interventions, produce business cases and secure funding, meaning that a pragmatic approach has been applied to estimated delivery of enhanced transport capacity.

3.4 Development of Packages for Scenario Testing

The approach taken to development of the Packages was undertaken in stages building progressively on the model results. Initially two scenarios were developed based on;

- The Draft Birmingham Transport Plan 2031initiatives including the proposed traffic cells in the City Centre, 20 mph zone and closure of the A38 weaving sections within the City Centre – all within Birmingham City Council's capability without relying on other agencies

- Maximum implementation of sifted public transport options with reductions on highway supply, plus full closure of the A38 tunnels. This would involve significant additional Birmingham City Council capabilities working with Transport for West Midlands particularly for the delivery of the SPRINT and Metro services.

Following assessment of the effectiveness of these two alternatives two further scenarios were developed;

- First Optimisation – inclusion of additional public transport (park and ride schemes), complementary parking (Workplace Parking Levy and on-street parking reductions) to reduce highway demand as much as possible. This package contains a mix of BCC areas of control in terms of parking supply and charging but also areas wholly delivered by third parties in terms of the park and ride schemes.

- Final Optimisation – addition of best performing highway options to mitigate delay hot-spots revealed in the modelling. Two junction schemes that fell just outside the list above were included having looked into the results from the other tests. The delivery of this package would require partnership working with both TfWM and Highway England.

The contents of each of the scenarios is shown in Table 3.2 below.

Table 3.2 Content of each of the Packages for Modelling – 2026

2026	Test 1 BCC TP	Test 2 Full Tunnel Closure	Test 3 Optimisation 1	Test 4 Optimisation 2
Traffic cells (city centre)	✓	✓	✓	✓
20mph across city centre (inside A4540)	✓	✓	✓	✓
Snow Hill Test 1 (A38 weaves closed)	✓			
Snowhill Test 2 (A38 tunnels closed)		✓	✓	✓
Sprint - Sutton-Langley		✓	✓	✓
Sprint - Bristol Road		✓	✓	✓

Sprint - Hagley Road (Halesowen and Dudley routes)		✓	✓	✓
Bus Improvement Corridors		✓	✓	✓
Parking SPD including roll-out of CPZ's and closure of car parks (-10% traffic based on the Birmingham Parking Study 2016 analysis of proportion of unrestricted on-street parking slightly above this figure)			✓	✓

Table 3.3 Contents of the Packages for Modelling - 2037

2037	Test 1 BCC TP	Test 2 Full Tunnel Closure	Test 3 Optimisation 1	Test 4 Optimisation 2
Traffic cells (city centre)	✓	✓	✓	✓
20mph across city centre (inside A4540)	✓	✓	✓	✓
Snow Hill Test 1 (A38 weaves closed)	✓			
Snowhill Test 2 (A38 tunnels closed)		✓	✓	✓
Sprint - Sutton-Langley		✓	✓	✓
Sprint - Bristol Road		✓	✓	✓
Sprint - Hagley Road (Halesowen and Dudley routes)		✓	✓	✓
Bus Improvement Corridors		✓	✓	✓
City wide/regional future expansion of Metro network		✓	✓	✓
Workplace Parking Levy			✓	✓
Parking SPD including roll-out of CPZ's and closure of car parks (-10% traffic)			✓	✓
Park and Ride - See table above			✓	✓
M5 Junction 1 capacity improvement				✓
Five Ways (3 Arm Signalised) (Op 5)				✓
Spring Hill (4 Arm Signalised) (Op 2)				✓

The coding approach for these schemes is included within Appendix F

4. Appraisal of Scenarios

4.1 Approach to the Assessment of Options

The aim of the process was to assess how the schemes aligned with the DBTP Policies and DfT objectives, also how additional measures would support BCC with their robust evidence base to inform DfT and support an application for funding for next stage development of the scheme. The options assessment utilises the capabilities of the transport models developed for BCC including:

- Overall change in demand (multi-modal / shift).
- Overall journey time reduction in the network and specifically the Snow Hill area.
- Change in highway trips origins and destinations.
- Change in vehicle kms.
- Highway network speeds change for the whole network and specifically in the Snow Hill area.
- Total highway delay change for the whole network and specifically in the Snow Hill area.

CO2, NOX and PM10 analysis has been provided using SATURN LPT outputs, this has limitations and a more detailed assessment would need to be carried out for the OBC in line with WebTAG and potentially including Air Quality modelling. SATURN outputs also do not account for change in average vehicle emissions over time and this should be considered for further detailed modelling at outline business case stage.

4.2 City Area Analysis

Table 4.1 to Table 4.6 shows the key highway model statistics for the four packages for each time period and for 2026 and 2037. The average distance and average journey time figures take account of the change on size of the matrices and change is compared to the reference case.

There is a consistent decrease in total vehicular trips across all time periods with the scheme in place. This accounts for some trips not being made with the scheme in place. There are also modelled benefits to overall average speeds and average journey times. There are small increases noted for the average journey distance implying that there is a change to the trip length distribution with a higher impact on shorter distance trips or re-routing to longer routes for individual trips. This represents all the trips within the full Birmingham City Model.

To understand the potential economic benefit of the test scenarios there are 3 critical indicators. These are also named as scheme matrices for economic assessment, which includes:

- Total Matrix Size
- Travel Distance between Origins and Destinations
- Journey Times between Origins and Destinations

These three together give a good indications of potential user economic benefits. Therefore, these indicators are extracted to comparatively analyse and report changes against the reference case. In addition, change in overall network speed together with fuel consumption for each scenario leads into a comparative analysis of network performance. As a final set of outputs, the SATURN model has been utilised to generate environmental factors such as CO2, NOX and PM10, which provides an understanding of environmental impact of each tested scenario against the reference case. These set of summary outputs are also selected to be able to analyse each scenario against the core objectives of the emerging Birmingham Draft Transport Plan.

Table 4.1 Key Network Statistics for the Four Package Scenarios - AM Peak 2026

AM 2026	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	297,512	285,360	288,791	286,779	286,779
Free Flow Time (PCU Hrs)	45,427	45,469	44,690	44,274	44,274
Total Travel Time (PCU Hrs)	77,173	77,669	75,534	72,941	72,941
Total Delays (PCU Hrs)	31,746	32,200	30,844	28,667	28,667
Travel Distance (PCU Kms	3,059,659	3,057,205	3,019,627	2,998,175	2,998,175
Overall Average Speed (kph)	39.6	39.4	40	41.1	41.1
Fuel Consumption (Ltrs)	267,437	267,851	263,035	258,267	258,267
Time Saving (hrs) %		496 0.6%	-1,639 -2.1%	-4,232 -5.5%	-4,232 -5.5%
Average Journey Distance (km) + % Change	10.28	10.71 4.2%	10.46 1.7%	10.45 1.7%	10.45 1.7%
Average Journey Time (mins) + % Change	15.56	16.33 4.9%	15.69 0.8%	15.26 -1.9%	15.26 -1.9%
Total CO2 emissions (kg)	120,890	121,349	117,735	115,627	115,627
Average CO2 emissions (kg per veh)	0.406	0.425	0.408	0.403	0.403

Table 4.2 Key Network Statistics for the Four Package Scenarios – Inter-peak 2026

IP 2026	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	266,667	256,799	259,800	258,165	258,165
Free Flow Time (PCU Hrs)	38,933	38,879	38,300	37,975	37,975
Total Travel Time (PCU Hrs)	62,661	62,021	59,579	58,631	58,631
Total Delays (PCU Hrs)	23,728	23,142	21,279	20,656	20,656
Travel Distance (PCU Kms	2,608,301	2,601,267	2,569,580	2,552,665	2,552,665
Overall Average Speed (kph)	41.6	41.9	43.1	43.5	43.5
Fuel Consumption (Ltrs)	223,386	221,761	217,250	214,979	214,979
Time Saving (hrs) %		-640 -1.0%	-3,082 -4.9%	-4,030 -6.4%	-4,030 -6.4%

Average Journey Distance (km) + % Change	9.78	10.13 3.6%	9.89 1.1%	9.89 1.1%	9.89 1.1%
Average Journey Time (mins) + % Change	14.10	14.49 2.8%	13.76 -2.4%	13.63 -3.3%	13.63 -3.3%
Total CO2 emissions (kg)	101,193	100,963	99,216	97,747	97,747
Average CO2 emissions (kg per veh)	0.379	0.393	0.382	0.378	0.378

Table 4.3 Key Network Statistics for the Four Package Scenarios - PM Peak 2026

PM 2026	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	329,238	317,527	320,673	319,241	319,241
Free Flow Time (PCU Hrs)	49,513	49,444	48,729	48,427	48,427
Total Travel Time (PCU Hrs)	86,613	85,704	83,125	82,536	82,536
Total Delays (PCU Hrs)	37,100	36,260	34,396	34,109	34,109
Travel Distance (PCU Kms	3,247,389	3,239,260	3,216,088	3,200,650	3,200,650
Overall Average Speed (kph)	37.5	37.8	38.7	38.8	38.8
Fuel Consumption (Ltrs)	288,717	286,902	283,093	281,235	281,235
Time Saving (hrs) %		-909 -1%	-3,488 -4.0%	-4,077 -4.7%	-4,077 -4.7%
Average Journey Distance (km) + % Change	9.86	10.20 3.4%	10.03 1.7%	10.03 1.6%	10.03 1.6%
Average Journey Time (mins) + % Change	15.78	16.19 2.6%	15.55 -1.5%	15.51 -1.7%	15.51 -1.7%
Total CO2 emissions (kg)	131,871	131,106	128,716	127,143	127,143
Average CO2 emissions (kg per veh)	0.401	0.413	0.401	0.398	0.398

Table 4.4 Key Network Statistics for the Four Package Scenarios - AM Peak 2037

AM 2037	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	319,448	316,085	312,709	308,521	309,741
Free Flow Time (PCU Hrs)	49,041	48,964	48,886	47,853	48,103
Total Travel Time (PCU Hrs)	88,080	88,334	89,735	82,767	82,845
Total Delays (PCU Hrs)	39,039	39,370	40,849	34,914	34,742
Travel Distance (PCU Kms	3,310,153	3,300,690	3,297,967	3,243,994	3,257,674

Overall Average Speed (kph)	37.6	37.4	36.8	39.2	39.3
Fuel Consumption (Ltrs)	295,614	295,089	296,883	284,743	285,516
Time Saving (hrs) %		254 0.3%	1,655 1.9%	-5.313 -6.0%	-5,235 -5.9%
Average Journey Distance (km) + % Change	10.36	10.44 0.8%	10.55 1.8%	10.51 1.5%	10.52 1.5%
Average Journey Time (mins) + % Change	16.54	16.77 1.4%	17.22 4.1%	16.10 -2.7%	16.05 -3.0%
Total CO2 emissions (kg)	130,501	130,608	130,446	125,143	125,999
Average CO2 emissions (kg per veh)	0.409	0.413	0.417	0.406	0.407

Table 4.5 Key Network Statistics for the Four Package Scenarios – Inter-peak 2037

IP 2037	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	289,097	286,851	284,359	280,811	281,845
Free Flow Time (PCU Hrs)	42,244	42,270	42,211	41,398	41,585
Total Travel Time (PCU Hrs)	70,647	71,522	72,196	68,518	68,538
Total Delays (PCU Hrs)	28,403	29,252	29,985	27,120	26,953
Travel Distance (PCU Kms	2,833,161	2,829,015	2,821,882	2,781,267	2,791,396
Overall Average Speed (kph)	40.1	39.6	39.1	40.6	40.7
Fuel Consumption (Ltrs)	246,167	246,730	247,612	240,373	240,857
Time Saving (hrs) %		875 1.2%	1,549 2.2%	-2,129 -3.0%	-2,109 -3.0%
Average Journey Distance (km) + % Change	9.80	9.86 0.6%	9.92 1.3%	9.90 1.1%	9.90 1.1%
Average Journey Time (mins) + % Change	14.66	14.96 2.0%	15.23 3.9%	14.64 -0.2%	14.59 -0.5%
Total CO2 emissions (kg)	109,969	110,041	110,806	106,790	107,052
Average CO2 emissions (kg per veh)	0.380	0.383	0.390	0.380	0.380

Table 4.6 Key Network Statistics for the Four Package Scenarios - PM Peak 2037

PM 2037	Reference Case	Test 1	Test 2	Test 3	Test 4
Total Matrix Size (Vehicles)	356,475	354,481	350,530	347,603	348,708

Free Flow Time (PCU Hrs)	54,279	54,422	54,117	53,381	53,538
Total Travel Time (PCU Hrs)	104,859	105,095	106,089	100,521	101,217
Total Delays (PCU Hrs)	50,580	50,673	51,972	47,140	47,679
Travel Distance (PCU Kms	3,571,376	3,576,369	3,575,851	3,535,355	3,549,077
Overall Average Speed (kph)	34.1	34	33.7	35.2	35.1
Fuel Consumption (Ltrs)	330,088	330,190	332,106	322,825	324,119
Time Saving (hrs) %		236 0.2%	1,230 1.2%	-4,338 -4.1%	-3,642 -3.5%
Average Journey Distance (km) + % Change	10.02	10.09 0.7%	10.20 1.8%	10.17 1.5%	10.18 1.6%
Average Journey Time (mins) + % Change	17.65	17.79 0.8%	18.16 2.9%	17.35 -1.7%	17.42 -1.3%
Total CO2 emissions (kg)	147,342	146,382	145,689	142,684	142,577
Average CO2 emissions (kg per veh)	0.413	0.413	0.416	0.410	0.409

Table 4.7 shows the travel demand matrices sizes and change in the tested scenarios compared to the reference case. The additional public transport and active mode provision is expected to enable an increase in capacity. This would sufficiently address to reduction in highway matrix sizes to avoid the core area being disadvantaged by reduced demand to the city by car trips. However, a full demand analysis should be conducted in the next stage of business case development this should include, distribution of additional supply and willingness to change mode.

Table 4.7 Total Highway Matrix Size in each Scenario / modelled year

Total Matrix Size	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	297,512	285,360	288,791	286,779	286,779
AM 2026 % Difference		-4%	-3%	-4%	-4%
IP 2026	266,667	256,799	259,800	258,166	258,166
IP 2026 % Difference		-4%	-3%	-3%	-3%
PM 2026	329,238	317,527	320,673	319,241	319,241
PM 2026 % Difference		-4%	-3%	-3%	-3%
AM 2037	319,448	316,085	312,709	308,521	309,741
AM 2037 % Difference		-1%	-2%	-3%	-3%
IP 2037	289,097	286,851	287,081	280,811	281,845
IP 2037 % Difference		-1%	-1%	-3%	-3%
PM 2037	356,475	354,481	352,864	347,603	348,708
PM 2037 % Difference		-1%	-1%	-2%	-2%

Table 4.8 shows the change in total highway model delay time for the tested scenarios compared to the reference case.

Table 4.8 Highway Model Total Change in Delay in each Scenario / Modelled Year

Total Change in Delays	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	31,746	32,200	30,844	28,667	28,667
AM 2026 % Difference		1%	-3%	-10%	-10%
IP 2026	23,728	23,142	21,279	20,656	20,656
IP 2026 % Difference		-2%	-10%	-13%	-13%
PM 2026	37,100	36,260	34,396	34,109	34,109
PM 2026 % Difference		-2%	-7%	-8%	-8%
AM 2037	39,039	39,370	40,849	34,914	34,742
AM 2037 % Difference		1%	5%	-11%	-11%
IP 2037	28,403	29,252	29,985	27,120	26,953
IP 2037 % Difference		3%	6%	-5%	-5%
PM 2037	50,580	50,673	51,972	47,140	47,679
PM 2037 % Difference		0%	3%	-7%	-6%

Appendix E presents the diagrams of changes in demand flows, change in delays and changes in demand across the study area and wider region.

Figure 4.1 shows the change in delays across all time periods for the options for 2026 and 2037, showing the relatively poor performance of test 1 compared to the base and Test 2 in 2037. Whereas tests 3 and 4 result in significant delay time savings with option 4 incrementally better in the AM and IP periods in 2037.

Figure 4.2 shows the change in total travel time which presents a similar picture between the options.

Figure 4.3 shows the change in the vehicle matrices revealing a substantial reduction in test 1 compared to the reference case in 2026 but not in 2037. Tests 1, 2 and 3 show progressive reductions in the matrices with test 4 – which relieves congestion at key junctions releasing capacity for more journeys to be made.

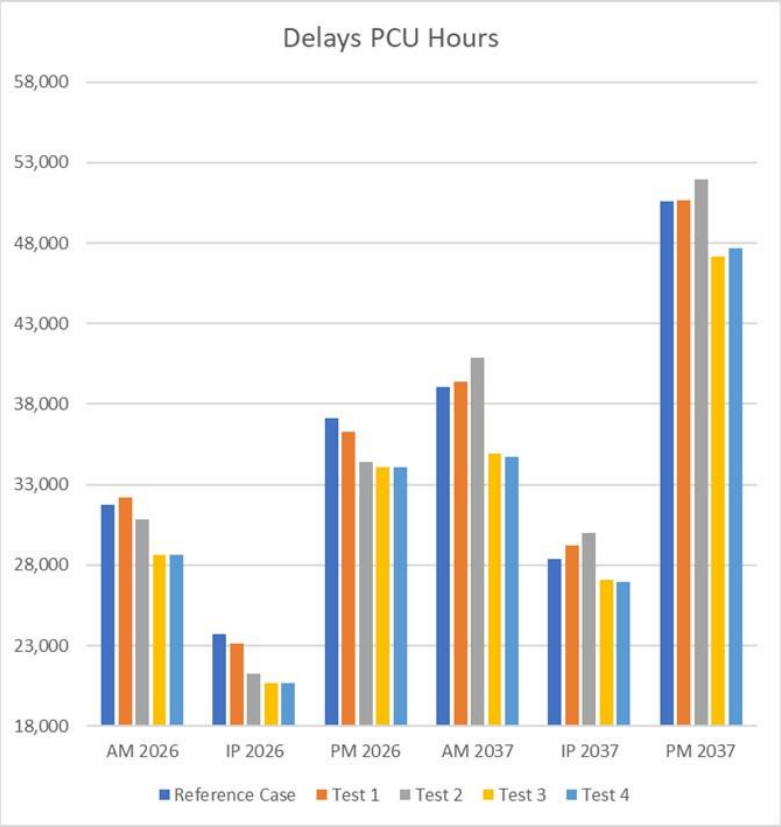


Figure 4.1: Comparison of Delay Times by period and Option for 2026 and 2037

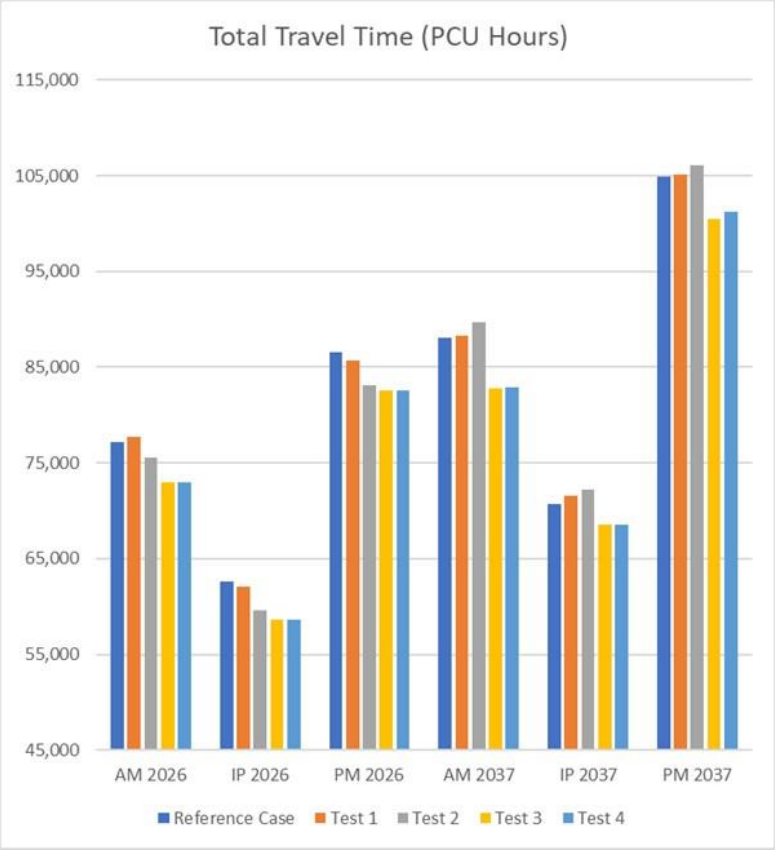


Figure 4.2: Comparison of Total Journey Time by Period and Option for 2026 and 2037

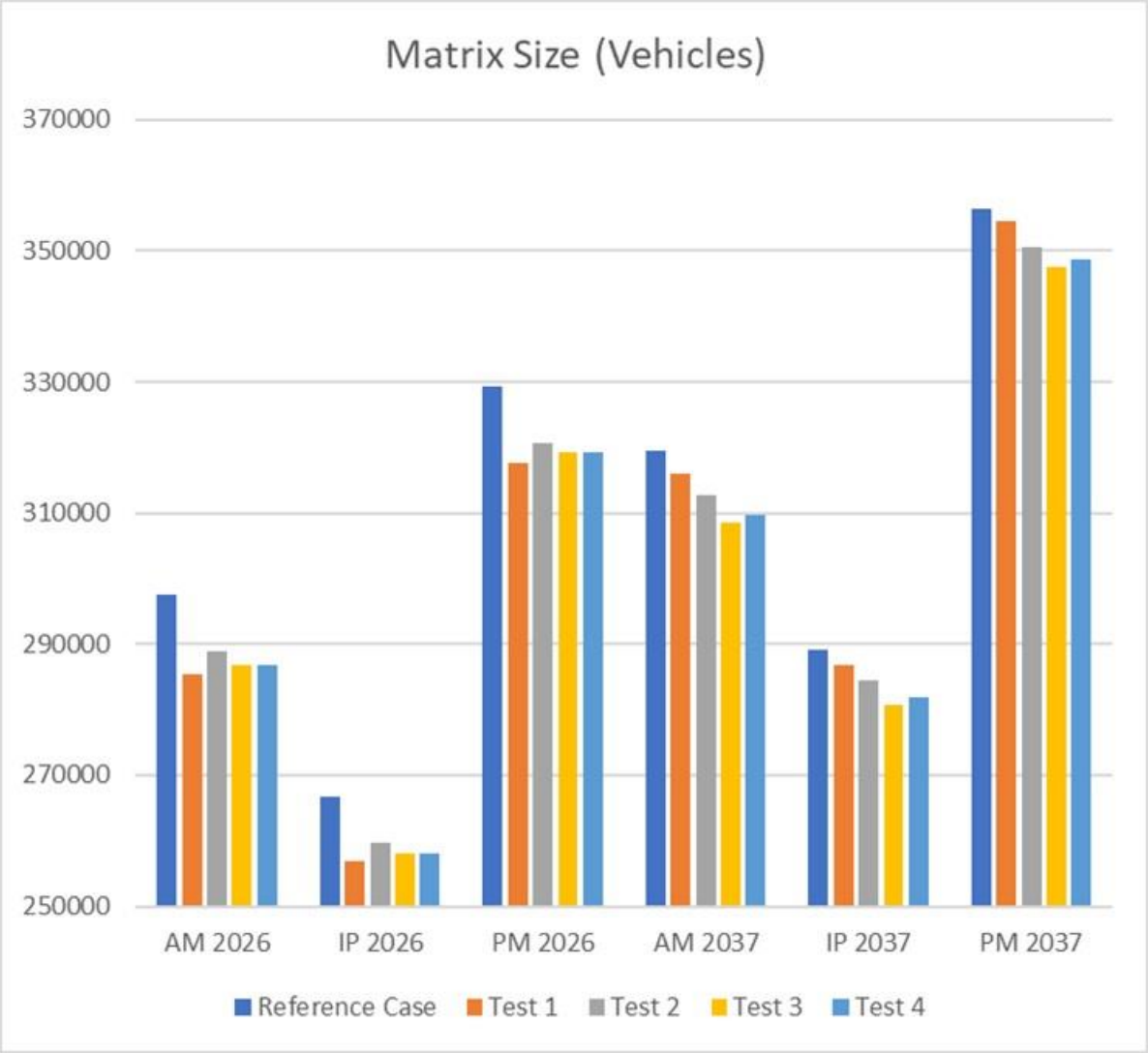


Figure 4.3: Comparison of Vehicle Matrix Sizes by Period and Option for 2026 and 2037

4.3 City Centre Impacts

Table 4.9 to 4.15 shows the City Centre cordoned statistics for each test for CO2, NOX, PM10 emissions, average speed, delays, total travel time and total travel distance within the City Centre to highlight the contribution of the scenarios to the achievement of the Snow Hill masterplan objectives and delivery of the growth strategy. As traffic is primarily directed onto the ring-road as a result of the A38 closure within the modelling the ring road is included in the city centre cordon area for purposes of analysis. This is detailed in Figure 4.4

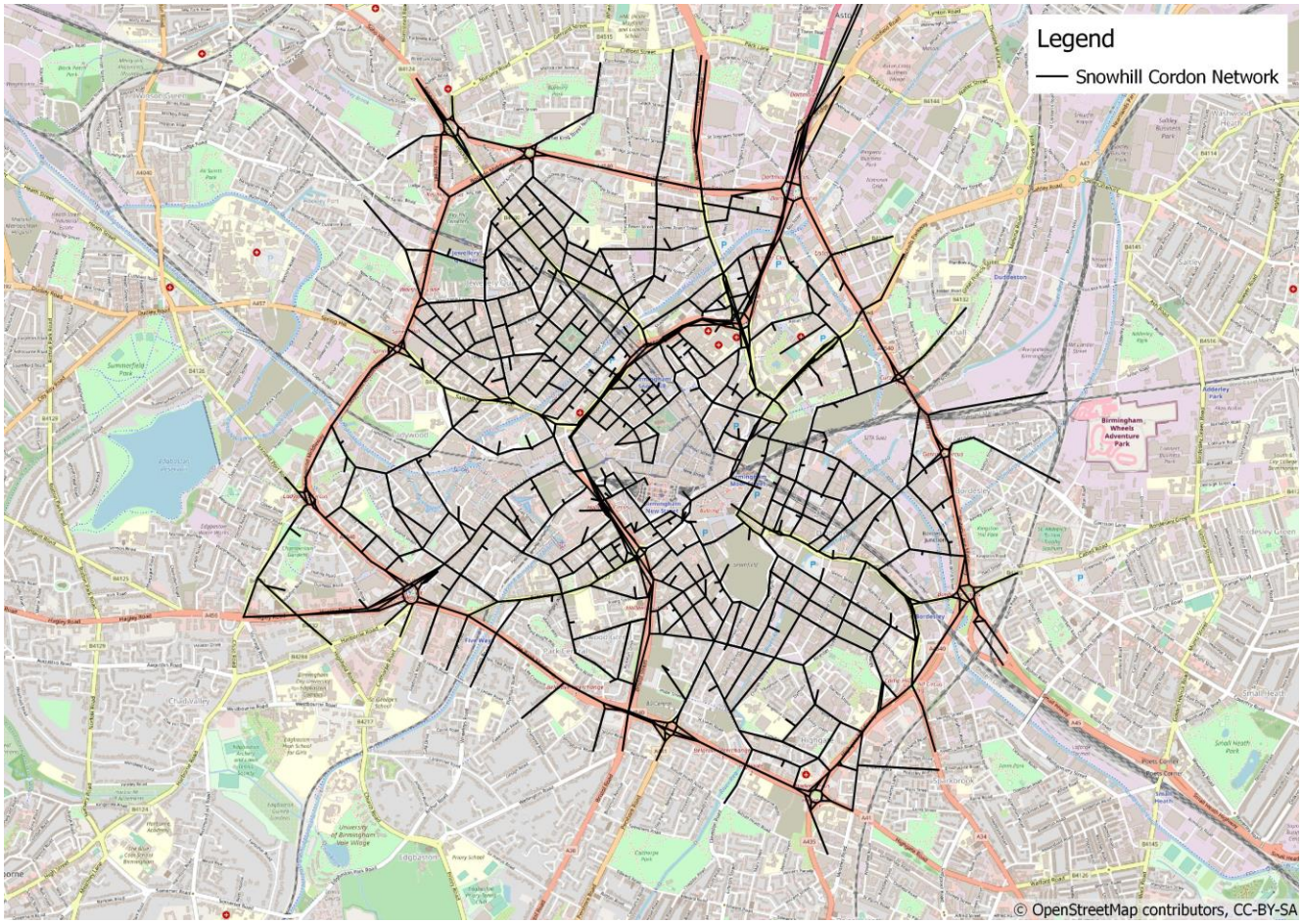


Figure 4.4: City Centre Cordon Area

Table 4.9 Change in CO2 emissions within the City Centre for Tests in 2026 and 2037

Inside the City Centre CO2	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	23281.64	22729.44	19203.57	17814.15	17814.15
		-2%	-18%	-23%	-23%
IP 2026	19421.46	18370.07	16449.97	15317.65	15317.65
		-5%	-15%	-21%	-21%
PM 2026	22860.79	21830.34	19250.91	18174.05	18174.05
		-5%	-16%	-21%	-21%
AM 2037	25309.02	24525.88	23226.87	20072.05	20122.91
		-3%	-8%	-21%	-20%
IP 2037	21258.01	20704.47	19691.98	16906.31	17420.78
		-3%	-7%	-20%	-18%
PM 2037	25202.97	24640.43	23751.43	20927.19	20734.02
		-2%	-6%	-17%	-18%

Table 4.10 Change in NOX emissions within the City Centre for Tests in 2026 and 2037

Inside the City Centre NOX	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	499.83	479.69	407.39	389.84	389.84
		-4%	-18%	-22%	-22%
IP 2026	442.7	434.28	378.17	360.51	360.51
		-2%	-15%	-19%	-19%
PM 2026	514.06	495.84	426.81	411.83	411.83
		-4%	-17%	-20%	-20%
AM 2037	519.5	493.84	451.23	423.62	434.64
		-5%	-13%	-18%	-16%
IP 2037	475.42	456.78	413.72	375.46	396.63
		-4%	-13%	-21%	-17%
PM 2037	525.85	515.85	465.78	448.82	443.44
		-2%	-11%	-15%	-16%

Table 4.11 Change in PM10 emissions within the City Centre for Tests in 2026 and 2037

Inside the City Centre PM10	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	2.58	2.51	2.14	2	2
		-3%	-17%	-22%	-22%
IP 2026	2.18	2.09	1.88	1.76	1.76
		-4%	-14%	-19%	-19%
PM 2026	2.61	2.51	2.21	2.1	2.1
		-4%	-15%	-20%	-20%
AM 2037	2.77	2.67	2.52	2.23	2.26
		-4%	-9%	-19%	-18%
IP 2037	2.38	2.31	2.19	1.9	1.98
		-3%	-8%	-20%	-17%
PM 2037	2.8	2.76	2.62	2.37	2.34
		-1%	-6%	-15%	-16%

Table 4.12 Change in Average Speed within the City Centre for Tests in 2026 and 2037

Overall Average Speed Within City Centre	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	12.7	12.2	11.9	13	13
		-4%	-6%	2%	2%
IP 2026	14.7	15.8	15.2	16	16
		7%	3%	9%	9%
PM 2026	12.2	12.5	12.5	13	13
		2%	2%	7%	13
AM 2037	11.3	10.8	9.8	12	12.5
		-4%	-13%	6%	11%
IP 2037	14.3	13	11.6	13.5	13.9
		-9%	-19%	-6%	-3%
PM 2037	10.3	10.3	8.7	11.2	11
		0%	-16%	9%	7%

Table 4.13 Change in Delays within the City Centre for Tests in 2026 and 2037

Delay Within City Centre	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	9116.3	9149.8	7763.1	6546.4	6546.4
		0%	-15%	-28%	-28%
IP 2026	6670.8	5702.5	5010	4435.9	4435.9
		-15%	-25%	-34%	-34%
PM 2026	9323.3	8566.1	7027.8	6388.4	6388.4
		-8%	-25%	-31%	-31%
AM 2037	11156.4	11390.1	11267.2	7933.2	7535.3
		2%	1%	-29%	-32%
IP 2037	7380.2	8082.9	8158.3	6015.9	5950.5
		10%	11%	-18%	-19%
PM 2037	12312.4	11875.8	13014.8	8870.4	8987.9
		-4%	6%	-28%	-27%

Table 4.14 Change in Total Travel Time within the City Centre for Tests in 2026 and 2037

Total Travel Time Within City Centre	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	12812.5	12836.4	10977.3	9631	9631
		0%	-14%	-25%	-25%
IP 2026	10008.3	9015.2	7967.3	7267.7	7267.7
		-10%	-20%	-27%	-27%
PM 2026	13221.3	12432.5	10409.6	9659.8	9659.8
		-6%	-21%	-27%	-27%
AM 2037	15018.8	15252.2	14882.4	11255.1	10924.8
		2%	-1%	-25%	-27%
IP 2037	10912.4	11617.6	11443.4	9001.8	9076.3
		6%	5%	-18%	-17%
PM 2037	16431.1	16006.7	16859.4	12466.2	12577.8
		-3%	3%	-24%	-23%

Table 4.15 Change in Total Travel Distance within the City Centre for Tests in 2026 and 2037

Travel Distance Within City Centre	Reference Case	Test 1	Test 2	Test 3	Test 4
AM 2026	162645.8	156575.5	130623.6	125487.4	125487.4
		-4%	-20%	-23%	-23%
IP 2026	146820.5	142145.3	120940.6	116233.9	116233.9
		-3%	-18%	-21%	-21%
PM 2026	161610.6	155335.2	129952.5	125957.3	125957.3
		-4%	-20%	-22%	-22%
AM 2037	169739.2	163964.5	146136.5	134576.7	136439.2
		-3%	-14%	-21%	-20%
IP 2037	155526.5	150578.2	133157.6	121601.6	126519.1
		-3%	-14%	-22%	-19%
PM 2037	169639.9	164987.2	147277.3	139277	138587.2
		-3%	-13%	-18%	-18%

There are indications within the outputs from the modelling there are clear economics benefits that will need further analysis in combination with the likely cost implications from the schemes assessed.

4.4 Interpretation of Test Results

All test scenarios have been run through the purpose-built demand model. There were some convergence issues for tests 2-4 with the closure of the tunnels and resulting significant increases in delay in key sections of the network due to traffic rerouting as would be expected. Convergence in flows is typically 95-97% of links, below the TAG requirement of 98%. As this is designed to be informative rather than as a full TAG compliant forecast, for purposes of scheme funding this is considered acceptable. Most changes between iterations are between large delays and very large delays so results inform where issues are; the exact scale for the worst areas may not be converged. This does not impact on where the need for the interventions that the model shows. (Note that convergence issues would need to be resolved at the OBC stage).

Interpreting the results of the tested scenarios show that the junctions along the Middleway could be subject to further improvements as part of the development of the Business Case. It should be noted that improvements at these locations may bring localised economic and environmental benefits but also have negative impacts at both upstream and downstream junctions on key routes. This may trigger the need for additional junction improvements. The key junctions that experience such an impact are introduced in figure 4.5 for PM 2037 Test 3 and summarised below.

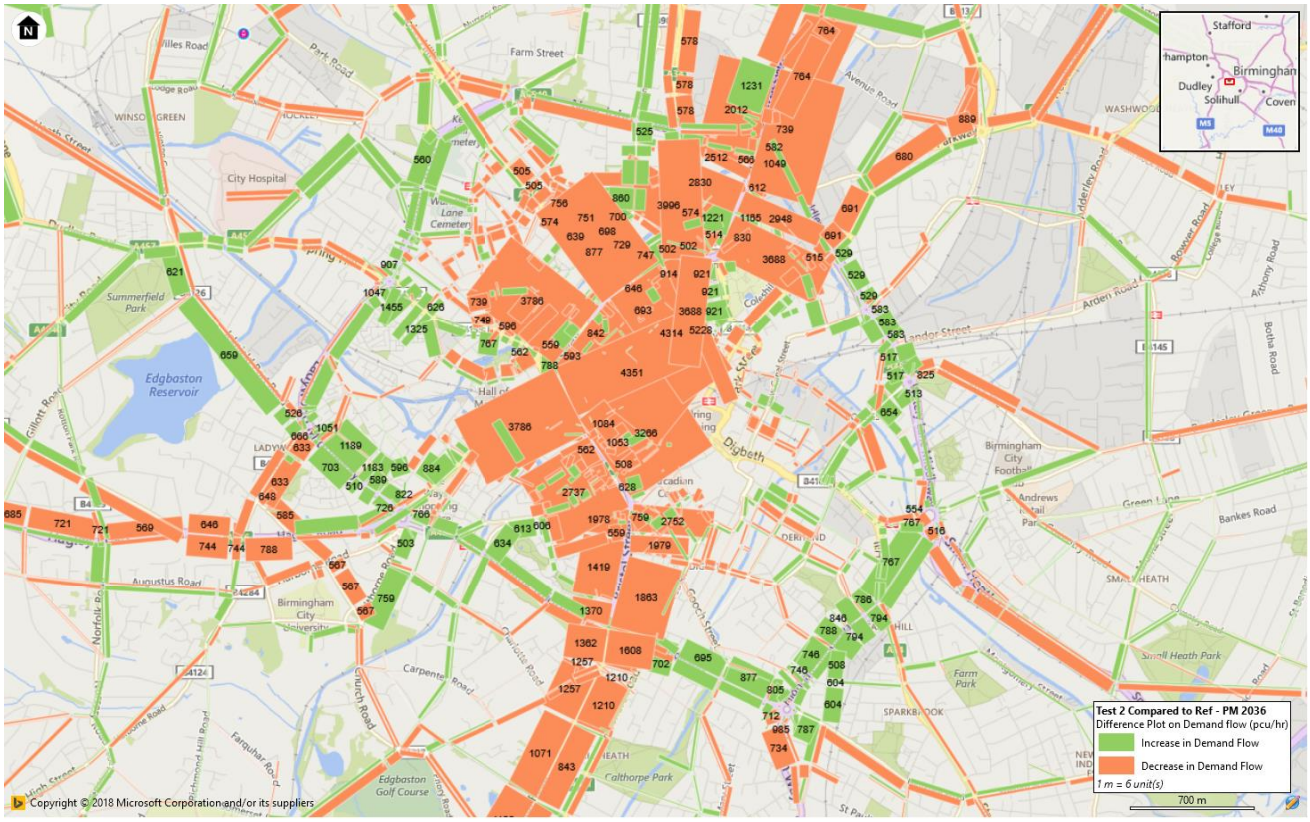


Figure 4.5: PM Test 3 Change in Demand Flows

The graphics, presented in Appendix E, also demonstrated that in opening year of 2026 and forecast year 2037 (available model assessment years) for tests 2-4 that:

- Increase in traffic demand on the A4540 on both sides of the A38 (east and west of A38)
- Significant decreases on the A38 and A34 into the city centre from outside of the A4540
- Some re-routing down minor roads through and around the city centre in response to the highways changes
- Considerable increases in delays along sections of the A4540
- Overall decrease in traffic to the city centre particularly around Snow Hill and A38.

Progressively from the test 1 to test 4 the analysis of overall network performance as well as localised performance at Snow Hill (area within the Middleway) have demonstrated compliance with the objectives and the results are explained in the following sections for each tested scenario.

4.4.1 BCC Transport Plan – Test 1:

Closing the accesses to and from the A38 near Snow Hill and across the city centre has limited impact on the amount of traffic using the A38 – actually making it a more attractive route for through traffic. This is a direct effect of the removal of delays associated with these accesses to the A38. This will not meet the aspirations for air quality and carbon emissions in the city centre. The introduction of traffic cells in the city centre and a 20mph zone coupled with the changes to A38 access significantly increases the use of the A4540 Middleway especially in 2037.

The Birmingham Transport Plan schemes result in initial significant reductions in the highway demand matrices but with smaller impacts in the longer term.

The 2026 models forecast overall highway network time savings in the interpeak and PM peak but disbenefits in 2037, these benefits are related to changes in the size of the matrix as average journey times and distances per journey are significantly greater in all time periods.

Within the city centre there are forecast reductions of emissions which are greater in 2026 than 2037 and relate to the matrix changes which result from increased network congestion. This test alone does not achieve the overall aspirations of the scheme so a more significant change would be required.

4.4.2 All shortlisted Schemes – Test 2

The full closure of the A38 tunnels to traffic plus the implementation of public transport schemes, result in greater reduction of the highway demand matrices and a substantial reduction in traffic through the city centre. Traffic switches to the A4540 Middleway east and west and in the wider area there is reduced use of the A38(M) and M6 and increased use of the A38 Tyburn Road and the outer ring road (A4040). Overall, there is a reduction in delays compared to the reference case in 2026, but some key junctions experience increased delays include Five Ways and Spring Hill junctions on the A4540 in 2026 as a result of the rerouting or A38 journeys to the Middleway. By 2037 the model begins to show worse results than test 1 as the reduction in capacity from the tunnels begins to have a greater impact. This shows that the tunnels are of increasing importance with increasing traffic levels (although with air quality and severance disbenefits).

There are significant reductions in CO2, NOX and PM10 emissions in the city centre in all periods and years as traffic is displaced from the centre. Travel time savings in the city centre in 2026 are lost in 2037.

4.4.3 Optimisation Process – Test 3

The additional Public Transport schemes and parking measures lead to further reductions of the highway demand matrices and reduction of delays. However, there remains substantial increases in flows on the A4540 Middleway east and west, as the measures do not particularly impact on through traffic. There remain residual issues at key junctions.

The test results forecast network level time savings, with average journey time savings in all years and time periods. Average journey distances are slightly greater as a result of rerouting away from the city centre. Matrix reductions are sustained in 2037 and there are more substantial benefits in reduced emissions in the city centre.

Overall, this test complements the range of policy objectives more comprehensively. However, it is noted that a significant amount of the benefits relate to the parking constraints and more analysis of the impacted journeys and availability of suitable public transport supply / capacity should be undertaken to determine acceptability and effectiveness of the proposals in Test 3 and Test 4.

At the OBC stage there will be a need to undertake a social and distributional analysis and equity assessment.

4.4.4 Final Optimisation Process – Test 4

The addition of crucial (limited) highway improvements at specific junctions resolves specific delay issues and further improves the network efficiency – enabling more use of the strategic highway network and less rat-running on unsuitable roads.

The modelling statistics are similar to test 3 in most respects but with additional network level average journey time savings. Overall this analysis suggests that there may be scope to further assess the design of key junction improvements to provide higher benefits and in all time periods. All further improvements in this test are localised around problem points on the network. These improvements are also limited in benefit by the capacities available at neighbouring junctions, which may require further interventions to maximise benefits. At Outline Business Case Stage options assessment and reporting will be conducted to address feasible, affordable and value engineered performance in line with Draft Birmingham Transport Plan.

5. Recommendations and Action Plan for Next Stage

5.1 Recommendations

The further development of the Birmingham City Model (BCM) to a revised calibration and validation in response to the Snow Hill access study has provided a robust platform to test the refined and revised set of schemes packaged to bring a coherent and policy-responsive approach. The revised Uncertainty Log (developed in line with TAG) has enabled establishment of a reliable "reference case" to provide a well-understood base case for options development. This has enabled multi-modal network operations to guide the options development process.

The development of a revised short-list of options has been fundamental to revise and refine the earlier developed schemes list in line with EAST as well as the Draft Birmingham Transport Plan 2031 objectives. This has led to the development of packaged scenarios, developed initially from the Draft Birmingham Transport Plan, and gradually developed with progressive closure of the A38 and addition of measures from the short list from Test 1 to Test 4. This has enabled understanding of progressive multi-modal network performance in a policy led approach.

All modelling has been undertaken with data collected before the Covid-19 Pandemic and its' impacts on travel demand. There will be a need to consider the impacts at the next stage including the difference between city centre access by car and by public transport and traffic levels and routings. Changes to travel behaviour since the pandemic and potentially sustained in the long term introduce the potential that PT investment is no longer required but also that the case for commercial investment is changes undermining the viability of development at Snow Hill Station.

The modelling approach has been proportionate and effective at demonstrating the effectiveness of the tested options on a range of metrics. The options tested have also highlighting the multi-agency delivery team that will be necessary to deliver the push and pull factors that will deliver the transport changes necessary to deliver the Snow Hill growth strategy.

There will be a need to further develop the modelling capability to assess the wider range of measures and interventions being recommended including the individual effectiveness of measures and their sustainability. This will require fitting public transport modelling supply and demand capability to the BCM and development of the 4 stage modelling capability of the VDM. The advantage would be ability to report achievement of the mode shift objective and equality assessment. The business case would need to widen out analysis to cover impacts on the health and wellbeing objectives. Also, the treatment of the A38 corridor through the Snow Hill Masterplan area, reduction of severance and improved local connectivity – with detailed analysis from the traffic models.

At this level of assessment, the packaged measures are limited to establishing the likely nature of schemes and not incorporating scheme designs to test the options. Whilst engineering judgement is utilised for these, there is now a need to identify options for each scheme, as tested in the model, and guided by the model to consider deliverability and likely costs at concept to preliminary design stages.

To be able to do this, we recommend that the adopted options (testing) stages are revised and commented/ agreed by Birmingham City Council and WMCA, to enable progression to the next stage. This needs to include the changes within the Snow Hill masterplan area to establish the local economic, environmental and social benefits. Once such an agreement is reached, the schemes can be developed to a sufficient stage to justify options completion, leading to a revised Strategic Outline Business Case and funding programme. Therefore, it is important that the proposed preferred option, Test option 4, is considered relative to other options and an agreement is reached to move to next stage. This is particularly of relevance for the Park & Ride expansion proposals and other public transport proposals which are expected to be delivered by other agencies in parallel to the BCC elements.

The business case needs to be presented in terms of the wider policy aims;

- Reducing transport's damaging impact on the environment and supporting Birmingham's commitment to becoming a carbon neutral city by 2030;
- Eliminating road danger particularly in residential areas;
- Connecting people with new jobs and training opportunities;
- Reconnecting communities by prioritising people over cars;
- Revitalising the city centre and local centres.

The modelling needs to be developed to support this analysis.

The next stage actions should be considered in a timeline of activities to not lose momentum as the timescales for delivery is considered to be 2026 for Snow Hill. Accordingly, we have developed an initial programme of activity in the form of an action plan to support the aspirations of Birmingham City Council, collaboratively with Transport for West Midlands and in conjunction with Department for Transport.

5.2 Action Plan

The action plan is only set out as guidance at this stage and would be subject to change following review of the report and adopted approach by Birmingham City Council and its partners, such as TfWM.

The action plan is presented in Table 5.1 below.

Table 5.1 Highway Model Total Change in Delay in each Scenario / Modelled Year

Activities	Time Scales
Review of Report Recommendations for the Proposed Test Option	2020
Consultation with TfWM for the recommendations of the Proposed Test Option	2020
Approach DfT with the evidence base and funding request for scheme next stage	2020
Commissioning of the production of feasible Options for each scheme within the preferred package for SOBC	2021
Commissioning of Schemes package development and SOBC Update	2021
DfT Approval and OBC Development	2022
Scheme Design and Delivery Commissioning and FBC	2022-2023
Contract for Delivery	2024
Delivery Plan for the Schemes for 2026	2024-2026

The development of the SOBC can be supported by the existing transport models and would require application of TUBA to estimate the benefits for the options, estimation of costs for the scheme options and for the public transport options the operating and maintenance costs, application of PRISM to estimate demand and revenues, financial sustainability and economic benefits. For the parking options the capital and ongoing costs would need to be estimated and we would need to determine internal financial sustainability as well as establish behavioural changes and economic impacts. Following the DfT earlier advice we recommend examination of wider economic, social and environmental impacts, development impacts and introduce maintenance costs savings related to the

A38. Further consideration of change to the physical infrastructure along the A38 alignment and costs needs to be developed as a central element of the project with land value uplift and regeneration benefits, employment and urban realm benefits quantified and brought into the overall analysis.

There is potential for the SOBC and parallel design and estimation work to be undertaken in parallel in the first quarter of 2021.

The Outline Business Case stage will require;

- Option design and comparisons and selection of the preferred option – both for treatment of the A38 and the other supporting measures.
- Development of the transport models to including a fully functioning public transport model aligned to the highway model and demand model to create a full Variable Demand Modelling Suite of models. The highway model will require further development to ensure robustness in calibration and validation statistics.
- Further development and quantification of the costs and benefits of the supporting measures.
- Risk assessment and development of the programme for implementation, working with the other agencies to determine a robust investment and implementation plan.
- Development of the planning proposals for utilising the opportunities created by closure of the A38 and additional costs, incomes and benefits.
- Development and presentation of the Strategic, Economic, Financial, Commercial and Management cases.

It is recommended that the initial work for development of the appraisal models fit to assess the scheme and supporting measures, plus the planning and engineering design work is initiated in the first quarter of 2021 – subject to available funding, otherwise the SOBC should be used to support applications for development funding from available sources.

The development of the schemes and OBC is expected to require 18 months and therefore would be completed in 2022 subject to available funding.

Appendix A. Base Model Calibration and Validation

Network changes were made to improve overall performance of the base models. These changes were highlighted by the error list and experience of the modelled area.

Change #1 - Distance differences (Excluding Bends) were identified and corrected.

Change #2 - Minor junction coding improvements within the buffer area of network to better reflect base model network conditions.

Change #3 - Signal timing checks and alterations to reduce delays in forecast scenario.

Change #4 - Removing redundant Speed Flow Curves that had been left in from previous modelling have been removed to apply a more consistent approach to SATURN model throughout the simulated area with focus on delays at junctions.

Figures A.1 to A.3 show the calibration and validation results (pass / fail) for links within the whole model for the AM Peak, Interpeak and PM Peak. There are no consistent failures within the model across the time periods.

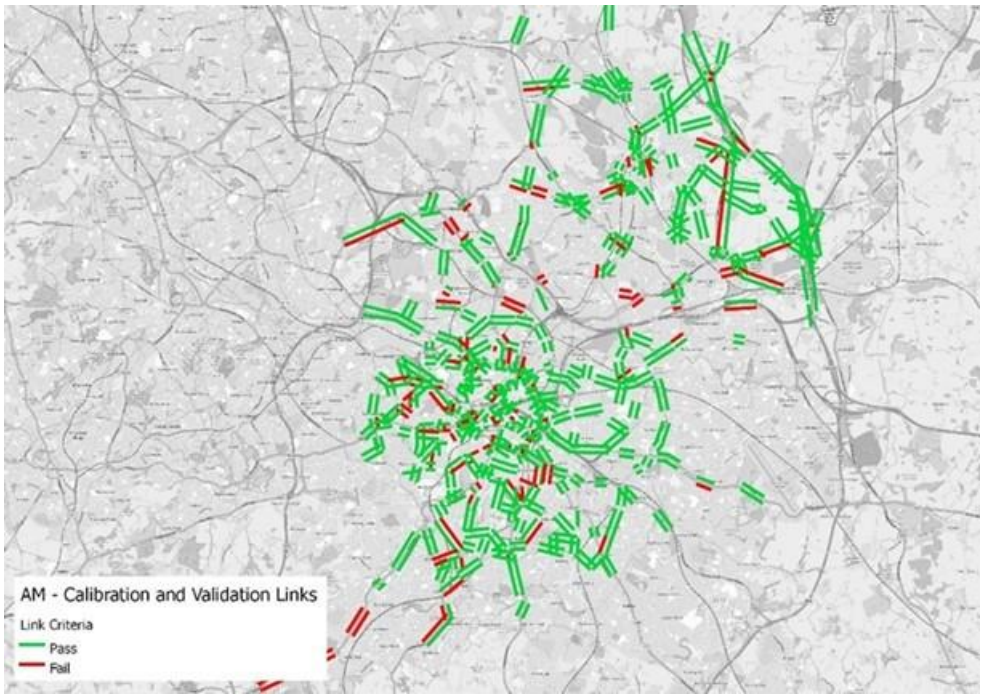


Figure A.1: AM Peak Calibration and Validation Links – Full Model Coverage

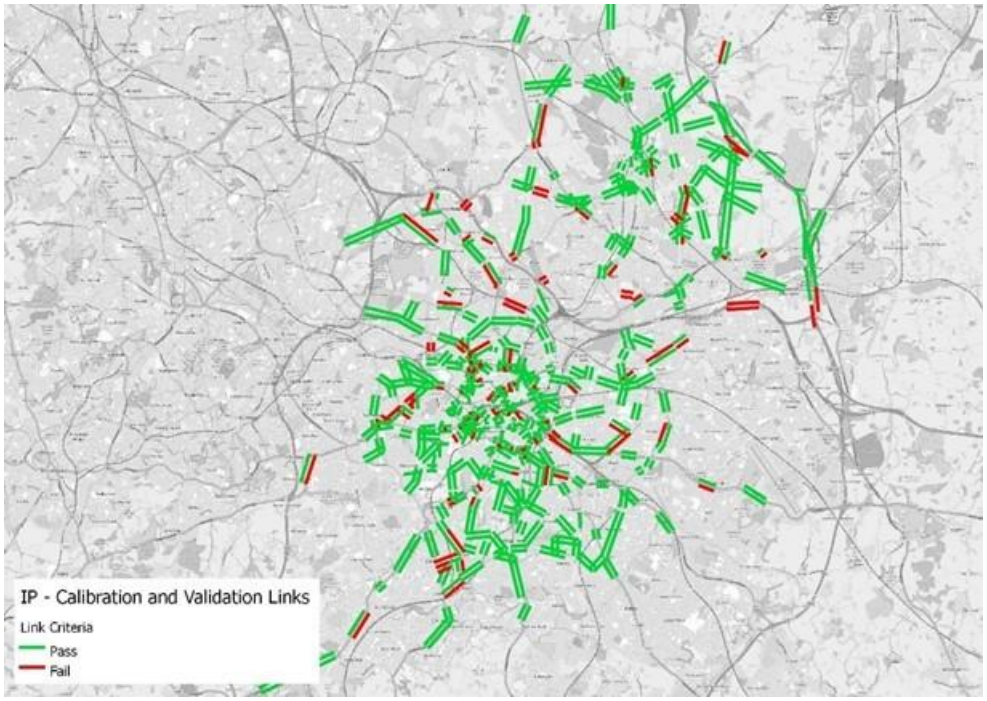


Figure A.2: Interpeak Calibration and Validation Links – Full Model Coverage

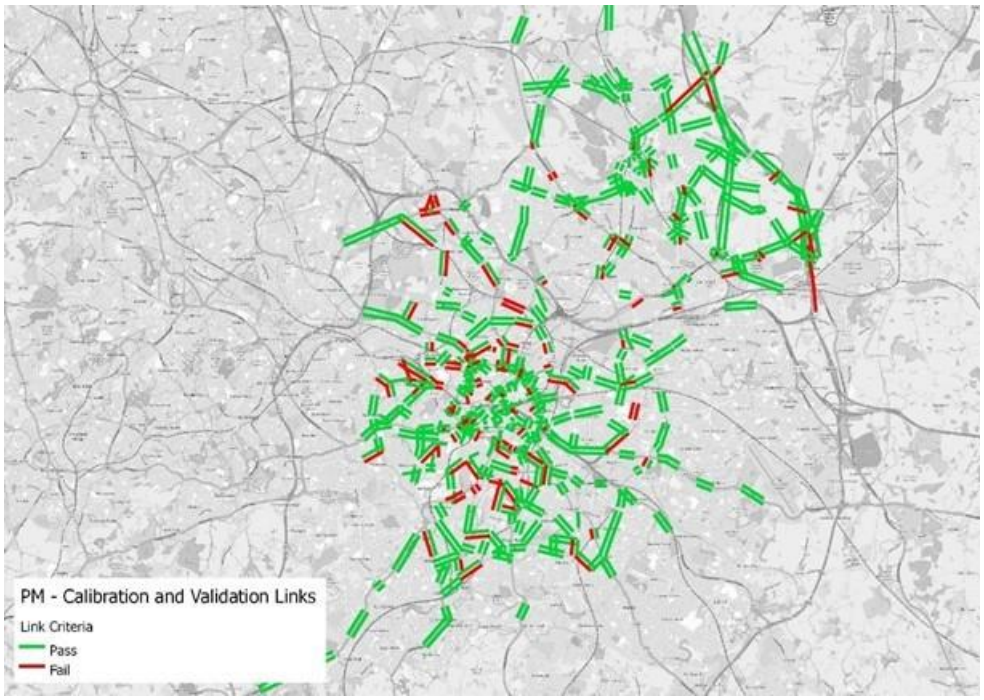


Figure A.3: PM Peak Calibration and Validation Links – Full Model Coverage

Figures A.4 to A.6 show the study area calibration for each time period. There are no consistent failures across time periods.

Figure A.4: AM Calibration and Validation Links at Local Level

Figure A.5: Interpeak Calibration and Validation Links at Local Level

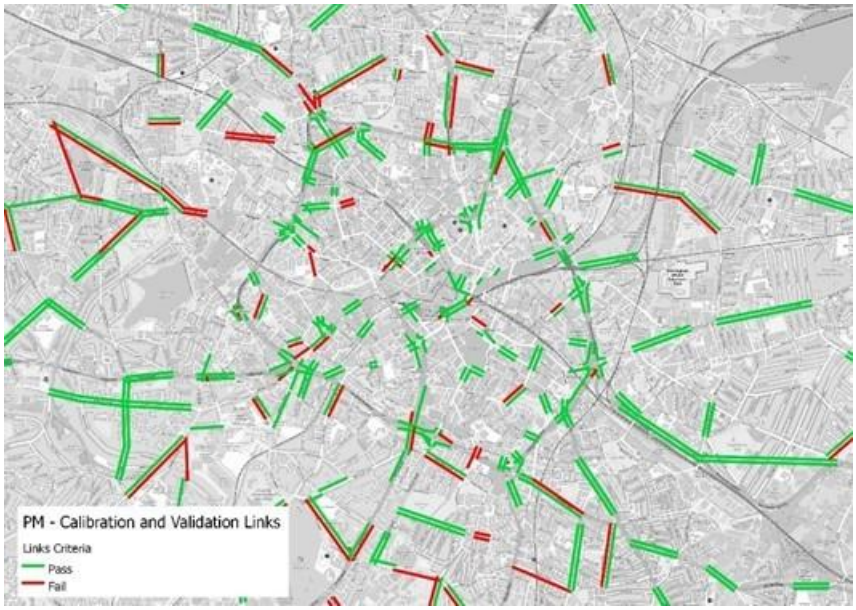
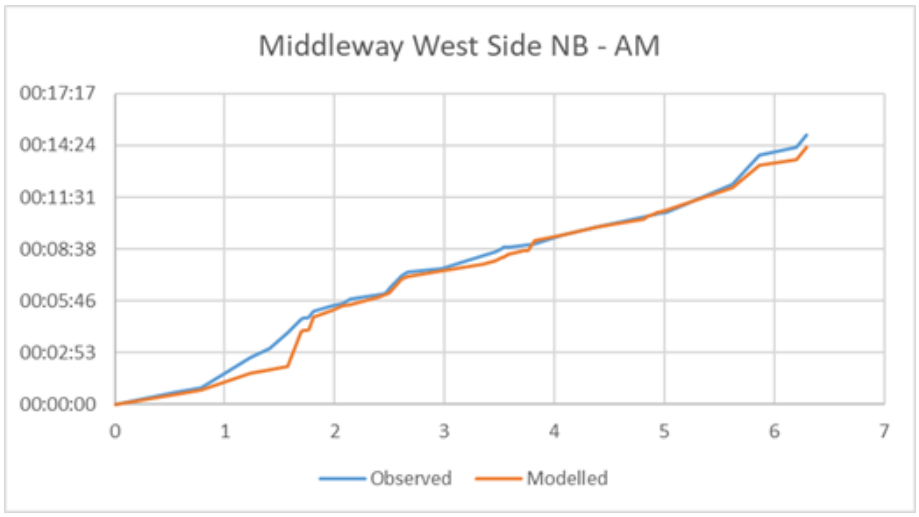
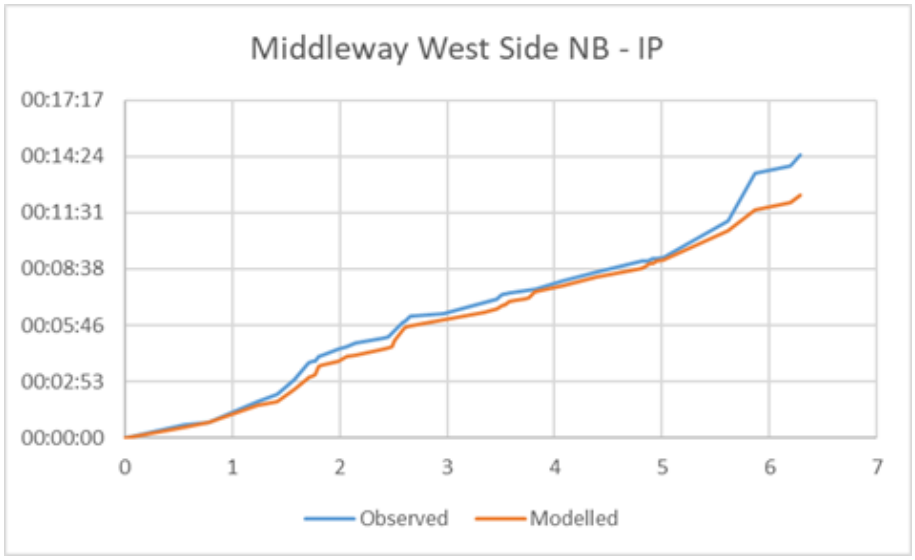
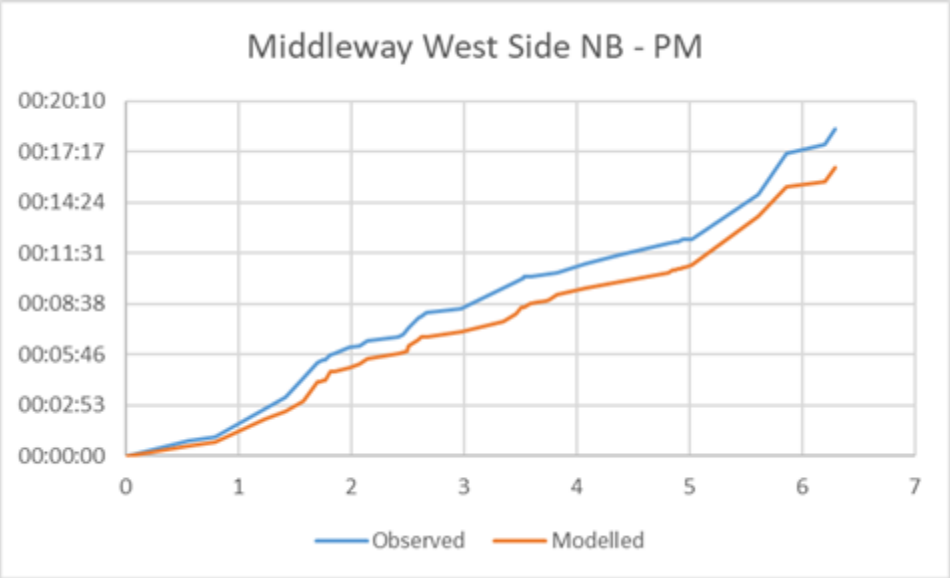


Figure A.6: PM Calibration and Validation Links at Local Level

Figures A.7- A.13: A4540 Western Side Journey Time Validation Graphs



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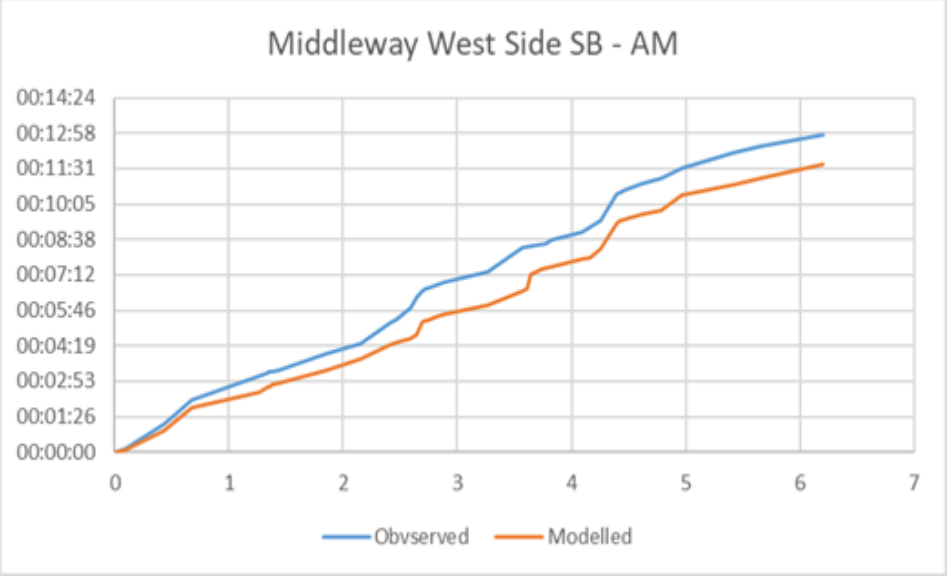
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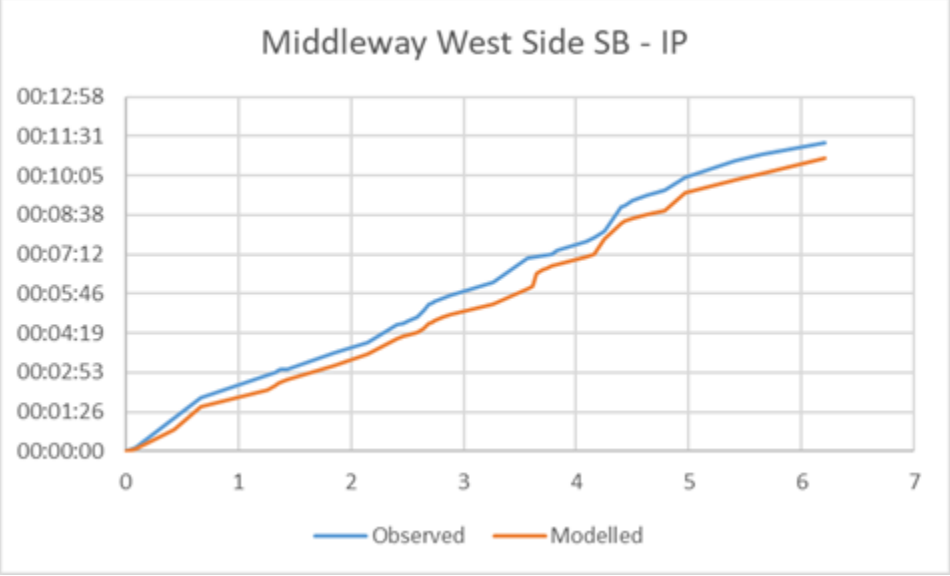
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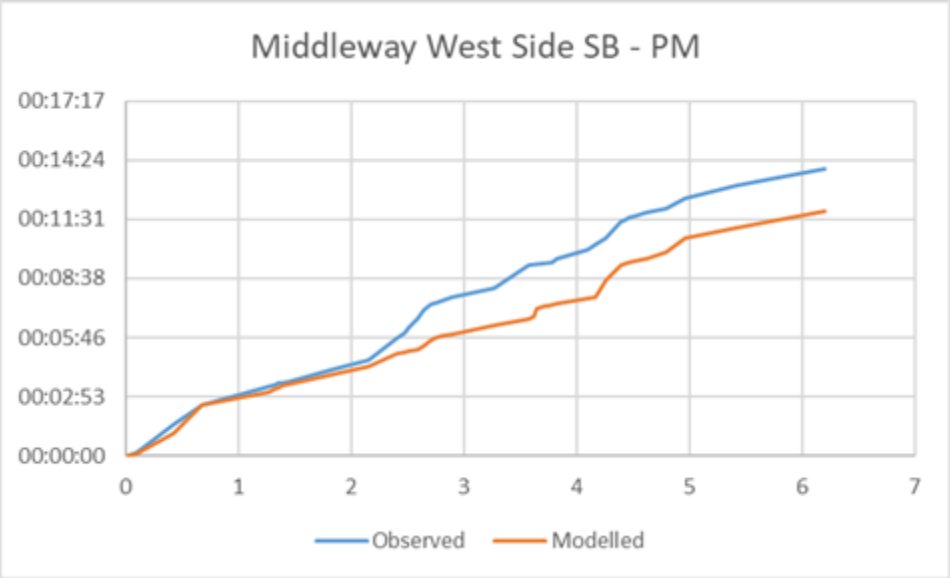
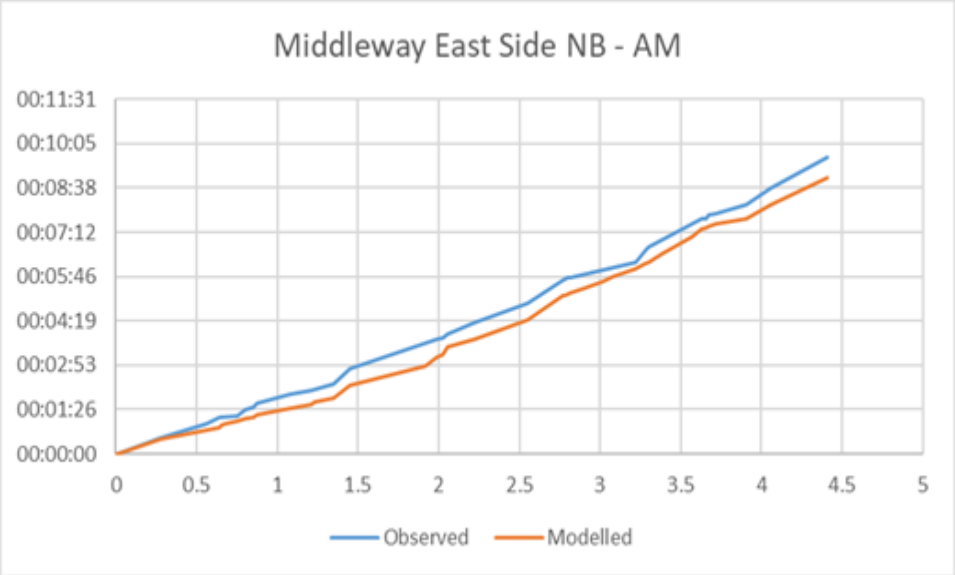
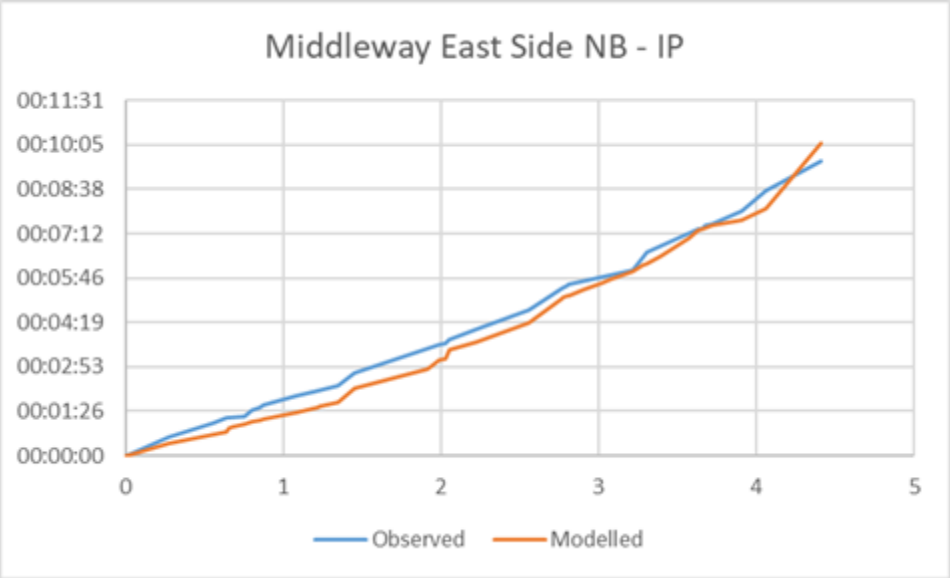


Figures A.14- A.19: Middleway Eastern Side Journey Time Validation Graphs

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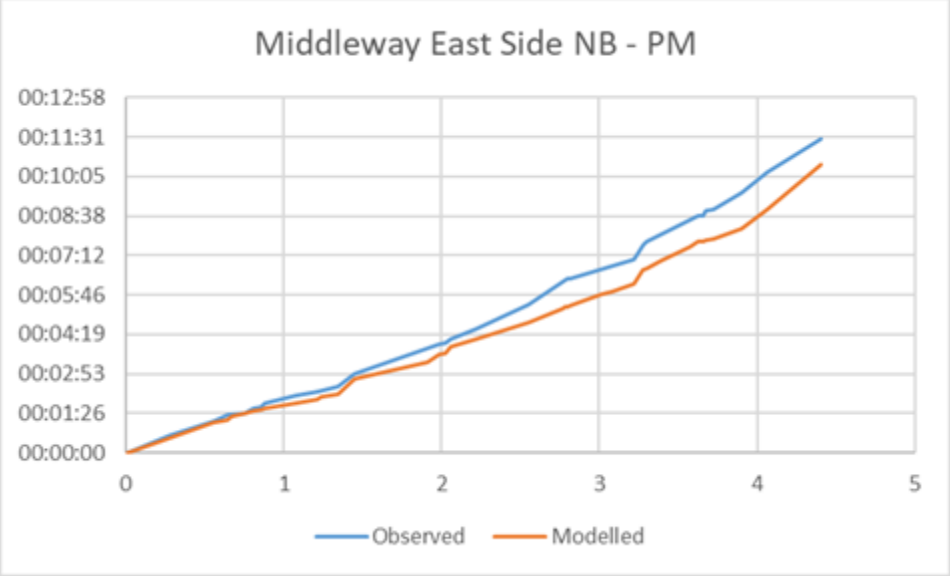
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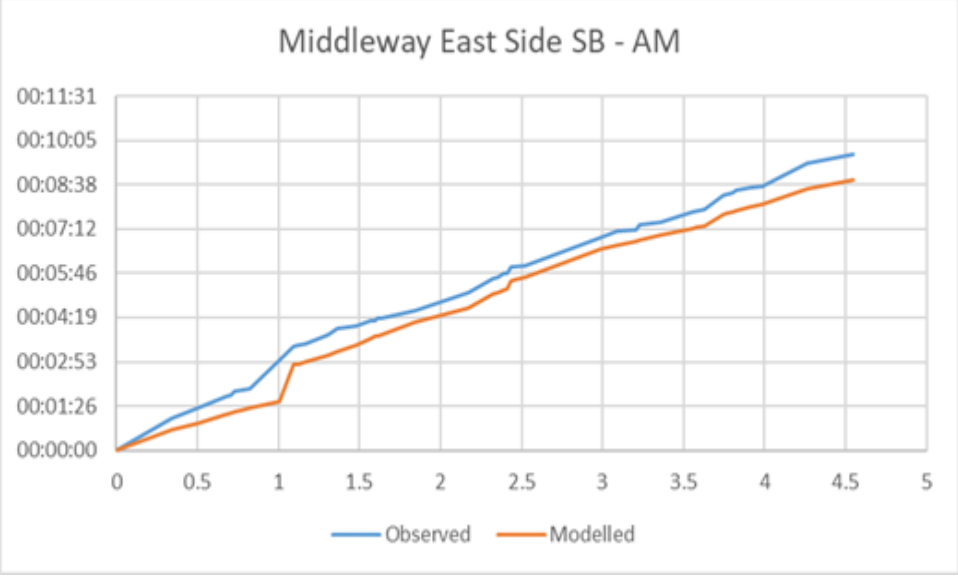
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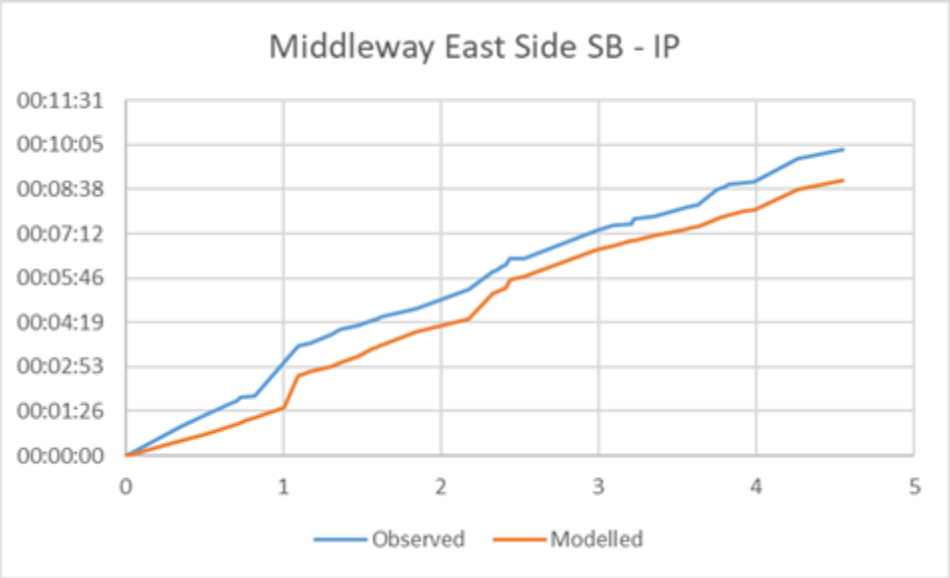
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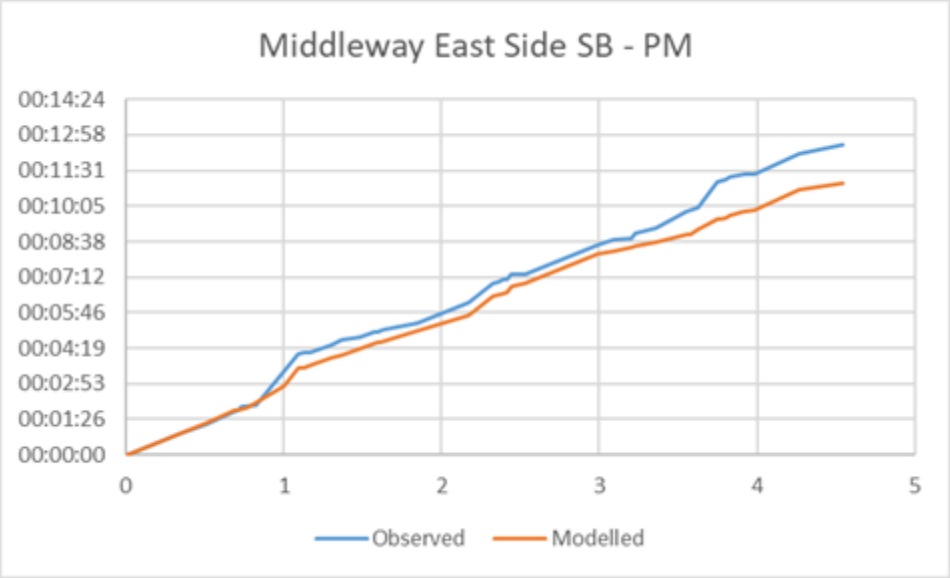
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Appendix B. Multi-Criteria Appraisal Criteria.

Policy Fit

- Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel in local neighbourhoods; managing demand through parking measures
- Improve Access to City Centre
- Use of Brownfield Land Improve reliability for people and goods
- Supports MfG Delivery corridor(s) Carbon net zero by 2030?
- Fit within other policy

Strategic

- Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)
- Supporting housing growth (committed sites)
- Encourage sustainable/active travel
- Strategic road access
- Supporting passenger growth
- Supporting redevelopment opportunities

Engineering /Deliverability

- Any known geotechnical issues
- Water Courses and Buried Infrastructure (culverts / drains)
- Operational efficiency
- Construction and maintenance
- Programme
- Land availability (including CPO requirements)
- Location conflict with existing planning permission
- Flexibility regarding future expansion/land availability (with additional future demand for parking spaces (not city or local centres))?
- Dependency - reliant on delivery of partner's schemes (additional rail capacity etc)
- Costs - Capital Costs
- Costs - Operating Costs

Transport Impacts

- Impact on future passengers Abstraction from existing stationsReduce road traffic on A38(M)
- Reduce road traffic on A38S - Bristol Road
- Reduce road traffic on A4540
- Impact on City Centre traffic levels
- Impact on train and bus operations
- Impact on ease of crossing the A4540 Mode shift (from car)
- Integration with current public transport services

Safety

- Passenger safety and security
- Severance to movement
- Highway Safety - Highway traffic
- Highway Safety - Active mode users
- Highway safety - collision statistics

Environmental

- Cycle Access
- Air quality
- Archaeology
- Noise
- Public realm
- Biodiversity
- Landscape / Townscape
- Greenhouse Gases
- Flood risk

Managerial

- Public acceptability
- Quality of supporting evidence
- Key risks

Financial/Economic

- Providing Value for Money
- Job creation
- Agglomeration/ connecting business
- Connecting employers and labour markets

Development Impacts

- Opportunity for development (land released or land opened-up)
- Support Planned development / Land use integration
- Land value uplift
- Impacts on business rates/council tax

Commercial

- Flexibility of option
- Funding source *
- Revenue (direct) *
- Revenue (indirect) *

Appendix C. Long List of Scheme Options

Ra1	Rail P&R Coseley - 50 space potential deck on Gough Road. Option to acquire part of Cannon Business Park?
Ra2	Rail P&R Tipton - 375 space expansion, incl on NR compound, 2 or 3 level deck
Ra3	Rail P&R Dudley Port - 120 spaces, interchange with Metro. Potential further expansion to Park Lane E car park, consider 2 or 3 levels (Consider knowledge of DPI scheme commission
Ra4	Rail P&R Sandwell & Dudley - 100 space second deck to further expand
Ra5	Rail P&R Smethwick Rolfe Street - 200 space potential at grade car park (potentially second deck) on Rolfe Street
Ra6	Rail P&R Stourbridge Junction - 150 spaces, potential to be more ambitious with decking proposals. Section of CP by industrial buildings to north of station could be decked. Also tree lining of main car park by station building could provide screening for a 2nd deck here.
Ra7	Rail P&R Cradley Heath - 200 spaces, potential to CPO private car park land. Further potential to sensitively deck the CPO'd land, so as to not overlook residential properties. Also potential for council owned land and to take over the closed CP.
Ra8	Rail P&R Old Hill - 200 spaces, potential to acquire businesses of Station Road (near junction). Further option to remove redundant railway embankment to provide larger site
Ra9	Rail P&R Rowley Regis - 900 space new MSCP for derelict site off Cakemore Road/Nimmings Road, walk distance shorter than extreme end of current CP. Pedestrian crossing and signage strategy required. Potential for 2 or 3 storey CP.
Ra10	Rail P&R Blake Street - 100 spaces, potential to partially deck 'to Birmingham' CP. Only 2nd storey due to residential area
Ra11	Rail P&R Butlers Lane - TfWM exploring scheme, more detail needed
Ra12	Rail P&R Four Oaks - 200 spaces - revisit why main car park not decked. Explore acquisition of Four Oaks House to enable expansion of extension to CP. Car parking on Station Drive (5-8 spaces) would have to be removed to reduce edge friction of access
Ra13	Rail P&R Sutton Coldfield - check within Jacobs re Sutton Interchange study. Potential acquisition of Sutton TC car park off Station Street, excavate down to provide ~2 storeys with interchange on top
Ra14	Rail P&R Chester Road - 270 spaces - existing plans being developed to deck, could support with additional funding. Potential to acquire current industrial uses opposite existing CP on Chester Road, would require enhanced crossing facilities. Potential 3 storey facility)
Ra15	Rail P&R Aston - 700 spaces - acquire businesses on south side of Lichfield Road (north of railway line) to develop 2 or 3 storey CP with foot overbridge to Birmingham bound platform. Access from M6 via Salford Circus or A38(M) via Park Circus and Waterlinks Boulevard
Ra16	Rail P&R Selly Oak - 100 spaces - support plans already under development by TfWM. Opportunity to fund additional deck (to give 3 storeys)?
Ra17	Rail P&R Bournville - 300 spaces - potential to acquire car repair businesses on Mary Vale Road (east of station) to provide decked car park. Not overlooked by residences. Would also serve Stirchley
Ra18	Rail P&R Kings Norton - 100 spaces - work with Network Rail to reconfigure land and accesses to permit decking of part of site
Ra19	Birmingham Intl Integrated Transport Hub
Ra20	CG400 - Snow Hill Lines (Plat4 reinstatement and Rowley Regis turnback)
Ra21	CJ550 Sutton Park Line: New local stations
Ra22	CD250 Aldridge Station
Ra23	CB700 Walsall-Wolverhampton new local stations (Willenhall, Darlaston)
Ra24	Camp Hill railway stations (interim service)
Ra25	Camp Hill railway stations (full service)
Ra26	Midlands Rail Hub - Bordesley Chords and 4 track into Moor Street station. 2 tph extra to Leicester, 2 tph extra to Nottingham, 1 tph extra to Hereford, diversion of camp hill line 2 tph.
Ra27	Tamworth line new local stations and services - Fort, Castle Bromwich, Kingsbury
Ra28	Dudley Road new Station (for Birmingham City Hospital) - On Wolverhampton - Birmingham line
Ra29	Walsall - Brownhills reopening
Ra30	Soho / Handsworth Wood Station (on Birmingham - Walsall - Rugeley line)

Ra31	Tettenhall Station (Between Wolverhampton and Billbrook)
Ra32	Restore Harborne Railway stations at Rotten Park, Hagley Road and Harborne (Park Hill Road)
Ra33	Cross City line tunnel and increased frequencies of other local rail services that come into New Street
Ra34	East Birmingham & Solihull Metro
Ra35	Connection Livery St to St Pauls Metro stop (over the railway)
Ra36	Extend Metro from Edgbaston Terminus - Harborne via Hagley Road (possibly on to UoB/UHB?)
Ra37	Southern Gateway Metro extension from eastside to UoB / UHB
Ra38	City wide/regional future expansion of Metro network
Ra39	Tram-Train from University via Bournbrook Corridor to Quinton
BS1	Sprint - A34N
BS2	Sprint - A45
BS3	Sprint - Sutton-Langley
BS4	Sprint - Bristol Road
BS5	Sprint - Hagley Road (Halesowen and Dudley routes)
BS6	Sprint P&R - A34 M6J7
BS7	Sprint P&R - Hagley Road M5J3
BS8	Sprint P&R - Sutton M6J5
BS9	Bus Improvement Corridor - A435 Alcester Road
BS10	Bus Improvement Corridor - A441 Pershore Road
BS11	Bus Improvement Corridor - A41 Holyhead Road/Soho Road
BS12	Bus Improvement Corridor - A5127 Sutton
BS13	Cross-city centre bus services
Ro1	CK200 Iron Lane
Ro2	CL150 Battery Way Extension
Ro3	20mph wider roll-out
Ro4	CALL80 A4123 Birmingham New Road
Ro5	CG100 Birchley Island M5J2 Improvement
Ro6	CG600 M5 J1 Improvement
Ro7	Traffic cells (city centre)
Ro8	20mph across city centre (inside A4540)
Ro9	Dartmouth Circus Option 1 - Through-about
Ro10	Dartmouth Circus Option 2 - Grade separated westbound, one way
Ro11	Dartmouth Circus Option 3 - Grade separated westbound, two way
Ro12	Dartmouth Circus Option 4 - Grade separated eastbound, one way
Ro13	Dartmouth Circus Option 5 - Grade separated eastbound, two way
Ro14	Dartmouth Circus Option 6 - Grade separated both directions, one way
Ro15	Dartmouth Circus Option 7 - Grade separated A38 and ring road
Ro16	Dartmouth Circus Option 8 - Grade separated with ring road through-about
Ro17	New Town Row/Summer Lane Option 1 - Ring road underpass
Ro18	New Town Row/Summer Lane Option 2 - Ring road overpass
Ro19	New Town Row/Summer Lane Option 3 - A34 overpass and closed Summer Lane
Ro20	New Town Row/Summer Lane Option 4 - Lane widening
Ro21	New John Street West Option 1 - Link widening
Ro22	Lucas Circus Option 1a - Convert to signalised roundabout
Ro23	Lucas Circus Option 1b - Convert to through-about
Ro24	Lucas Circus Option 1c - Convert to signalised crossroads
Ro25	Lucas Circus Option 2 - Remove junction
Ro26	Pitsford Street Option 1 - Remove right turners
Ro27	Spring Hill Circus Option 1 - Carriageway widening
Ro28	Spring Hill Circus Option 2a - Convert to signalised roundabout
Ro29	Spring Hill Circus Option 2b - Convert to through-about
Ro30	Spring Hill Circus Option 2c - Convert to signalised crossroads
Ro31	Spring Hill Circus Option 3 - Grade separated, long overpass

Ro32	Spring Hill Circus Option 4 - Grade separated, short overpass
Ro33	Five Ways Option 1 - Westbound through-about
Ro34	Five Ways Option 2 - Westbound through-about with carriageway widening
Ro35	Five Ways Option 3 - Full through-about with carriageway widening
Ro36	Five Ways Option 4 - Signalised T-junction
Ro37	Five Ways Option 4a - Signalised T-junction, Monument Road changes
Ro38	Five Ways Option 5 - Signalised T-junction with minor road left in / left out
Ro39	Five Ways Option 5a - Signalised T-junction with minor road left in/left out, Monument Road changes
Ro40	Five Ways Option 6 - Grade separated both directions
Ro41	Belgrave Interchange Option 1 - Carriageway realignment and widening
Ro42	Haden Circus Option 1a - Convert to signalised roundabout
Ro43	Haden Circus Option 1b - Convert to through-about
Ro44	Haden Circus Option 1c - Convert to signalised crossroads
Ro45	Haden Circus Option 2 - Grade separated
Ro46	Camp Hill Circus Option 1 - Carriageway widening
Ro47	Camp Hill Circus Option 2a - Convert to signalised roundabout
Ro48	Camp Hill Circus Option 2b - Convert to through-about
Ro49	Camp Hill Circus Option 2c - Convert to signalised crossroads
Ro50	Camp Hill Circus Option 3 - Grade separated
Ro51	Bordesley Circus Option 1 - Carriageway widening
Ro52	Bordesley Circus Option 2 - Change direction of through-about
Ro53	Bordesley Circus Option 3 - Coventry Road bus and taxi only
Ro54	Bordesley Circus Option 4 - Convert to signalised crossroads and T-junction
Ro55	Bordesley Circus Option 5 - Grade separated
Ro56	Garrison Circus Option 1 - Carriageway widening
Ro57	Garrison Circus Option 2a - Convert to signalised roundabout
Ro58	Garrison Circus Option 2b - Convert to through-about
Ro59	Garrison Circus Option 2c - Convert to signalised crossroads
Ro60	Garrison Circus Option 3 - Grade separated
Ro61	Curzon Circus Option 1 - Carriageway widening
Ro62	Curzon Circus Option 2 - Close Curzon Street
Ro63	Curzon Circus Option 3a - Convert to signalised roundabout
Ro64	Curzon Circus Option 3b - Convert to through-about
Ro65	Curzon Circus Option 3c - Convert to signalised crossroads
Ro66	Curzon Circus Option 4 - Close Curzon Street and convert to signalised junction
Ro67	Curzon Circus Option 5 - Increase diameter of roundabout
Ro68	Options to address A4540 crossings
AM1	Local centres walking and cycling access
AM2	Bham cycle revolution - phase 1 Soho Road
AM3	Bham cycle revolution - phase 1 Alcester Road
AM4	Bham cycle revolution - phase 1 Lichfield Road
AM5	Bham cycle revolution - phase 2 Tyburn Road
AM6	Bham cycle revolution - phase 3 outer connections
AM7	Middleway cycle routes
AM8	Last mile cycle routes
AM9	Cross-city cycle routes
AM10	Development of Active mode measures
Ot1	CAZ
Ot2	Workplace parking levy
Ot3	Birmingham parking SPD (inside A4540 reductions/CPZ/RPZ etc)
Ot4	CM750 Selly Oak/Edgbaston and Uni/Hospitals area wide parking scheme
Ot6	Low Traffic Neighbourhood (Places for People)
Ot7	Options for the use of the former A38 through the City Centre

Appendix D. MCA Appraisal Output

Rail Schemes

ID	Scheme		Fit with Big Moves. Reallocating road space. Transforming the city centre. Prioritising active travel in local neighbourhoods, managing demand through parking measures	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MfG Delivery corridor(s)	Carbon net zero by 2030?	Fit within other policy
			Policy Fit						
Ra1	Rail P&R Coseley - 50space potential deck on Gough Road. Option to acquire part of Cannon Business Park?	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra2	Rail P&R Tipton - 375 space expansion, incl on NR compouond, 2 or 3 level deck	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra3	Rail P&R Dudley Port - 120 spaces, interchange with Metro. Potential further expansion to Park Lane E car park, consider 2 or 3 levels (Consider knowledge of DPI scheme commission	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra4	Rail P&R Sandwell & Dudley - 100 space second deck to further expand	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra5	Rail P&R Smethwick Rolfe Street - 200 space potential at grade car park (potentially second deck) on Rolfe Street	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra6	Rail P&R Stourbridge Junction - 150 spaces, potential to be more ambitious with decking proposals. Section of CP by industrial buildings to north of station could be decked. Also tree lining of main car park by station building could provide screening for a 2nd deck here.	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra7	Rail P&R Cradley Heath - 200 spaces, potential to CPO private car park land. Further potential to sensitively deck the CPO'd land, so as to not overlook residential properties. Also potential for council owned land and to take over the closed CP.	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra8	Rail P&R Old Hill - 200 spaces, potential to acquire businesses of Station Road (near junction). Further option to remove redundant railway embankment to provide larger site	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra9	Rail P&R Rowley Regis - 900 space new MSCP for derelict site off Cakemore Road/Nimmings Road, walk distance shorter than extreme end of current CP. Pedestrian crossing and signage strategy required. Potential for 2 or 3 storey CP.	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra10	Rail P&R Blake Street - 100 spaces, potential to partially deck 'to Birmingham' CP. Only 2nd storey due to residential area	SHCS	ate Be	t Bene	ate Be	t Bene	Neutra	t Bene	Neutra
Ra11	Rail P&R Butlers Lane - TfWM exploring scheme, more detail needed	SHCS	ate Be	t Bene	ate Be	t Bene	Neutra	t Bene	Neutra
Ra12	Rail P&R Four Oaks - 200 spaces - revisit why main car park not decked. Explore acquisition of Four Oaks House to enable expansion of extension to CP. Car parking on Station Drive (5 8 spaces) would have to be removed to reduce edge friction of access	SHCS	ate Be	t Bene	ate Be	t Bene	Neutra	t Bene	Neutra
Ra13	Rail P&R Sutton Coldfield - check within Jacobs re Sutton Interchange study. Potential acquisition of Sutton TC car park off Station Street, excavate down to provide ~2 storeys with interchange on top	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra14	Rail P&R Chester Road - 270 spaces - existing plans being developed to deck, could support with additional funding. Potential to acquire current industrial uses opposite existing CP on Chester Road, would require enhanced crossing facilities. Potential 3 storey facility)	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
Ra15	Rail P&R Aston - 700 spaces - acquire businesses on south side of Lichfield Road (north of railway line) to develop 2 or 3 storey CP with foot overbridge to Birmingham bound platform. Access from M6 via Salford Circus or A38(M) via Park Circus and Waterlinks Boulevard	SHCS	ate Be	t Bene	ate Be	t Bene	t Bene	t Bene	Neutra
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Ra19	Birmingham Intl Integrated Transport Hub	MfG	t Bene	t Bene	ate Be	t Bene	t Bene	t Bene	ate Be
Ra20	CG400 - Snow Hill Lines (Plat4 reinstatement and Rowley Regis turnback)	MfG	t Bene	e Bene	ate Be	ate Be	t Bene	ate Be	t Bene

ID	Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities	Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/land availability (with additional future demand for parking spaces (not city or local centres))?	Dependency - reliant on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs
	Strategic						Engineering / Deliverability										
Ra1	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra2	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra3	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra4	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra5	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra6	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra7	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Ad	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra8	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Ad	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra9	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	ht Adv	Neutra	Neutra	ht Adv	ht Adv	ate Ad	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra10	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra11	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra12	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra13	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra14	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra15	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Ad	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra16	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	t Bene	t Bene	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra17	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Ad	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra18	ate Be	Neutra	ht Adv	Neutra	ate Be	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	ate Be	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra19	t Bene	Neutra	ht Adv	Neutra	t Bene	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	t Bene	Neutra	t Bene	Neutra	ht Adv	ht Adv
Ra20	ate Be	Neutra	t Bene	Neutra	e Bene	Neutra	Neutra	Neutra	Neutra	ht Adv	ht Adv	t Bene	Neutra	t Bene	Neutra	ht Adv	ht Adv

ID	Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services	Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics
	Transport Impacts										Safety				
Ra1	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra2	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra3	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra4	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra5	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra6	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra7	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra8	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra9	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra10	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra11	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra12	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra13	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra14	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra15	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra16	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra17	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra18	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra19	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra20	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	

ID	Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk	Public acceptability	Quality of supporting evidence	Key risks
	Environmental									Managerial		
Ra1	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ate Ad	t Bene	e Bene	ht Adv
Ra2	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra3	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra4	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra5	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	e Bene	ht Adv
Ra6	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	e Bene	ht Adv
Ra7	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra8	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra9	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ate Ad	t Bene	e Bene	ht Adv
Ra10	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ate Ad	t Bene	e Bene	ht Adv
Ra11	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ate Ad	t Bene	e Bene	ht Adv
Ra12	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra13	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	e Bene	ht Adv
Ra14	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	ate Be	ht Adv
Ra15	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	Neutra	ht Adv
Ra16	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	ate Be	ht Adv
Ra17	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	Neutra	ht Adv
Ra18	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	ate Be	ht Adv
Ra19	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	ht Adv	t Bene	ate Be	ht Adv
Ra20	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ht Adv	t Bene	Neutra	t Bene	ate Be	ht Adv

ID	Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Flexibility of option	Funding source*	Revenue (direct)*	Revenue (indirect)* [illegible]
	Financial/ Economic				Development Impacts				Commercial			
Ra1	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra2	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra3	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra4	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra5	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra6	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra7	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra8	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra9	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra10	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra11	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra12	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra13	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra14	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra15	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra16	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra17	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra18	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ate Ben	ht Ben
Ra19	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	ate Ben	ht Ben
Ra20	ate Be	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	ate Ben	ht Ben

Policy Fit / Strategic

	Scheme		Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MfG Delivery corridor(s)	Carbon net zero by 2030?	Fit with other policy	Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities
Ra21	CJ550 Sutton Park Line: New local stations	MfG	t Bene	te Be	te Be	te Be	t Bene	te Be	te Be	te Be	t Bene	t Bene	Neutra	Bene	Neutra
Ra22	CO250 Aldridge Station	MfG	te Be	te Be	te Be	t Bene	te Be	t Bene	te Be	te Be	t Bene	t Bene	Neutra	Bene	Neutra
Ra23	C8700 Walsall-Wolverhampton new local stations (Willenhall, Darlaston)	MfG	te Be	Bene	te Be	te Be	Neutra	te Be	te Be	Bene	t Bene	t Bene	Neutra	Bene	Neutra
Ra24	Camp Hill railway stations (interim service)	BTP	t Bene	te Be	te Be	t Bene	Neutra	t Bene	Bene	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra25	Camp Hill railway stations (full service)	BTP	te Be	Bene	te Be	te Be	Neutra	te Be	Bene	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra26	Midlands Rail Hub - Bordesley Chords and 4 track into Moor Street station. 2 tph extra to Leicester, 2 tph extra to Nottingham, 1 tph extra to Hereford, diversion of camp hill line 2 tph.	Moderate	te Be	Bene	te Be	te Be	te Be	te Be	Bene	Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra27	Tamworth line new local stations and services - Fort, Castle Bromwich, Kingsbury	Moderate	te Be	Bene	te Be	t Bene	t Bene	te Be	te Be	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra28	Dudley Road new Station (for Birmingham City Hospital) - On Wolverhampton - Birmingham line	Moderate	te Be	te Be	te Be	t Bene	t Bene	t Bene	Neutra	Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra29	Walsall - Brownhills reopening	Moderate	te Be	te Be	te Be	t Bene	Neutra	te Be	te Be	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra30	Soho / Handsworth Wood Station (on Birmingham - Walsall - Rugeley line)	Moderate	te Be	te Be	te Be	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra31	Tettenhall Station (Between Wolverhampton and Bilbrook)	Slight	Bene	te Be	te Be	t Bene	Neutra	t Bene	t Bene	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra32	Restore Harborne Railway stations at Rotton Park, Hagley Road and Harborne (Park Hill Road)	Moderate	te Be	te Be	te Be	te Be	t Bene	te Be	te Be	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra33	Cross City line tunnel and increased frequencies of other local rail services that come into New Street	Moderate	te Be	Bene	Neutra	te Be	t Bene	te Be	Bene	Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra34	East Birmingham & Solihull Metro	Moderate	te Be	Bene	te Be	Neutra	t Bene	te Be	t Bene	te Be	Neutra	t Bene	Neutra	Bene	Neutra
Ra35	Connection Livery St to St Pauls Metro stop (over the railway)	Slight	Bene	t Bene	te Be	t Bene	t Bene	Neutra	Neutra	Neutra	Neutra	t Bene	Neutra	Neutra	Neutra
Ra36	Extend Metro from Edgbaston Terminus - Harborne via Hagley Road (possibly on to UoB/UHB?)	Moderate	te Be	Bene	te Be	Neutra	Neutra	te Be	t Bene	t Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra37	Southern Gateway Metro extension from eastside to UoB / UHB	MfG	te Be	Bene	te Be	te Be	t Bene	te Be	te Be	Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra38	City wide/regional future expansion of Metro network	Large	Bene	Bene	te Be	te Be	Neutra	te Be	te Be	Bene	Neutra	t Bene	Neutra	Bene	Neutra
Ra39	Tram-Train from University via Bournbrook Corridor to Quinton	0	Neutra	t Bene	Neutra	t Bene	Neutra	te Be	Neutra	te Be	Neutra	t Bene	Neutra	t Bene	Neutra

Engineering / Deliverability

	Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/ land availability (with additional future demand for parking spaces	Dependency - reliance on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs
Ra21	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra22	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra23	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra24	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra25	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra26	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra27	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra28	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra29	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra30	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra31	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra32	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra33	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra34	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra35	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra36	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra37	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra38	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv
Ra39	Neutra	Neutra	Neutra	nt Adv	nt Adv	t Bene	Neutra	t Bene	Neutra	nt Adv	nt Adv

Transport Impacts / Safety

	Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services	Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics
Ra21	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra22	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra23	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra24	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra25	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra26	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra27	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra28	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra29	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra30	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra31	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra32	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra33	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra34	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra35	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	Neutra	t Bene	Neutral	
Ra36	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra37	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra38	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	
Ra39	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutral	

Environmental / Managerial

	Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk	Public acceptability	Quality of supporting evidence	Key risks
Ra21	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra22	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra23	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	ate Ad	t Bene	te Be	nt Adv
Ra24	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra25	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra26	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra27	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	ate Ad	t Bene	te Be	nt Adv
Ra28	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra29	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra30	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra31	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra32	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	ate Ad	t Bene	Neutra	t Bene	te Be	nt Adv
Ra33	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	ate Ad	t Bene	te Be	nt Adv
Ra34	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra35	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	nt Adv
Ra36	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra37	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	ate Ad	t Bene	te Be	nt Adv
Ra38	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	nt Adv	t Bene	te Be	nt Adv
Ra39	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	nt Adv	t Bene	Neutra	t Bene	te Be	Adverse

Financial/ Economic / Development Impacts / Commercial

	Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
Ra21	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra22	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	rate Be	ht Benef
Ra23	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	rate Be	ht Benef
Ra24	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	rate Be	ht Benef
Ra25	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Bene	rate Be	ht Benef
Ra26	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra27	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra28	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra29	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra30	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra31	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra32	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ge Adve	rate Be	ht Benef
Ra33	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra34	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra35	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	rate Be	ht Benef
Ra36	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra37	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra38	te Be	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	rate Be	ht Benef
Ra39												

		Objective / Scheme		Policy Fit: Fit with Big Moves: Reallocating road space; Transforming the city centre;	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MRG Delivery corridor(s)	Carbon net zero by 2030?	Fit within other policy	Strategic: Supporting economic growth (increasing connectivity to employment sites e.g.	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities
Bus & SPRINT	BS1	Sprint - A34N	SHCS	ate Be	t Bene	ate Be	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS2	Sprint - A45	SHCS	ate Be	t Bene	ate Be	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS3	Sprint - Sutton-Langley	SHCS	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	t Bene	t Bene	Neutral	ate Be	t Bene
	BS4	Sprint - Bristol Road	MfG	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS5	Sprint - Hagley Road (Halesowen and Dudley routes)	MfG	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS6	Sprint P&R - A34 M6J7	Moderate	ate Be	t Bene	ht Adv	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	ht Adv	Neutral	ate Be	t Bene
	BS7	Sprint P&R - Hagley Road M5J3	Moderate	ate Be	t Bene	ht Adv	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	ht Adv	Neutral	ate Be	t Bene
	BS8	Sprint P&R - Sutton M6J5	Moderate	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	ht Adv	Neutral	ate Be	t Bene
	BS9	Bus Improvement Corridor - A435 Alcester Road	MfG	ate Be	t Bene	t Bene	t Bene	Neutral	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS10	Bus Improvement Corridor - A441 Pershore Road	MfG	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS11	Bus Improvement Corridor - A41 Holyhead Road/Soho Road	MfG	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS12	Bus Improvement Corridor - A5127 Sutton	MfG	ate Be	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	Neutral	t Bene	Neutral	ate Be	t Bene
	BS13	Cross-city centre bus services	#N/A	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	Neutral	ate Be	t Bene

ID	Engineering / Deliverability: Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/ land availability (with additional future demand	Dependency - reliant on delivery of partner's schemes (additional rail capacity	Costs - Capital Costs	Costs - Operating Costs
BS1	Neutral	t Bene	t Bene	ht Adv	Neutral	ate Be	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS2	Neutral	t Bene	t Bene	ht Adv	Neutral	ate Be	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS3	Neutral	t Bene	t Bene	ht Adv	Neutral	ate Be	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS4	Neutral	t Bene	t Bene	ht Adv	Neutral	ate Be	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS5	Neutral	t Bene	t Bene	ht Adv	Neutral	ate Be	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS6	Neutral	t Bene	t Bene	ht Adv	Neutral	ht Adv	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS7	Neutral	t Bene	t Bene	ht Adv	ht Adv	ate Ad	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS8	Neutral	t Bene	t Bene	ht Adv	ht Adv	ht Adv	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS9	Neutral	t Bene	t Bene	ht Adv	Neutral	t Bene	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS10	Neutral	t Bene	t Bene	ht Adv	Neutral	t Bene	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS11	Neutral	t Bene	t Bene	ht Adv	Neutral	t Bene	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS12	Neutral	t Bene	t Bene	ht Adv	Neutral	t Bene	t Bene	t Bene	t Bene	ht Adv	ht Adv
BS13	Neutral	t Bene	t Bene	ht Adv	Neutral	t Bene	t Bene	t Bene	t Bene	ht Adv	ht Adv

ID	Transport Impacts: Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services
BS1	t Bene	Neutral	t Bene	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS2	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS3	t Bene	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS4	t Bene	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS5	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS6	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS7	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS8	t Bene	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS9	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS10	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS11	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS12	t Bene	Neutral	t Bene	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene
BS13	t Bene	Neutral	Neutral	Neutral	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene

ID	Safety: Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics	Environmental: Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk
BS1	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS2	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS3	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS4	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS5	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS6	t Bene	Neutral	t Bene	t Bene	Slight	t Bene	t Bene	Neutral	t Bene	t Bene	ht Adv	ate Ad	t Bene	Neutral
BS7	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	ht Adv	ate Ad	t Bene	Neutral
BS8	t Bene	Neutral	t Bene	t Bene	Slight	t Bene	t Bene	Neutral	t Bene	t Bene	ht Adv	ht Adv	t Bene	Neutral
BS9	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS10	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS11	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS12	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral
BS13	t Bene	Neutral	t Bene	t Bene	Beneficial	Neutral	t Bene	Neutral	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral

ID	Managerial: Public acceptability	Quality of supporting evidence	Key risks	Financial/ Economic: Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Development Impacts: Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Commercial: Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
BS1	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS2	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS3	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS4	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS5	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS6	Neutral	ate Be	Neutral	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	Neutral	nt Benef
BS7	Neutral	ate Be	Neutral	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	Neutral	nt Benef
BS8	Neutral	ate Be	Neutral	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	Neutral	nt Benef
BS9	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS10	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS11	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS12	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef
BS13	t Bene	ate Be	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	nt Benef

		Objective / Scheme		Policy Fit							Strategic					
				Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MfG Delivery corridor(s)	Carbon net zero by 2030?	Fit with other policy	Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities
Road Schemes	Ro1	CK200 Iron Lane	MfG	ht Adv	Neutral	t Bene	t Bene	ate Be	ht Adv	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral	t Bene
	Ro2	CL150 Battery Way Extension	MfG	ht Adv	Neutral	ate Be	ate Be	ate Be	ht Adv	t Bene	ate Be	Neutral	ht Adv	ate Be	Neutral	ate Be
	Ro3	20mph wider roll-out	MfG	t Bene	t Bene	Neutral	t Bene	t Bene	t Bene	ate Be	Neutral	t Bene	t Bene	Neutral	t Bene	t Bene
	Ro4	CALL80 A4123 Birmingham New Road	MfG	ht Adv	Neutral	t Bene	t Bene	ate Be	ht Adv	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral	t Bene
	Ro5	CG100 Birchley Island M5J2 Improvement	MfG	ht Adv	Neutral	t Bene	t Bene	ate Be	ht Adv	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral	t Bene
	Ro6	CG600 M5 J1 Improvement	MfG	ht Adv	Neutral	t Bene	t Bene	ate Be	ht Adv	t Bene	t Bene	Neutral	ht Adv	t Bene	Neutral	t Bene
	Ro7	Traffic cells (city centre)	BTP	t Bene	t Bene	t Bene	t Bene	ate Be	t Bene	t Bene	ate Be	t Bene	t Bene	Neutral	t Bene	t Bene
	Ro8	20mph across city centre (inside A4540)	BTP	ht Adv	t Bene	Neutral	t Bene	t Bene	t Bene	ate Be	Neutral	t Bene	t Bene	Neutral	t Bene	t Bene
	Ro9	Dartmouth CircusOption 1 - Through-about	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro10	Dartmouth CircusOption 2 - Grade separated westbound, one way	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro11	Dartmouth CircusOption 3 - Grade separated westbound, two way	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro12	Dartmouth CircusOption 4 - Grade separated eastbound, one way	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro13	Dartmouth CircusOption 5 - Grade separated eastbound, two way	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro14	Dartmouth CircusOption 6 - Grade separated both directions, one way	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro15	Dartmouth CircusOption 7 - Grade separated A38 and ringroad	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro16	Dartmouth CircusOption 8 - Grade separated with ringroad through-about	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro17	New Town Row/Summer LaneOption 1 - Ring road underpass	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro18	New Town Row/Summer LaneOption 2 - Ring road overpass	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro19	New Town Row/Summer LaneOption 3 - A34 overpass and closed Summer Lane	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	Adverse						
	Ro20	New Town Row/Summer LaneOption 4 - Lane widening	SHCS	ht Adv	Neutral	Neutral	t Bene	t Bene	ht Adv	ate Ad	Neutral	Neutral	ht Adv	t Bene	Neutral	Neutral

	Engineering / Deliverability										
	Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/(and availability (with additional future demand for parking spaces (not	Dependency - reliant on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs
Ro1	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro2	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro3	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro4	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro5	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro6	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro7	Neutral	t Bene	Neutral	Neutral	t Bene	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene
Ro8	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	t Bene	Neutral	Neutral	ht Adv	ht Adv
Ro9											
Ro10											
Ro11											
Ro12											
Ro13											
Ro14											
Ro15											
Ro16											
Ro17											
Ro18											
Ro19											
Ro20	Neutral	Neutral	Neutral	ht Adv	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral

	Transport Impacts										Safety				
	Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services	Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics
Ro1	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Adv	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Adv	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro4	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Adv	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro5	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Adv	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro6	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ht Adv	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro7	Neutral	Neutral	Neutral	Neutral	ht Adv	t Bene	t Bene	Neutral	t Bene	t Bene	Neutral	Neutral	t Bene	t Bene	Slight
Ro8	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	
Ro9															
Ro10															
Ro11															
Ro12															
Ro13															
Ro14															
Ro15															
Ro16															
Ro17															
Ro18															
Ro19															
Ro20	Neutral	Neutral	t Bene	t Bene	ht Adv	Neutral	Neutral	ht Adv	ate Ad	ht Adv	Neutral	Neutral	Neutral	ht Adverse	Slight

	Environmental									Managerial		
	Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk	Public acceptability	Quality of supporting evidence	Key risks
Ro1	Neutral	ht Adv	Neutral	ht Adv	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	ate Be	t Bene
Ro2	Neutral	ht Adv	Neutral	ht Adv	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	ate Be	t Bene
Ro3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	t Bene	ate Be	t Bene
Ro4	Neutral	ht Adv	Neutral	ht Adv	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	ate Be	t Bene
Ro5	Neutral	ht Adv	Neutral	ht Adv	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	ate Be	t Bene
Ro6	Neutral	ht Adv	Neutral	ht Adv	Neutral	Neutral	Neutral	ht Adv	Neutral	t Bene	ate Be	t Bene
Ro7	t Bene	Neutral	Neutral	t Bene	t Bene	Neutral	t Bene	Neutral	Neutral	t Bene	t Bene	Neutral
Ro8	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	t Bene	ate Be	t Bene
Ro9												
Ro10												
Ro11												
Ro12												
Ro13												
Ro14												
Ro15												
Ro16												
Ro17												
Ro18												
Ro19												
Ro20	ht Adv	ht Adv	Neutral	ht Adv	ht Adv	Neutral	ht Adv	ht Adv	ht Adv	Neutral	t Bene	ht Adv

	Financial/ Economic				Development Impacts				Commercial			
	Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
Ro1	t Bene	t Bene	Neutral	Neutral	ht Benef	ht Benef	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro2	t Bene	t Bene	Neutral	Neutral	rate Ben	rate Ben	rate Ben	ht Benef	Neutral	rate Ben	rate Ben	ht Benef
Ro3	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro4	t Bene	t Bene	Neutral	Neutral	ht Benef	ht Benef	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro5	t Bene	t Bene	Neutral	Neutral	ht Benef	ht Benef	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro6	t Bene	t Bene	Neutral	Neutral	ht Benef	ht Benef	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro7	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adve	ght Adve	Neutral
Ro8	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Ben	rate Ben	ht Benef
Ro9												
Ro10												
Ro11												
Ro12												
Ro13												
Ro14												
Ro15												
Ro16												
Ro17												
Ro18												
Ro19												
Ro20	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral

	Objective / Scheme		Policy Fit							Strategic						Engineering / Deliverability											Transport Impacts										Safety					Environmental									Managerial			Financial/ Economic				Development Impacts				Commercial			
	Scheme		Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MfG Delivery corridor(s)	Carbon net zero by 2030?	Fit with other policy	Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities	Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/land availability (with additional future demand for parking spaces (not	Dependency - reliant on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs	Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services	Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics	Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk	Public acceptability	Quality of supporting evidence	Key risks	Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
Ro21	New John Street West Option 1 - Link widening	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	nt Adv	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	nt Adv	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro22	Lucas Circus Option 1a - Convert to signalised roundabout	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro23	Lucas Circus Option 1b - Convert to through-about	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro24	Lucas Circus Option 1c - Convert to signalised crossroads	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	t Bene	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro25	Lucas Circus Option 2 - Remove junction	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	ate Ad	t Bene	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro26	Pitsford Street Option 1 - Remove right turners	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	nt Adv	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	nt Adv	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro27	Spring Hill Circus Option 1 - Carriageway widening	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	nt Adv	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	nt Adv	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro28	Spring Hill Circus Option 2a - Convert to signalised roundabout	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro29	Spring Hill Circus Option 2b - Convert to through-about	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro30	Spring Hill Circus Option 2c - Convert to signalised crossroads	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	t Bene	t Bene	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro31	Spring Hill Circus Option 3 - Grade separated, long overpass	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	Adverse																																																										
Ro32	Spring Hill Circus Option 4 - Grade separated, short overpass	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	Adverse																																																											
Ro33	Five Ways Option 1 - Westbound through-about	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro34	Five Ways Option 2 - Westbound through-about with carriageway widening	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro35	Five Ways Option 3 - Full through-about with carriageway widening	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	ate Ad	Neutral	Neutral	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	Neutral	Neutral	ate Ad	nt Adv	Neutral	Neutral	Neutral	nt Adverse	Slight	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro36	Five Ways Option 4 - Signalised T-junction	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	t Bene	ate Be	ate Ad	t Bene	Neutral	t Bene	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	nt Benefi	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro37	Five Ways Option 4a - Signalised T-junction, Monument Road changes	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	t Bene	Neutral	Neutral	Neutral	t Bene	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	t Bene	ate Be	ate Ad	t Bene	Neutral	t Bene	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	nt Benefi	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro38	Five Ways Option 5 - Signalised T-junction with minor road left in / left out	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	t Bene	Neutral	Neutral	Neutral	t Bene	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	t Bene	ate Be	ate Ad	t Bene	Neutral	t Bene	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	nt Benefi	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro39	Five Ways Option 5a - Signalised T-junction with minor road left in / left out, Monument Road changes	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	nt Adv	Neutral	Neutral	nt Adv	t Bene	t Bene	Neutral	Neutral	Neutral	t Bene	ate Ad	ate Ad	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral	Neutral	t Bene	t Bene	nt Adv	Neutral	t Bene	ate Be	ate Ad	t Bene	Neutral	t Bene	Neutral	nt Adverse	Slight	t Bene	nt Adv	Neutral	nt Adv	nt Adv	Neutral	nt Adv	nt Adv	nt Adv	Neutral	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	nt Benefi	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro40	Five Ways Option 6 - Grade separated both directions	SHCS	nt Adv	Neutral	Neutral	t Bene	t Bene	nt Adv	Adverse																																																										

	Objective		Policy Fit							Strategic						Engineering / Deliverability											Transport Impacts										Safety					Environmental									Managerial			Financial/ Economic				Development Impacts				Commercial			
	Scheme		Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel	Improve Access to City Centre	Use of Brownfield Land	Improve reliability for people and goods	Supports MJG Delivery corridor(s)	Carbon net zero by 2030?	Fit within other policy	Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)	Supporting housing growth (committed sites)	Encourage sustainable/active travel	Strategic road access	Supporting passenger growth	Supporting redevelopment opportunities	Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/land availability (with additional future demand for parking spaces (not	Dependency - reliance on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs	Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services	Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics	Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk	Public acceptability	Quality of supporting evidence	Key risks	Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
Ro41	Belgrave InterchangeOption 1 - Carriageway realignment and widening	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ht Adv	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ht Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	ht Adv	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro42	Haden CircusOption 1a - Convert to signalised roundabout	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro43	Haden CircusOption 1b - Convert to through-about	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro44	Haden CircusOption 1c - Convert to signalised crossroads	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	t Bene	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	t Bene	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro45	Haden CircusOption 2 - Grade separated	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																									
Ro46	Camp Hill CircusOption 1 - Carriageway widening	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																									
Ro47	Camp Hill CircusOption 2a - Convert to signalised roundabout	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro48	Camp Hill CircusOption 2b - Convert to through-about	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro49	Camp Hill CircusOption 2c - Convert to signalised crossroads	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	t Bene	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	t Bene	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro50	Camp Hill CircusOption 3 - Grade separated	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																								
Ro51	Bordesley CircusOption 1 - Carriageway widening	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ht Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	ht Adv	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro52	Bordesley CircusOption 2 - Change direction of through-about	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	ht Adv	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro53	Bordesley CircusOption 3 - Coventry Road bus and taxi only	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ht Adv	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ht Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	t Bene	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro54	Bordesley CircusOption 4 - Convert to signalised crossroads and T-junction	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																								
Ro55	Bordesley CircusOption 5 - Grade separated	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																								
Ro56	Garrison CircusOption 1 - Carriageway widening	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ht Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	ht Adv	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro57	Garrison CircusOption 2a - Convert to signalised roundabout	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro58	Garrison CircusOption 2b - Convert to through-about	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	Neutra	Neutra	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro59	Garrison CircusOption 2c - Convert to signalised crossroads	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	ate Ad	Neutra	Neutra	ht Adv	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra	Neutra	Neutra	t Bene	t Bene	ht Adv	Neutra	t Bene	t Bene	ate Ad	ht Adv	Neutra	Neutra	Neutra	ht Advers	Slight	t Bene	ht Adv	Neutra	ht Adv	ht Adv	Neutra	ht Adv	ht Adv	ht Adv	Neutra	t Bene	ht Adv	t Bene	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	rate Adv	Neutral	Neutral
Ro60	Garrison CircusOption 3 - Grade separated	SHCS	ht Adv	Neutra	Neutra	t Bene	t Bene	ht Adv	Adverse																																																								

Group	ID	Objective / Scheme	Source
	Ro61	Curzon CircusOption 1 - Carriageway widening	SHCS
	Ro62	Curzon CircusOption 2 - Close Curzon Street	SHCS
	Ro63	Curzon CircusOption 3a - Convert to signalised roundabout	SHCS
	Ro64	Curzon CircusOption 3b - Convert to through-about	SHCS
	Ro65	Curzon CircusOption 3c - Convert to signalised crossroads	SHCS
	Ro66	Curzon CircusOption 4 - Close Curzon Street and convert to signalised junction	SHCS
	Ro67	Curzon CircusOption 5 - Increase diameter of roundabout	SHCS
	Ro68	Options to address A4540 crossings	#N/A
Active Mode Schemes	AM1	Local centres walking and cycling access	MfG
Active Mode Schemes	AM2	Bham cycle revolution - phase 1 Soho Road	THCP
Active Mode Schemes	AM3	Bham cycle revolution - phase 1 Alcester Road	THCP
Active Mode Schemes	AM4	Bham cycle revolution - phase 1 Lichfield Road	THCP
Active Mode Schemes	AM5	Bham cycle revolution - phase 2 Tyburn Road	THCP
Active Mode Schemes	AM6	Bham cycle revolution - phase 3 outer connections	THCP
Active Mode Schemes	AM7	Middleway cycle routes	LCWIP
Active Mode Schemes	AM8	Last mile cycle routes	LCWIP
Active Mode Schemes	AM9	Cross-city cycle routes	LCWIP
Active Mode Schemes	AM10	Development of Active mode measures	0
Other Schemes	Ot1	CA2	BB+R2
Other Schemes	Ot2	Workplace parking levy	BTP
Other Schemes	Ot3	Birmingham parking SPD (inside A4540 reductions/CP2/RPZ etc)	BTP
Other Schemes	Ot4	CM 750 Selly Oak/Edgbaston and Uni/Hospitals area wide parking scheme	MfG
Other Schemes	Ot6	Low Traffic Neighbourhood (Places for People)	0
Other Schemes	Ot7	Options for the use of the former A38 through the City Centre	0

Scheme	Policy Fit: Fit with Big Moves: Reallocating road space; Transforming the city centre; Prioritising active travel	Policy Fit: Improve Access to City Centre	Policy Fit: Use of Brownfield Land	Policy Fit: Improve reliability for people and goods	Policy Fit: Supports MfG Delivery corridor(s)	Policy Fit: Carbon net zero by 2030?	Policy Fit: Fit with other policy	Strategic: Supporting economic growth (increasing connectivity to employment sites e.g. Enterprise Zones)	Strategic: Supporting housing growth (committed sites)	Strategic: Encourage sustainable/active travel	Strategic: Strategic road access	Strategic: Supporting passenger growth	Strategic: Supporting redevelopment opportunities
Ro61	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro62	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro63	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro64	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro65	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro66	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro67	nt Adv	Neutra	Neutra	t Bene	t Bene	nt Adv	ate Ad	Neutra	Neutra	nt Adv	t Bene	Neutra	Neutra
Ro68	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	t Bene
AM1	ate Be	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM2	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM3	ate Be	t Bene	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM4	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM5	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM6	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM7	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM8	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM9	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
AM10	ate Be	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	Neutra
Ot1	ate Be	nt Adv	Neutra	Neutra	Neutra	ate Be	ate Be	Neutra	Neutra	t Bene	Neutra	t Bene	Neutra
Ot2	ate Be	t Bene	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	t Bene	Neutra
Ot3	ate Be	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra	t Bene	Neutra
Ot4	ate Be	Neutra	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene
Ot6	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra
Ot7	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra

Scheme	Engineering / Deliverability: Any known geotechnical issues	Water Courses and Buried Infrastructure (culverts / drains)	Operational efficiency	Construction and maintenance	Programme	Land availability (including CPO requirements)	Location conflict with existing planning permission	Flexibility regarding future expansion/land availability (with additional future demand for parking spaces (not	Dependency - reliance on delivery of partner's schemes (additional rail capacity etc)	Costs - Capital Costs	Costs - Operating Costs
Ro61	Neutra	Neutra	Neutra	nt Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro62	Neutra	Neutra	Neutra	nt Adv	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro63	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro64	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro65	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro66	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro67	Neutra	Neutra	Neutra	ate Ad	ate Ad	Neutra	Neutra	Neutra	Neutra	ate Ad	Neutra
Ro68	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra
AM1	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM2	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM3	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM4	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM5	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM6	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM7	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM8	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM9	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
AM10	Neutra	Neutra	Neutra	nt Adv	Neutra	t Bene	t Bene	t Bene	t Bene	nt Adv	nt Adv
Ot1	Neutra	Neutra	t Bene	nt Adv	Neutra	Neutra	Neutra	Neutra	t Bene	nt Adv	nt Adv
Ot2	Neutra	Neutra	t Bene	Neutra	ate Ad	Neutra	Neutra	Neutra	Neutra	nt Adv	nt Adv
Ot3	Neutra	Neutra	t Bene	nt Adv	nt Adv	Neutra	Neutra	Neutra	Neutra	nt Adv	Neutra
Ot4	Neutra	Neutra	t Bene	nt Adv	ate Ad	Neutra	Neutra	Neutra	nt Adv	nt Adv	Neutra
Ot6	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	nt Adv	Neutra
Ot7	Neutra	Neutra	t Bene	nt Adv	Neutra	Neutra	Neutra	Neutra	Neutra	nt Adv	Neutra

Scheme	Transport Impacts: Impact on future passengers	Abstraction from existing stations	Reduce road traffic on A38(M)	Reduce road traffic on A38S - Bristol Road	Reduce road traffic on A4540	Impact on City Centre traffic levels	Impact on train and bus operations	Impact on ease of crossing the A4540	Mode shift (from car)	Integration with current public transport services
Ro61	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	Neutra	nt Adv	ate Ad	nt Adv
Ro62	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	nt Adv	Neutra	ate Ad	nt Adv
Ro63	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	t Bene	Neutra	ate Ad	nt Adv
Ro64	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	Neutra	Neutra	ate Ad	nt Adv
Ro65	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	t Bene	t Bene	ate Ad	nt Adv
Ro66	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	nt Adv	t Bene	ate Ad	nt Adv
Ro67	Neutra	Neutra	t Bene	t Bene	nt Adv	Neutra	Neutra	nt Adv	ate Ad	nt Adv
Ro68	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene
AM1	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM2	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM3	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM4	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM5	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM6	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM7	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM8	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM9	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
AM10	Neutra	Neutra	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	t Bene	Neutra
Ot1	Neutra	Neutra	t Bene	t Bene	nt Adv	t Bene	Neutra	nt Adv	t Bene	t Bene
Ot2	Neutra	Neutra	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	t Bene	Neutra
Ot3	t Bene	Neutra	t Bene	t Bene	Neutra	t Bene	Neutra	Neutra	t Bene	Neutra
Ot4	Neutra	Neutra	Neutra	t Bene	Neutra	Neutra	t Bene	Neutra	t Bene	Neutra
Ot6	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	Neutra	Neutra	Neutra	Neutra
Ot7	Neutra	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	Neutra	Neutra	Neutra

Scheme	Safety: Passenger safety and security	Severance to movement	Highway Safety - Highway traffic	Highway Safety - Active mode users	Highway safety - collision statistics	Environmental: Cycle Access	Air quality	Archeology	Noise	Public realm	Biodiversity	Landscape / Townscape	Greenhouse Gases	Flood risk
Ro61	Neutra	Neutra	Neutra	nt Adverse	Slight	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro62	Neutra	Neutra	Neutra	nt Adverse		Neutra	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro63	Neutra	Neutra	Neutra	nt Adverse	Slight	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro64	Neutra	Neutra	Neutra	nt Adverse	Slight	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro65	Neutra	Neutra	Neutra	nt Adverse	Slight	t Bene	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro66	Neutra	Neutra	Neutra	nt Adverse	Slight	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro67	Neutra	Neutra	Neutra	nt Adverse	Slight	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	Neutra	nt Adv	nt Adv	nt Adv
Ro68	Neutra	t Bene	Neutra	ate Be	Slight	t Bene	Neutra	t Bene	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra
AM1	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM2	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM3	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM4	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM5	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM6	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM7	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM8	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM9	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
AM10	Neutra	t Bene	t Bene	t Bene	Moderate	ate Be	t Bene	Neutra	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra
Ot1	Neutra	Neutra	Neutra	Beneficial		Neutra	t Bene	Neutra	Neutra	t Bene	Neutra	nt Adv	Neutra	Neutra
Ot2	Neutra	Neutra	t Bene	Neutral		Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra	t Bene	Neutra
Ot3	Neutra	Neutra	Neutra	Beneficial		Neutra	t Bene	Neutra	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra
Ot4	Neutra	Neutra	Neutra	Beneficial	Slight	t Bene	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	Neutra
Ot6	Neutra	Neutra	Neutra	Neutral		Neutra	t Bene	Neutra	Neutra	Neutra	Neutra	Neutra	t Bene	Neutra
Ot7	Neutra	t Bene	Neutra	Beneficial	Slight	t Bene	t Bene	Neutra	Neutra	t Bene	Neutra	t Bene	Neutra	Neutra

Scheme	Managerial: Public acceptability	Quality of supporting evidence	Key risks	Financial/ Economic: Providing Value for Money	Job creation	Agglomeration/ connecting business	Connecting employers and labour markets	Development Impacts: Opportunity for development (land released or land opened-up)	Support Planned development / Land use integration	Land value uplift	Impacts on business rates/council tax	Commercial: Flexibility of option	Funding source *	Revenue (direct) *	Revenue (indirect) *
Ro61	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro62	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro63	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro64	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro65	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro66	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro67	Neutra	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ate Ad	Neutral	Neutral
Ro68	ate Be	t Bene	Neutra	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM1	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM2	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM3	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM4	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM5	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM6	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM7	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM8	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM9	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
AM10	t Bene	t Bene	t Bene	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ght Adv	Neutral
Ot1	Neutra	t Bene	Neutra	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	nt Benef	Neutral
Ot2	nt Adv	t Bene	nt Adv	t Bene	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	ate Ben	Neutral
Ot3	nt Adv	t Bene	nt Adv	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	nt Benef	Neutral
Ot4	nt Adv	t Bene	nt Adv	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	nt Benef	Neutral
Ot6	Neutra	Neutra	Neutra	Neutra	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	ght Adv	Neutral	Neutral
Ot7	Neutra	Neutra	Neutra	Neutra	t Bene	Neutral	Neutral	nt Benef	Neutral	Neutral	Neutral	Neutral	ght Adv	Neutral	Neutral

Appendix F. Short Listed Options Coding Notes

The modelling methodology is listed for each scheme below.

Traffic cells (city centre)

All routes across a traffic cells boundary have been converted to bus only in the network (to avoid disrupting any existing bus routes)

20mph across city centre (inside A4540)

All links (except for existing A38 links) have had their free flow speeds coded at 20mph.

Snow Hill Test 1 (A38 weaves closed)

All weaves joining and leaving the A38 between Holloway and Lancaster Circuses are converting to bus only.

Snowhill Test 2 (A38 tunnels closed)

In addition to test 1 the tunnel underneath paradise circus is converted to bus only to force all traffic off the A38, without making unnecessary presumptions regarding bus routing through the area.

Sprint/ Bus Improvement Corridors & Metro Expansion

All Sprint/Bus Improvement Corridors have been coded to the following procedure:

- If the road link is of two or more lanes in any directions, one of the lanes is converted to a bus/sprint/metro lane for all directions with more than two lanes.
- If the road link is of one lane in both directions, there is no change.

Workplace Parking Levy

Using the Birmingham Parking Study, the proportion of non-residential private parking in each zone has been calculated. This proportion has been then been multiplied by the CAZ charge (in assumption that almost all vehicles would be compliant by 2037 so no longer affected by the CAZ and that this is an affective replacement). This cost is applied to all trips that start/finish in the city centre area (including five ways outside of the Middleway). These costs are then used by the variable demand model to adjust trip distribution and frequency.

Parking SPD including roll-out of CPZ's and closure of car parks (-10% traffic)

Using the Birmingham Parking Study it was observed that just over 10% of the parking spaces were accounted for by unrestricted on-street parking (around 7,000 of 60,000 spaces). It was considered that from this an aim from a roll out of changes to parking in the city centre could be to reduce traffic on a basis of this proportion, so a 10% reduction has been applied to all traffic with an origin or destination within the Middleway.

Park and Ride

Select links have been taken on routes alongside park and ride locations (and nearby major roads where appropriate) with a proportion of traffic re-routed to using the train station zone instead of its original origin/destination. This proportion has been based off the spaces to trip change from previous snowhill modelling.

M5 Junction 1 capacity improvement

Early runs indicated a potential for traffic to re-route via M5 J1. Without a scheme to test with and to understand in impacts of capacity here on the city centre re-routing all capacity constraints were removed here (whilst keeping signal-based delays).

Five Ways (3 Arm Signalised) (Op 5)

Roundabout at five ways has been modelled to be replaced with a 3-arm signalised junction connected to both sides of the Middleway and Hagley Road arms. Where possible free flow movements have been added for all left turning movements with additional lanes to attempt to maximise space. This leaves the potential for better signal optimisation and considerations of the final size and layout of the scheme to meet BCC objectives.

Spring Hill (4 Arm Signalised) (Op 2)

Roundabout at spring hill has been modelled to be replaced with a 4-arm signalised junction. As part of this all left turns are considered to have a segregated left turn into a give way. Additional lanes have been coded at the lights and detailed design will have to determine the potential for this to be achieved or expanded upon. This leaves the potential for better signal optimisation and considerations of the final size and layout of the scheme to meet BCC objectives.