North East Cambridge

Area Action Plan Transport Evidence Base

20 September 2019

Cambridgeshire County Council

Mott MacDonald
10 Fleet Place
London EC4M 7RB
United Kingdom

T +44 (0)20 7651 0300
F +44 (0)20 7248 2698
mottmac.com

Cambridgeshire County Council
Shire Hall
Castle Hill
Cambridge CB3 0AP

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Mott MacDonald Limited. Registered in England and Wales no. 1243967. Registered office: Mott MacDonald House, 8-10 Sydenham Road, Croydon CR0 2EE, United Kingdom

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Executive summary

Introduction and baseline context

Cambridge City Council and South Cambridgeshire District Council, working with Cambridgeshire County Council and Highways England, are jointly preparing an Area Action Plan (AAP) for the North East Cambridge (NEC) area. Mott MacDonald has been commissioned by Cambridgeshire County Council (CCC) to prepare a Transport Evidence Base to inform the AAP.

A review of baseline transport conditions in and around the study area shows that NEC is already relatively well-connected to surrounding multi-modal networks, but the effectiveness of these connections is hampered by performance limitations at peak times. Examples of these include highway congestion issues at the Milton Interchange and on Milton Road; delays to vehicles departing areas of the site during the PM peak period; and overcrowding on busway and rail services.

There are also some significant barriers to pedestrian and cycle movements within and around the study area, including those imposed by Milton Road, and some of the intra-site boundaries including fencing around the Cambridge Business Park, which reduce the potential permeability for these modes, while options for introducing new highway access points and/or increasing existing highway network capacity, even if this were desirable, are also limited by the same physical barriers and other constraints.

In addition, a review of 2011 Census data shows that nearly half of employees travelling to the study area have no public transport alternative from point-of-origin and that nearly 90% of these travel to the site by car. The fact that there is currently an over-abundance of free parking across the NEC site as a whole exacerbates this situation and disincentivises use of public transport (PT) even where it is available so that, overall, 71% of employees currently drive to the NEC area to work.

Given the current lack of spare highway network capacity in and around the study area at peak times, the limited opportunities to increase this in future, the additional pressure to be placed by other developments such as the New town North of Waterbeach and the lack of wider policy support for this, it will be necessary for any further development to be delivered in a way that does not result in peak-period highway trip levels increasing above existing levels to the extent of creating a severe impact. Remaining within this ‘trip budget’ will require the relatively unconstrained car mode-share level of today to be significantly reduced in future, an approach which is in line with that adopted by the Greater

Cambridge Partnership who are promoting various transport interventions to support the growing Cambridge economy.

Future context

There are a number of land use schemes already consented for the study area which will increase employment levels at the NEC. The development scenarios being potentially considered for the emerging study area AAP involve a further significant increase in employment levels, plus a mix of housing and ancillary uses to maximise internalisation of trips and not contribute to further exceeding local highway capacity. These scenarios could result in an increase in jobs and dwellings of between 4,400 and 13,200 and 5,500 and 9,200 respectively, as summarised in the table below.

Table ES1: Summary of dwelling and estimated B1/B2 jobs per development scenario

	Existing	HIF Scenario	Option1	Option 2	Option3	Option 4
Jobs	12,000	18,900	18,200	23,200	27,000	23,200
Dwellings	n/a	9,200	5,500	6,650	7,600	8,700

Source: Project Team

A review of committed, planned or potential transport improvements in the area show that, as a result of those schemes which include pedestrian, cycle and public transport improvements, accessibility to the study area by non-car modes will improve in coming years, but that highway capacity improvements will be relatively minor, particularly to the south of the A14. This confirms the principle that any future development growth in the study area should be delivered without any significant increase in development-related highway trips so that highway impacts can be minimised.

A review of recent and future travel trends and emerging technologies also suggests that such a principle is consistent with, and complementary to, the way in which travel behaviour and transport policy is likely to continue developing. The policy focus should move away from the forecast-led paradigm of ‘predict and provide’ and towards a vision-led paradigm of ‘decide and provide’ – decide on what characterises the future that is desired and then put in place measures to move towards realising that future (e.g. maximising public transport provision and active travel accessibility to support and enhance a shift away from car driving and towards sustainable travel).

Predicting development trip generation and establishing trip budget

Standard trip rates modified to fit local conditions have been derived to allow estimation of both person and vehicle trips for both existing and proposed future land uses in the study area. Based on this data, it is predicted that the future development scenarios being considered as part of this AAP evidence base could result in total person flows by all modes which are two to three times higher than existing flow levels, and so will require significant car driver mode shift in order that impacts on the highway network are minimised.

A traffic modelling exercise has been undertaken to establish a vehicular trip budget level for the study area within which development expansion could take place without creating a severe impact on local highway conditions, and to identify the level of car driver mode shift that would be required for each development scenario to achieve this. Assuming that the investment in committed transport projects is delivered, and based on the average results for all development scenarios, this analysis suggests the following peak hour trip budget levels:

- AM peak hour: 3,900 two-way vehicle trips.
- PM peak hour: 3,000 two-way vehicle trips.

These development trip levels are similar to existing vehicle trip levels and, therefore, for any development growth to be accommodated, will require the existing car driver mode share to decrease to maintain traffic levels within the trip budget limits. Delivering the growth represented by the different AAP development scenarios tested for this study therefore has the following car mode shift implications:

- Option 1 is the least onerous, with a required car driver mode share reduction of 0.47, though the resulting 38% employment and 15-20% residential targets are still challenging
- Options 3 and 4 are the most onerous, with a required car driver mode share reduction of 0.64, resulting in target mode shares for employment and residential trips of 25% and 10-13% respectively
- Option 2 and the HIF scenario fall between these two extremes

On the assumption that these changes can be achieved, the application and maintenance of this trip budget is anticipated to have the following impact on highway mitigation, air quality and safety:

- Only minor changes would be required to the site accesses on Milton Road to accommodate the impacts of redistributed highway traffic.
- No significant changes would be required or recommended for other off-site highway locations as the trip budget would not allow for a growth in future development vehicle trips on the network. The future design of the network up to the CGB junction has been determined by the Greater Cambridge Partnership Milton Road Corridor scheme. Overall, the capacity of the network is principally limited by the junctions of Kings Hedges Road, Science Park access and the A14 Milton interchange.

- Due to the trip budget limiting the growth in development flows on the local network, significant detrimental air quality impacts are not expected.
- Similarly, the limiting of future development-related traffic growth will minimise the potential increase in highway safety impacts, while the considered measures to improve NMU and public transport connectivity and priority to and within the study area should generate further highway safety benefits.

Managing parking supply

Management of parking supply and use in and around the study area will be one of key elements required to support the behavioural changes needed to facilitate the levels of development proposed. This can also contribute to creating a place less dominated by cars, and with improved environmental quality, in line with the wider emerging aspirations for the area. The approach adopted in this study focusses on the residential and primary employment uses (i.e. B1 / B2) as these are the key contributors to external trip-making. Other uses are assumed to be ancillary to the main land uses and contribute towards enhancing the level of internalised trip-making within the AAP Area. Parking standards for the latter, and in particular for retail and leisure uses, should be limited to operational uses only, with limited or no on-street parking opportunities so that these do not become car trip generators in their own right. This would need to be accompanied by prohibitive design, and/or wider parking restrictions and appropriate enforcement measures.

A 4-step methodology has been adopted to assess the parking standard implications of the levels of ‘primary’ employment development proposed for each development scenario, given the established vehicle trip budgets:

i. AM peak vehicles arrivals to the employment uses have been extracted from the trip budget analysis.
ii. This has been applied to the TRICS-based arrival and departure profile used in the trip budget analysis to derive a parking accumulation profile which shows the parking accumulation , and at what time of day maximum occupancy occurs. This represents the peak parking demand that would occur with the trip budget in place.
iii. The peak parking demand has then been compared to the proposed level of floorspace for each development scenario to derive an implied parking standard.
iv. The parking standard derived has then been compared to the range observed elsewhere to provide some benchmarking context.

This process gives rise to a potential employment-based parking standard that ranges between 1 space per 84 sqm and 1 space per 128 sqm of employment space depending on the development scenario, which sit within the range of standards implemented elsewhere, and are thus considered reasonable. Importantly, and in line with the trip budget, these implied standards should be viewed as maxima with the expectation that lower levels of provision and hence further reductions in car use should sought. Clearly, there will be a need to parking provision to be actively managed across the sites to accompany these lower levels of provision.

Reducing parking provision within residential development can potentially lead to reduced car ownership levels and hence reduced car use, thereby bringing decongestion benefits. On the other hand, this could have the potential to also lead to displaced parking on surrounding areas. Therefore, the recommended approach to residential parking standards at NEC is to seek to strike a balance between these two but with demand for car travel being managed, in particular, through implementation of parking restraint measures at the 'destination end' whilst also not overproviding at the residential, or origin end and providing an appropriate balance.

As there are wider aspirations from the Local Planning Authorities for the site to become a new urban quarter for Cambridge, it is recommended that residential parking standards are initially established based on car ownership data from potential comparator locations locally, combined with aspirations from the planning authorities and development partners. Given this, it is proposed that provision across the NEC should not exceed 0.5 cars per household on average and that this should be viewed as a maxima. Early engagement with the development industry suggests that more ambitious standards could be achieved, and so lower levels should be provided wherever possible as has already been achieved on other highly accessible sites within Cambridge.

Within this, a more detailed residential parking strategy should be developed to incorporate neighbourhoods of car-free housing around highly accessible transport nodes but with some recognition that in more peripheral locations within the site there may be some need for greater provision. That said, the overall aim is that the site should have high levels of non-car accessibility across the area and that low levels of residential car parking provision should be deliverable regardless of location. Residential-specific parking will need to be accompanied by appropriate design, parking control schemes, and enforcement so as to eliminate inappropriate parking and contribute to place-making objectives.

To mitigate potential parking displacement, parking demand and capacity in areas within approximately 800m distance (approximately 10-minute walking), and beyond if identified through survey work, from the NEC should be monitored as the development comes forward, and introduction of Resident Parking Schemes should be consulted on if considered necessary. This would likely include the Chesterton East, West and South, and the King's Hedges areas to the south and Milton to the north. These surveys, and a requirement to implement, or contribute to, on-street parking control and enforcement measures should be sought via condition or legal agreement through the planning process.

To assist in offsetting potential impacts due to displaced commuter parking, the following additional measures are considered to have high viability.

- Increasing Park and ride (P&R) provision accessible to the site, with a strong location for this being the Milton Road P&R, to the north of the A14, the proposed P&R site at Waterbeach, and potentially others surrounding Cambridge subject to securing appropriate connections to those.
- To make this offer more attractive, frequent and reliable public transport connections could be provided by means of a segregated link off the A10 (via Mere Way), which could be linked to the guided busway to provide a quicker passage all the way to the Cambridge North Station (CNS).
- Secure cycle parking spaces could also be provided at Milton Road P&R. This, combined with an appealing pricing strategy and an attractive segregated route, could provide an enticing alternative to some commuters.
- Variable Message Signage (VMS) could be installed along the A14 approaches to the Milton Interchange, as well as on the A10 to the north of the P&R, to relay real-time information regarding congestion and parking availability at the P&R (and even within the NEC).
- It should be noted that these measures could be adapted or replaced by other, more innovative, solutions as these are developed including the potential evolution of the Milton P&R into a more general multi-modal travel hub with some of the car access potentially being replaced with demand responsive feeder services, building upon the Combined Authority aspirations to reduce car dependency to P&R sites.

Encouraging internalisation

Local TEMPro data combined with National Travel Survey 2013/17 and 2011 Census data show evidence of residential trips during peaks being clearly split by journey purpose during the peak travel hours. The same data also supports analysis of the level of trip internalisation that could be achieved across different trip purposes by contrasting said end trip purposes with land uses with the potential to be provided within the NEC area.

Based on this analysis, it is estimated that the mix of land uses proposed for each AAP development scenario considered by this study could result in between about 15% and 20% of all development trips being internal to the study area. External trips, and more importantly, external car trips, can therefore be reduced significantly by ensuring that the appropriate mix of land uses are delivered as part of the spatial framework for the site.

To achieve this, it is critical that the physical severance across the area is successfully reduced by providing viable pedestrian and cycle connections in order to connect different parts of the NEC area and land uses coming forward on each. This should include a combination of at grade and grade separated crossings on Milton Road and the busway, and addressing intra-site barriers where possible including, for example, connections into and out of Cambridge Business Park and other areas within the NEC.

A shuttle system service could be introduced to aid with travel between Cambridge North station and the most distant parts of the NEC area and connect these with key destinations further afield such as the Milton Road P&R. This service should be aimed at maximising efficiency and reliability whilst minimising delays by providing a route that is mostly segregated from traffic. In the short term, this shuttle system could be in form of a bus, this potentially being an electric vehicle in line with the place-making ethos for this site. However, in mid-long term, other alternative mass transit solutions could fulfil this role which could range from, for instance, from self-driving vehicles such as (electric) buses, to fully autonomous driverless vehicles such as pods or trains, or even grade separated cable cars to avoid all interaction with the surrounding highway network.

An attractive and comprehensive network of sustainable travel opportunities to provide viable alternatives to travel by private car will have to be an intrinsic part of the spatial framework and associated access and transport strategy which, together with the parking strategy, will focus on constraining traffic flows to/from the study area to the identified trip budget.

Increasing non-car accessibility and use

Given that maximising development trip internalisation will minimise development trips on external networks, while careful management of study area parking supply and usage will discourage those journeys being undertaken by car, it is essential that the study area becomes highly accessible by non-car modes and that measures are put in place to increase their usage in order that future NEC development can effectively operate within the trip budget.

Implementation of the proposed Milton Road Corridor, the Greenway network, the Chisholm Trail, and the resolution of the severance barriers within and around the study area are therefore key to increasing non-motorised user (NMU) accessibility to and from the site and the wider Cambridge City area. It is also expected that the growth in availability and use of micromobility modes, such as e-bikes and e-scooters, will contribute to increasing the range and appeal of these modes for travel to, from, between and within the NEC sites.

Similarly, it is noted that there are a number of proposed or recommended public transport measures which could significantly contribute to increasing the accessibility of the study area by these modes. These include the Milton Road improvements, rail network and service improvements, and the emerging CAM network proposals. The CAM proposals, in particular, would help to connect the study area to commuter origin locations in the wider hinterland of Cambridge, thereby meaning that a larger number of journeys from outside of Cambridge City to the area can be accommodated by non-car modes. However, these are largely fixed public transport modes and so local bus service improvements should also be pursued to fill in any catchment gaps not filled by CAM. It is also anticipated that, as NEC parking availability reduces, new employees will increasingly choose to live in locations where trips to and from the study area do not need to be conducted by car. Over time, therefore, it can be expected that the overlap between NEC employee and public transport catchments will increase, both through greater network coverage and through employee redistribution.

It is also acknowledged that there will be a proportion of commuter journeys which, at present, begin without a viable alternative to the car at point-of-origin. However, should innovative demand-responsive services be developed in line with Combined Authority aspirations, the use of car as a feeder mode could potentially be significantly reduced. Allowing these feeder trips, by whatever mode they are made, to be completed by some form of P&R final mode will therefore become increasingly important. This need can be met by the recommendation to introduce a new segregated public transport and cycle link between the Milton site and the study area due to its proximity, and an examination of connectivity to the wider network of park and ride sites around Cambridge, while CAM also has the potential to improve links between NEC and existing P&R sites at Trumpington, along the busway and at Newmarket Road, and also from a potential new site at the new town north of Waterbeach. It also connects the site to the whole Cambridge area, allowing for non-car commuting over a wider area.

An extensive programme of behavioural change measures will also be needed to encourage greater use of these modes, such as incentive programmes, needs-based parking allocation systems, subsidised travel, Mobility as a Service (MaaS) credits, and carsharing schemes. There is already a strong and successful travel planning programme in place within the study area, which provides the basis to expand the programme and its impacts in order to help deliver the future mode shift required to achieve the study area trip budget.

Several of the measures identified here include initiatives based on more ‘traditional’ modes, which is in itself important for demonstrating deliverability. However, given societal changes and the emergence of new approaches to transport including MaaS, it will be important for NEC to adopt these measures as they become viable substitutes for some of the more conventional solutions and, given the innovative nature of many of the activities undertaken at NEC, for the area to spearhead their use and potentially act as a test-bed for their implementation where/when acceptable to the local planning and transport authorities.

Estimating mode shift impact

To estimate the impact of the potential interventions, these have been mainly categorised as:

- encouraging internalisation
- managing parking supply, and
- increasing non-car accessibility and use

In order to estimate impacts on the existing NEC car driver mode share, comparison has been made with the CBC and city centre areas of Cambridge where many of these types of measures, or required locational characteristics, are already in place. Using 2011 Census travel-to-work data for these areas as both workplace and worker residence, the potential impact of each intervention category was simulated for NEC by assigning to it some of the travel characteristics of the comparison areas. The results of this incremental impact assessment are summarised in the following table and show how each set of measures, together with the influence of future travel trends and technologies, contributes towards reaching the target car driver mode share required for the development scenarios, as an average, to operate within the trip budget.

Table ES2: Estimated car driver mode-shift impact

Measure simulated	Predicted commute-trip car driver mode share (average across development scenarios)	
	Employment-generated trips	Residential-generated trips
Existing situation	71%	45%*
+ increased internalisation of trips	70%	44%
+ maximised non-car mode use	53%	26%
+ increased non-car mode overlap	50%	26%
+ increased P&R usage	37%	26%
+ future trends and technology	29%	19%
Target mode share	**29%**	**19%**

Source: Mott MacDonald.
(*) Assumed that residential commute mode-shift is applicable to all residential trip purposes

In order to support this level of car driver mode share, trips by other modes will need to increase substantially, and so will the capacity of those modes. The workday AM peak hour has been used to provide an indication at this stage of what level of extra public transport capacity will be required to support the above car mode share, depending on development scenario. This is shown in the table below.

Table ES3: Estimate of extra non-car mode capacity required

Extra capacity	HIF scenario	Option 1	Option 2	Option 3	Option 4
Buses (vehicles)	11	7	11	15	13
Rail (carriages)	3.9	2.5	4.4	5.8	5.2
P&R (spaces)	1,545	1,332	1,794	2,080	1,883

Notes. Buses could be replaced by other more innovative solutions in the longer term.
Source: Mott MacDonald

In terms of rail capacity, it is worth noting that the additional capacity highlighted above should be achievable if CAM / railway capacity improvements highlighted in the Cambridge rail study review are implemented. Additional public transport capacity requirements noted would need to be delivered as part of the interventions package in support of the development proposals for the area.

Trip budget delivery plan

A comprehensive list of transport interventions has been identified which have been compiled through specialist knowledge, analysis and evidence, together with stakeholder liaison, including a workshop where the client team, as well as representatives from other public sector bodies and transport providers.

Identified interventions have been categorised under internal, local or strategic impact levels. Internal measures seek to address demand management and behavioural challenges; local measures aim at maximising current public transport provision and last mile solutions; and strategic measures seek to address public transport provision gaps in the wider area. A summary of these is provided below:

- Internal measures:
  - Spatial framework and subsequent masterplan development promoting connectivity and permeability for public transport, cycling and walking (and improving pedestrian/cycle connectivity to enhance linkages to existing key residential areas, wayfinding and urban realm)
  - Segregated crossing point(s) on Milton Road to maximise inter-site permeability (which, subject to further design and viability assessment, could take the form of a green bridge connecting the NEC on both sides of the road, or other grade separated solutions)
  - Crossing points on the busway
  - Highway site access improvements
  - Intra-site shuttle system

  - NEC parking strategy (including implementation of trip-budget-compliant parking standards on-site, parking monitoring and promotion of Residential Parking Schemes where required locally)
  - Travel Plan Measures and Travel Monitoring (including e-bikes / e-scooters, incentive programmes, transport subsidies, smartphone apps / information messaging, carsharing, home working / hot-desking culture)
  - Potential changes to development mix / quantum to reduce trip budget impact and increase internalisation levels
  - Marketing support to attract residents to the area that are more likely to use alternative travel modes other than car, and
  - Incentive scheme to maximise resident-to-employee ratio
- Local measures:
  - New segregated public transport link from Milton Road P&R to site avoiding interaction with Milton Road and including shared pedestrian / cycling facilities
  - Additional P&R spaces at key locations, recognising that demand for these might reduce on the longer term should demand responsive feeder services be provided
  - Park and cycle opportunities at P&R locations
  - P&R shuttle system, and
  - Variable Message Signage (VMS) at key locations to inform drivers of P&R spaces and congestion issues at Milton Rd / Milton Interchange
- Strategic measures:
  - Additional public transport services (including buses and rail but, in the medium term, taking advantage of the benefits that future forms of mobility and rapid transport will bring)
  - Delivery of already planned cycle improvements including the Greenway network and the Chisholm Trail
  - Plugging gaps in the wider cycle network to enhance routes to key residential areas
  - Delivery of the wider PT network (e.g. CAM)
  - Alignment with any demand management measures that might emerge via the GCP’s consideration of wider measures for Greater Cambridge

The identified trip budget for the area relies on existing car mode shares being reduced to allow for further trips related to new developments in the area to be made without the budget being breached. Therefore, current travel patterns will have to be modified prior to the significant occupation of any new development with some of the internal and local measures requiring implementation ahead of future development stages. This would also include, at least partially, the implementation of some of the proposed strategic measures in order to provide for gaps in public transport and cater for the needs of existing employees in the area. Additional local and strategic measures would be required in full at latter stages of development as development progresses and patronage grows.

Estimates of the total high-level costs for measures show that these could be in the region of £60m, excluding ongoing travel plan measures and monitoring, as well as strategic measures except for potential contributions to these. However, it is noted that these represent only high-level costs which are subject to change given that other measures may emerge as the process progresses and the spatial framework develops. As the plan proceeds, a more detailed costing study will be required to estimate in more detail the costs of interventions, this will be key to define the actual costs of interventions. Further analysis on how potential funding packages are assembled will also be needed.

In terms of public transport provision, a number of bus and rail services, the emerging CAM public transport system, and /or other alternative rapid transit services will be required at internal, local and strategic level. Service subsidies would be expected to be required over the early years to 'pump-prime' services to and from strategic destinations until sufficient patronage is built up to make the service self-sustainable. For the purposes of costing, it has been assumed that these will, in the short-term be bus-based, but it is expected that other more innovative solutions would replace these in the longer term.

The delivery of the interventions will be reliant on organisations and stakeholders working together, requiring collaboration between parties for them to come to fruition. This requires CCC, South Cambridgeshire DC, Cambridge City Council, the GCP and the CA, developers, statutory undertakers and other stakeholders including highway and public transport operators, to work together to harness available mainstream funding sources to ensure the required infrastructure is delivered; with further sources of funding being required, including third party, S106, S278 and CIL, as well as other sources, to help deliver the internal and local measures.

Continuous monitoring will be required as development comes forward to ensure that the identified trip budget is not breached, and alternative measures are put in place to ensure that the trip budget can be managed. In the first instance, this will be through the planning process, to then take the form of traffic/travel surveys at agreed intervals for as long as the development is active, with such intervals being agreed as part of the planning process negotiations.

Conclusions

The conclusions of this study are that, for development aspirations for NEC to be achieved, a significantly reduced car mode share for journeys to and from the area will be required.

Internal measures are considered crucial to address travel demand behaviours and trends and these would need to be introduced and maintained from the outset. Parking restraint is a key factor in influencing these behaviours by implementing trip budget compliant restrictions at the destination end and with appropriate provision at the trip origin end too.

Strengthening current travel trends leading to lower car usage via softer measures and travel planning and making use of future mobility technologies to further encourage this, will also have a vital place in accomplishing a travel mode shift away from car on development mixes that come forward at the site.

The identified trip budget for the area relies on existing car mode shares being reduced to allow for further trips related to new developments in the area to be made without the budget being breached. Therefore, current travel patterns will have to be modified prior to the significant occupation of any new development with some of the internal and local measures requiring implementation ahead of future development stages. This would also include, at least partially, the implementation of some of the proposed strategic measures in order to provide for gaps in public transport and cater for the needs of existing employees in the area.

Additional local and strategic measures would be required in full at latter stages of development as development progresses and patronage grows. The delivery of strategic public transport interventions is also key, and without these the potential for this area to meet its targets of achieving a high public transport mode share will be severely curtailed.

A monitoring strategy for any future development which takes place will be critical, which would need to be subject to planning conditions or legal agreements with developers as part of the planning process. Continuous monitoring will be required as development comes forward to ensure that the identified trip budget is not breached. Such monitoring can be used to ensure compliance with the proposed trip budget, to minimise inappropriate off-site parking, and to contribute to this quarter of Cambridge being less-car dominated than it is today. If this cannot be achieved, then other measures will need to be considered to ensure the trip budget can be managed and accommodated on the network.

Overall, the conclusion of this study is that delivery of the proposed development scenarios is feasible from a transport perspective, but this will require significant reductions in car mode share.

Whilst challenging and representing a significant change from ‘business as usual’ behaviours, this is considered achievable with appropriate, and significantly reduced, levels of parking provision and a co-ordinated approach to its management and delivery; transport investment in both conventional and more innovative solutions to provide wider non-car accessibility; place-making measures that enhance permeability for walking and cycling; and wider societal trends in transport take-up.

1 Introduction

Cambridge City Council and South Cambridgeshire District Council, working with Cambridgeshire County Council and Highways England, are jointly preparing an Area Action Plan (AAP) for the North East Cambridge (NEC) area. Mott MacDonald has been commissioned by Cambridgeshire County Council (CCC) to prepare a Transport Evidence Base to inform the AAP. The purpose of this document is to present the study process and findings.

1.1 Background

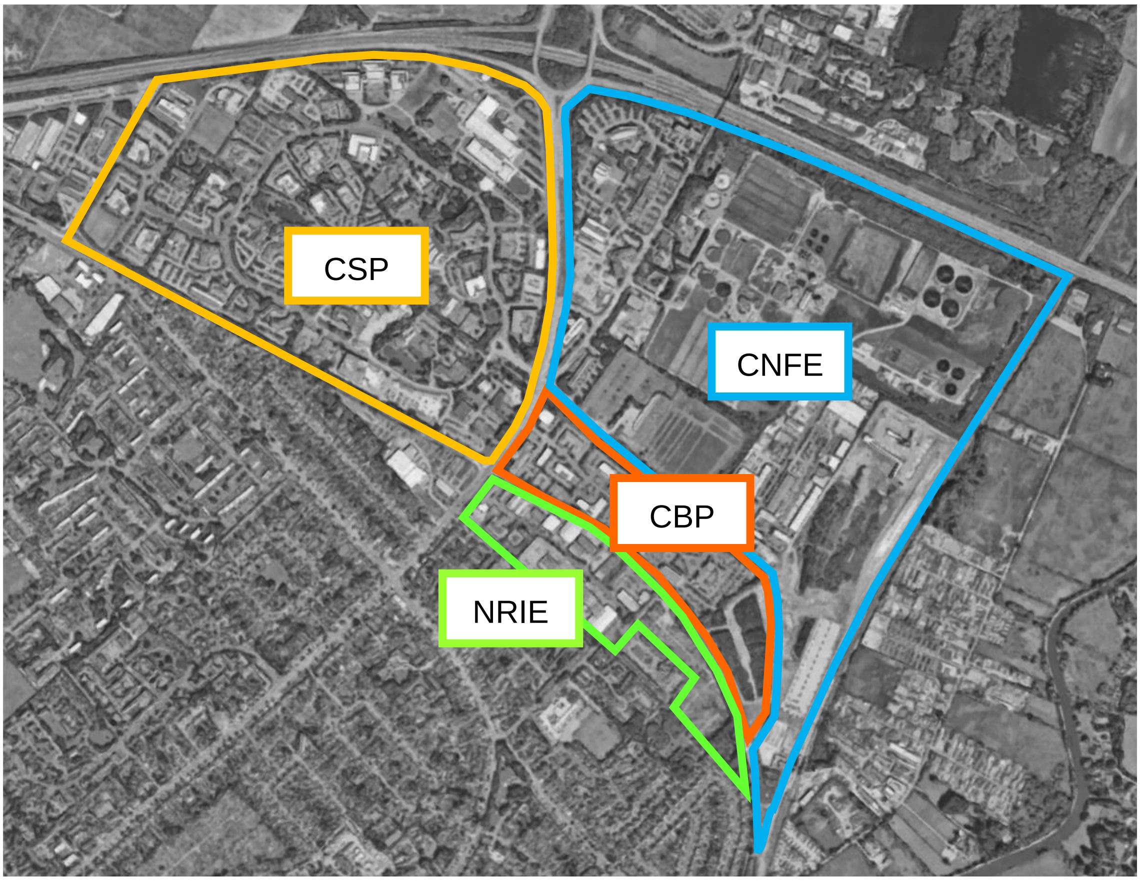
Cambridge City Council and South Cambridgeshire District Council, working with Cambridgeshire County Council, are jointly preparing an Area Action Plan (AAP) for the northern fringe of Cambridge which will form part of their statutory development plans. A Transport Evidence Base is needed to inform the preparation of the AAP, and facilitate its approval, as required by National Planning Practice Guidance. Mott MacDonald has been commissioned to undertake this work.

In accordance with the brief for this study, this transport evidence supports the delivery of sustainable new developments on the northern fringe of Cambridge for important development areas east and west of Milton Road. In order to deliver the aspirational levels of development on a constrained part of the transport network, the analysis undertaken diverges from the traditional approach of ‘predict and provide’ into more of a ‘decide and provide’ approach, where interventions focus on affecting travel behaviour in order to facilitate a shift away from private car rather than simply addressing highway capacity constraint. This represents a step change in the thinking as to how a new quarter of the city can be brought forward with dramatically different transport characteristics to those of other developments locally, building upon the ‘trip budget’ concept identified in the preceding Ely to Cambridge Transport Study.

The AAP study area includes the four main sites shown in the following figure and referred to as follows:

- Cambridge Science Park (CSP)
- Cambridge Northern Fringe East (CNFE)
- Cambridge Business Park (CBP)
- Nuffield Road Industrial Estate (NRIE)

Figure 1: AAP study area sites



Source: Google maps, Mott MacDonald

The CNFE site is one of the last significant brownfield sites in Greater Cambridge still to be redeveloped, while there are proposals to intensify development of the Science Park and to potentially redevelop the Nuffield Road Industrial Estate site. All these proposals will increase the number of trips generated by these sites, which will result in impacts on surrounding transport networks, some of which already operate at or over capacity today.

The purpose of this study, therefore, is to generate a Transport Evidence Base (TEB) that supports the emerging AAP for the NEC area. The evidence base has been prepared in accordance with the principles of the Government's *'Transport evidence bases in plan making and decision taking'* guidance, which are to:

- *assess the existing situation and likely generation of trips over time by all modes and the impact on the locality in economic, social and environmental terms*
- *assess the opportunities to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport*
- *highlight and promote opportunities to reduce the need for travel where appropriate*

- *identify opportunities to prioritise the use of alternative modes in both existing and new development locations if appropriate*
- *consider the cumulative impacts of existing and proposed development on transport networks*
- *assess the quality and capacity of transport infrastructure and its ability to meet forecast demands*
- *identify the short, medium and long-term transport proposals across all modes*

1.2 Document structure

The above principles are reflected in the way this TEB document is structured, which is as follows:

- **Section 2: Baseline context.** It describes the current study-area land use, accessibility and travel behaviour characteristics to provide a baseline against which future development scenarios can be compared.
- **Section 3: Future context.** It considers planned developments which will affect the land use, accessibility and travel behaviour characteristics of the study area and also considers potential future site development options within this context.
- **Section 4: Predicting development trip generation.** It describes how the volume of peak-period person trips has been predicted for each development scenario, in order that target car driver mode-shares can be established in the next section.
- **Section 5: Establishing development trip budget.** It establishes a vehicular 'trip budget' for the study area sites within which development expansion can take place without creating a severe impact on the local highway network, and also identifies the level of car driver mode shift required for each development scenario to achieve this.
- **Section 6: Managing parking supply.** It examines the role of parking provision influencing trip-making by motorised vehicles and sets out how parking levels can be established that are aligned to the level of vehicle trip-making established on Section 5.
- **Section 7: Encouraging internalisation.** It provides an overview of the level of internalisation that is expected could be achieved within the area given the appropriate mix of land uses coming forward within the area sites, together with the adequate combination of spatial framework design to cater for improved connectivity within NEC and surrounding areas.
- **Section 8: Increasing non-car accessibility and promoting active travel.** It explores the extent to which non-car transport demand can be catered for by existing, and planned, investment in transport measures and the promotion of

behavioural change. It then identifies gaps in provision and measures to plug these gaps so that the required mode shift can be achieved

- **Section 9: Estimating mode shift impact.** It sets out the mode shift consequences of the accessibility enhancements identified in previous sections in order that trip budgets can be met.
- **Section 10: Trip budget delivery plan.** It highlights what measures are considered required to not breach the identified car trip budget whilst maximising the level of development that can be delivered at NEC and align with the current proposal ambitions for the area.

For clarity, the following table summarises how this structure satisfies the Government's *'Transport evidence bases in plan making and decision taking'* principles and the main report sections where this information can be found.

Table 1: *'Transport evidence bases in plan making and decision taking'* principles and document response

Principle	Response
• Assess the existing situation and likely generation of trips over time by all modes and the impact on the locality in economic, social and environmental terms	• The baseline and future situations, as they relate to transport supply, demand and performance in and around the study area, are covered in **Sections 2 and 3**. • Predicted study area trip generation is covered in **Section 4**. • Potential transport impacts of development on the locality are reviewed in **Section 5** and the 'trip budget' required to avoid impacts is established.
• Assess the opportunities to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport	• Significantly increasing the level of parking restraint within the study area to deliver development within the 'trip budget' and to maximise use of sustainable modes is considered in **Section 6**.
• Highlight and promote opportunities to reduce the need for travel where appropriate	• Measures and opportunities to maximise the internalisation of trips within the study area and to promote the conducting of these by non-car modes are highlighted in **Section 7**.
• Identify opportunities to prioritise the use of alternative modes in both existing and new development locations if appropriate	• Measures and opportunities to increase the non-car accessibility of the study area for external trips and the greater use of these modes are identified in **Section 8**.
• Consider the cumulative impacts of existing and proposed development on transport networks	• The estimated impacts of the strategy to deliver development within a sustainable 'trip budget' are considered in **Section 9**.
• Assess the quality and capacity of transport infrastructure and its ability to meet forecast demands	• Transport capacity implications for delivering the required transport strategy are assessed in **Section 9.8**.
• Identify the short, medium and long-term transport proposals across all modes	• A plan for delivering the essential elements of the transport strategy, in terms of phasing, funding and monitoring, is identified in **Section 10**.

Source: Mott MacDonald

2 Baseline context

2.1 Introduction

The purpose of this section is to describe the current study-area land use, accessibility and travel behaviour characteristics to provide a baseline against which future development scenarios can be compared.

2.2 Baseline land uses

2.2.1 Overview

The current land uses within the study area are all commercial uses, falling into the categories of business park (B1), industrial & manufacturing (B2) or storage (B8). There are currently only a small number of dwellings (C3) within these sites.

The following table summarises the number of jobs per site and land use type estimated for the purposes of this study to reflect conditions in 2017[1]. The source of this data is discussed in more detail in the following subsections.

Table 2: NEC land use summary

Site	Land use	Estimated number of jobs
CSP	Business park (B1)	**7,459**
CNFE	Business park *(B1 – St John's Innovation Centre)*	*1,795*
	Remainder of site (mainly B2)	*688*
	Full site	**2,483**
CBP	Business park (B1)	**1,452**
NRIE	*Business park (B1)*	*319*
	Industrial & manufacturing *(B2)*	*206*
	Storage (B8)	*115*
	Full site	**640**
All sites		**12,034**

Source: Various – see following subsections below.

2.2.2 CSP job estimate

The above jobs estimate of 7,459 for the CSP site is derived from the ONS Business Register and Employment Survey (BRES) for 2017. This is similar to the Travel for Cambridgeshire current jobs estimate of 7,000 for this site.

Applying B1 Business Park vehicle trip rates per employee from TRICS[2] to this BRES level of jobs also produces development flows which compare favourably with 2017 observed count data provided by CCC (see more on this in Section

[1] 2017 has been chosen as a baseline, as this is the most recent year for which traffic counts of the area are available.

[2] Trip Rate Information Computer System – industry standard database for predicting development trips.

4.2.1 below). For all sites, it is beneficial to the assessment for the assumed level of jobs to correspond strongly with observed flows, so the BRES estimate was adopted for this site.

2.2.3 CNFE job estimate

The 2017 BRES job estimate for the CNFE site is 5,760 jobs, which is nearly 80% the level of jobs estimated at the CSP site. Intuitively speaking, this estimate appears excessive. Applying this level of jobs to appropriate TRICS vehicle trip rates per employee also predicts development traffic flows which are noticeably higher than those recorded by observed counts.

Therefore, the TRICS trip rates were reverse applied to the count data to imply an associated level of jobs, and this generated the average job numbers shown in the above table. This also allows strong correspondence between estimated job level and observed count data.

For reference, the Travel for Cambridgeshire job estimate for St John's Innovation Centre is 1,600, which compares favourably with the above equivalent estimate of 1,795.

2.2.4 CBP job estimate

In contrast to the CNFE site, the BRES estimate for CBP provides a lower than expected level of jobs at 887. The equivalent Travel for Cambridgeshire estimate is 1,600 jobs, while the average number of jobs implied by applying appropriate TRICS trip rates to observed counts is 1,452. The latter value was therefore selected for the purpose of this assessment to allow strong correspondence between jobs and observed counts.

2.2.5 NRIE job estimate

Unlike for the other sites, traffic count data was not available for this site, but an estimate of existing floor areas was provided by CCC. These were translated into an estimated number of jobs by applying a combination of locally derived and standard job density ratios. The floor areas and job densities for this site are summarised in the following table.

Table 3: Job estimate details for NRIE site

Land use	Gross Floor Area (m^2)	Job density (GFA/job)	Estimated jobs
Business park (B1)	6,143	19	319
Industrial & manufacturing (B2)	7,427	36	206
Storage (B8)	8,873	77	115
All	**22,442**	**-**	**640**

Source: GFAs from CCC, see below for job densities source

The job densities applied were derived from the following sources:

- For the CSP site, CCC also provided an estimate[3] of existing gross floor areas (GFA) of about 144,000m^2. When applied to the above estimated number of jobs, this produced a corresponding job density of 19 m^2 GFA per job. This corresponds adequately with the equivalent densities for B1 type uses in Homes England's (formerly the Homes and Communities Agency) current Employment Density Guide (3rd Edition)
- The job densities for B2 and B8 uses are taken directly from the equivalent values provided in the Employment Density Guide (3rd Edition)

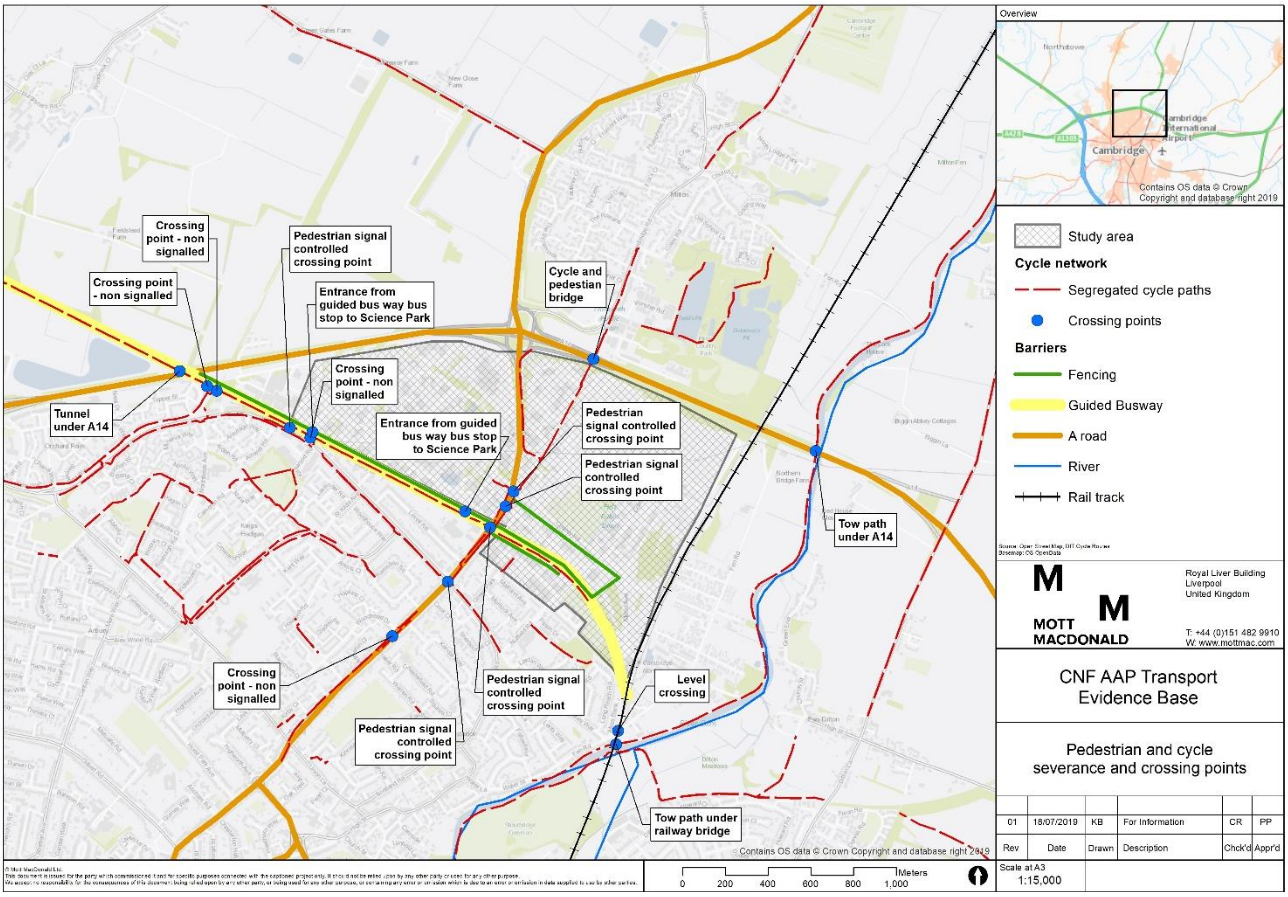
2.3 Baseline accessibility

2.3.1 Pedestrian and cycle accessibility

The following plan shows for the study area:

- Existing cycle route provision
- Existing barriers to movement and related crossing points

Figure 2: Existing cycle routes, movement barriers and crossings



Source: Cambridge cycle map

[3] CCC's latest estimate of CSP B1 floor area for 2019 at time of issue is 171,418m^2, but the previous estimate of 144,000m^2 is considered to better match the situation in 2017 when the traffic count surveys used for this study were undertaken.

This plan illustrates:

- The CSP site bounded to the north by the A14 with no crossing points; on the east side by Milton Road, with crossing opportunities only available in the southern section; and on the south western side by the fence-lined busway, with crossing opportunities only at the Kings Hedges Road junction.
- The CNFE site is bounded on the north side by the A14, with just one grade-separated crossing point to Milton via the Jane Coston Bridge; on the east side by the railway, with the nearest crossing point being at the Fen Road level crossing; on the south side by the busway with no crossing points other than at the rail station to the south-eastern end, and much of which is inaccessible due to fencing around the CBP site; and on the west side by Milton Road, with all crossing points restricted to the southern section, as for the CSP site.
- The CBP site is bounded on three sides by trees and fencing which is impermeable to pedestrians and cyclists, except for where there is a gap to the cycleway which runs along the north eastern edge. This main access to this site for all users is from Milton Road.
- Inter-site severance is also noticeable, with the CSP and CNFE/CBP sites separated by Milton Road; the CBP and CNFE sites separated by the CBP perimeter barrier; and the CNFE/CBP and NRIE sites separated by the busway.

Overall, therefore, there are pedestrian and cycle routes to and within the sites, but also some significant barriers to movement which reduce the permeability of the sites and their accessibility to surrounding residential areas.

2.3.2 Bus and rail accessibility

2.3.2.1 Network access

The study area is well connected to bus and rail networks, being bounded by the busway and rail line, and having Milton Road pass through the centre. This is illustrated in the following figure, which shows these main corridors, and also shows:

- Existing access points
- 400m radius catchments around the bus stops (although it should be noted that there is some evidence from busway-related surveys that for dedicated provision greater walk distances can be achieved) and an 800m catchment around the rail station
- Catchments coloured by the frequency of services calling at the access points.

Figure 3: Bus and rail access points, service frequencies and catchments

Source: Mott MacDonald

This figure shows that all the CBP and NRIE sites are within a 400m direct distance of existing bus stops, but that large proportions of the CSP and CNFE sites are not. It also shows how most of the CBP and NRIE sites are within 800m direct distance of Cambridge North station and about half the CNFE site, but that all the CSP site falls outside this range. The north western part of the area is a significant distance of nearly 2km from Cambridge North Station.

The sites are, therefore, potentially well connected to existing local bus and rail services, but this accessibility is hindered for some sections of the sites by longer than recommended walking distances to the nearest network access points. The degree to which this network actually serves the travel needs of study area employees is considered in the next section.

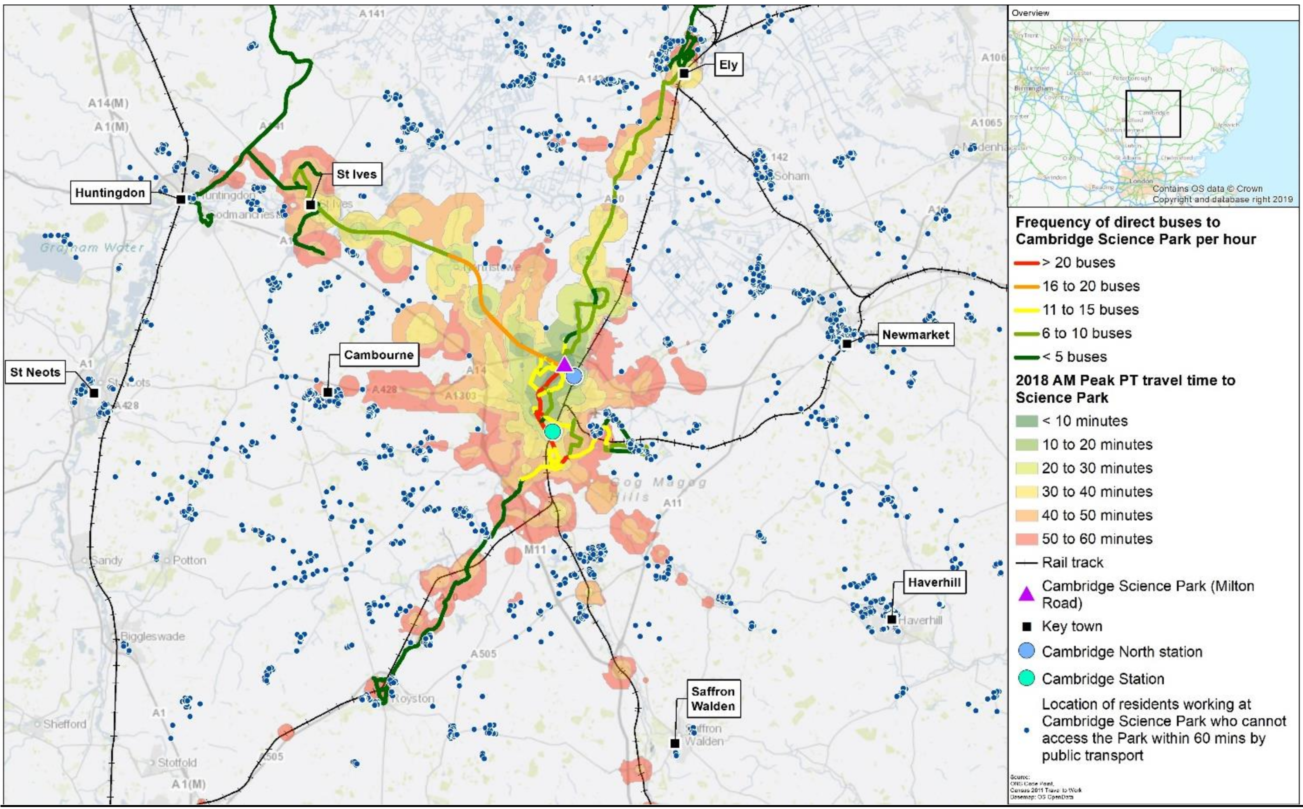
2.3.2.2 Network coverage

The following figure shows:

- The existing rail network serving Cambridge North station
- Direct bus service routes and frequencies serving the study area

- Combined bus and rail 2018 weekday peak-hour travel time isochrones to and from the study area (based on both direct and indirect services), represented by a central point between the sites on Milton Road
- The location of study-area worker commute origins (derived from the 2011 census[4]) which lie outside the 60-minute bus and rail isochrones

Figure 4: Direct bus routes, bus and rail travel time isochrones and study area worker origins



Source: TRACC and 2011 census

This plan shows good coverage between the study area, the city centre and the northern half of the city, with longer travel times to the south side. Good coverage outside Cambridge is seen along the A10(N) corridor to Ely and along the busway corridor to St Ives, and to a lesser extent along the A428 corridor towards Cambourne, the A10(S) corridor to Royston, the Greater Anglia rail corridor towards Audley End and along the A1307 corridor towards Linton.

The plan equally shows how the best journey times are available along routes which directly serve the study area, which are mostly along a north-south axis

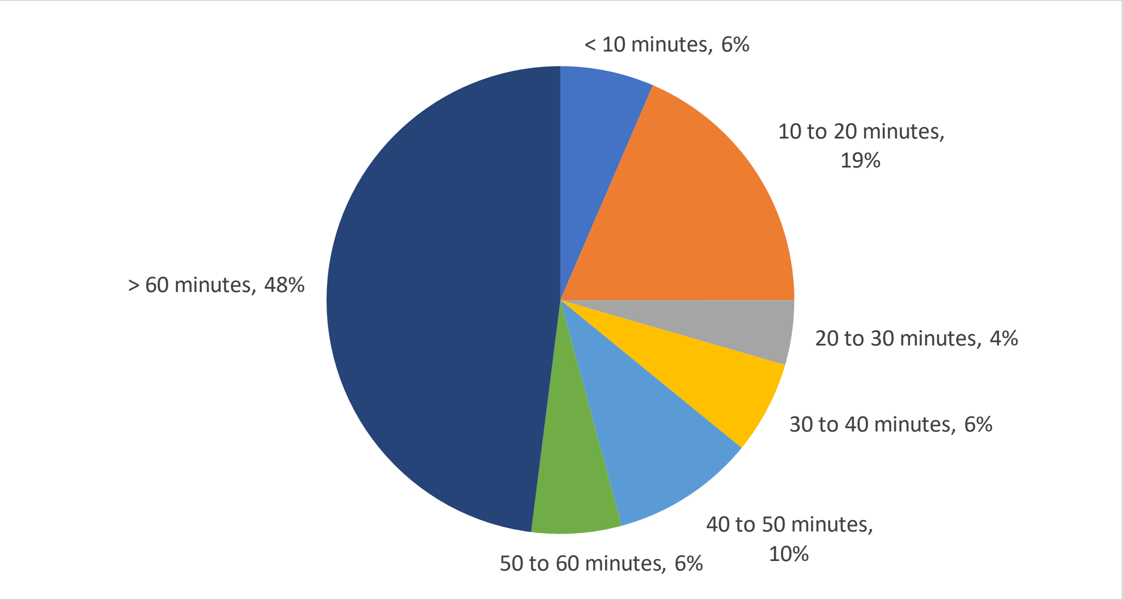
[4] It is noted that 2011 data is 8 years old at the time of writing but, given the robustness of the sample and that the nature of the destination has not changed in that time, it is reasonable to assume that the origin distribution of workers is still broadly valid.

and along the busway, but that indirect routes, such as from Cambourne or Cottenham, show slower journeys.

The other conclusion to be drawn from this plan, though, is the large number of study area commute origins which are not currently catered for by either bus or rail modes. Clearly, given the rural and dispersed nature of much of the city's surrounding hinterland, it is unrealistic to expect public transport to reach all areas, but the plan also shows certain employee clusters which are currently not served or poorly served by public transport. These include St Neots and Cambourne to the west, and Soham, Burwell, Newmarket, Haverhill and Saffron Walden to the east.

The following chart summarises this data by showing what proportion of study area commute origins are covered by each public transport travel time isochrone and shows that nearly half (48%) of 2011 commuter origins currently have no public transport option from their place of residence to the NEC AAP area, while less than a third (29%) live within 30 minutes by these modes.

Figure 5: Distribution of study area worker commute origins by PT isochrone



Source: TRACC and 2011 census

2.3.2.3 Network performance

We have not been able to obtain quantitative bus and rail performance data, but anecdotal views from industry representatives and reports in the press confirm the following:

- There is spare peak-hour capacity on non-busway buses serving the study area, but
- There is effectively no spare peak-hour capacity on busway services, while
- Southbound rail services calling at Cambridge North are generally crowded in peak periods, but with some spare capacity available northbound.

Bus services in the area also suffer delays as a result of peak period traffic congestion on the routes surrounding and passing through the study area, as described further in Section 2.3.3.2 below.

2.3.3 Highway accessibility

2.3.3.1 Network access

The study area sits adjacent to some key highway routes for both Cambridge and the wider region. However, as the following figure shows, the opportunities for connecting the sites to this network are relatively limited, as the study area is bounded by the A14 to the north, the busway to the south and the rail line to the east. This concentrates most access points onto Milton Road, with a second CSP access point on King Hedges Road. All access points are signalised.

Figure 6: Site boundary constraints and highway access points

Source: Mott MacDonald

2.3.3.2 Network performance

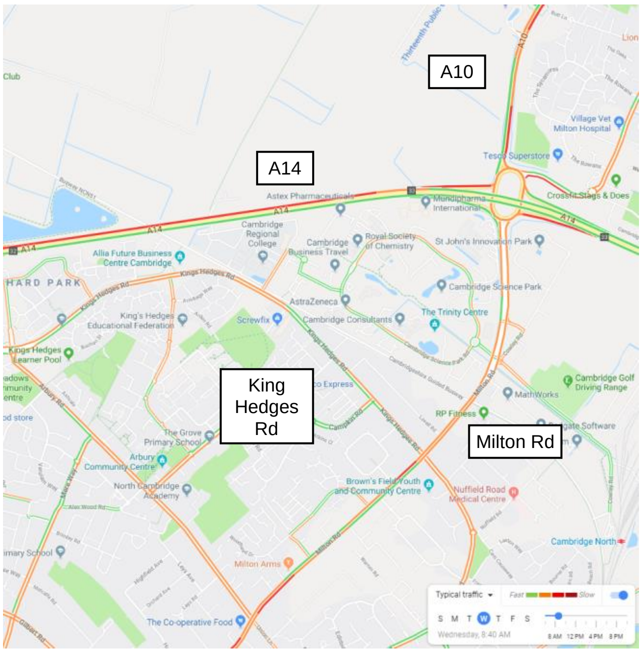
The highway network surrounding the site experiences congestion during peak periods. This is shown in the following figures, which show typical 2019 weekday peak-hour travel conditions reported on Google Maps.

These images show:

- AM peak delays on the A14, A10 and Cambridge Road approaches to Milton Interchange, and slow-moving traffic on the A14 mainline eastbound due to off-slip queuing and delays, corresponding with the high demand of traffic entering Cambridge at this time. Also, slow moving traffic on Milton Road and King Hedges Road in this peak hour.
- PM congestion more severe still on Milton Road in the PM peak, particularly between King Hedges Road and Milton Interchange in both directions, with delays extending into the CSP site at both exits. The A14 westbound on-slip also shows delays extending back from the merge with the mainline, which also incurs delays.

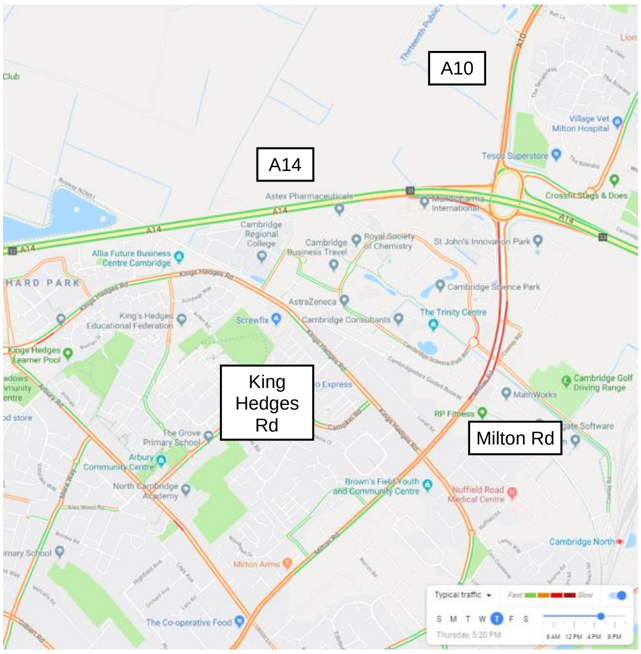
In summary, the local highway network surrounding and within the study area currently operates at or over capacity during weekday peak hours.

Figure 7[5]: Baseline congestion – AM peak



Source: Google maps, typical Wed 08:40 conditions, 2019

Figure 8: Baseline congestion – PM peak



Source: Google maps, typical Thu 17:15 conditions, 2019

[5] Note. Colour coding shows typical speeds of traffic on the road. Green means no traffic delays; orange means medium amount of traffic; whilst red means traffic delays, with the darker the red, the slower the speed of traffic on the road.

2.3.4 Parking provision

2.3.4.1 On-site parking

A survey of private non-residential parking supply and usage was undertaken in Cambridge in October 2016. Data was collected in school term-time from Monday to Thursday inclusive between 10:00 and 12:00 and between 14:00 and 16:00 to capture periods of peak parking usage. The results for the study area are summarised in the following table.

Table 4: Study area parking supply and usage

Site	Capacity	Demand	Utilisation
CSP	5,376	2,638	49%
CNFE + CBP	2,670	1,502	56%
NRIE	499	267	54%
Total	**8,545**	**4,407**	**52%**

Source: Mott MacDonald Cambridge Private Non-Residential Parking Study, November 2016

This shows that, across the full study area, there is an over-provision of parking, with only just over half of all spaces being used on a typical weekday.

It is noted above that the estimated GFA total for CSP around the time of the parking surveys was about 144,000m^2. When applied to the above CSP parking capacity result, this suggests a parking standard of 1 space per 27m^2. This figure exceeds the 1 space per 40 sqm (maximum) standard for B1 office development in the adopted Cambridge Local Plan, though a standard based on actual usage would be in compliance with this standard at 1 space per 55m^2. It is also noted that the site was developed prior to the adoption of the current Local Plan.

Overall, however, with the current over-provision of parking in the study area and the lack of rationing by price, it can be concluded that parking currently provides no restraint to car use for travelling to the study area.

2.3.4.2 P&R parking

The study area is directly served by the P&R sites listed in the following table, which also shows recent car park utilisation data.

Table 5: P&R site options serving study area

Site	Link to site	Approaches served	Capacity	Weekday avg max demand	Weekday avg max utilisation
St Ives	Busway	West	1,000	310	31%
Longstanton	Busway	West	350	102	29%
Milton	Milton P&R route	North	792	268	34%
All			**2,142**	**680**	**32%**

Source: March 2017 to May 2018 P&R data provided by CCC

This table shows that P&R options for the site are most available for trips from the west and north, though the Milton site can potentially serve any trips reaching the site via Milton Interchange.

However, these sites are currently under-utilised, which suggests there could be scope for more study-area bound trips to take advantage of them. It is considered that the under-utilisation will mainly be because the study area is so accessible to the strategic highway network and currently provides an abundance of free parking, whilst P&R buses between the sites and the study area charge a fare and suffer overcrowding and/or congestion issues. The Milton P&R site is also too close to the study area to currently justify the interchange penalty required to access it. On the other hand, it also means that these sites currently offer spare capacity of about 1,450 spaces to accommodate future growth and/or mode shift.

2.3.5 Travel Plan measures

Travel for Cambridgeshire have been active for over ten years in engaging businesses in the study area with the Travel Plan Plus (TP+) measures programme to reduce car dependence and increase the use of sustainable modes. The TP+ area includes businesses in the Science Park, Cambridge Business Park and St John's Innovation Park. Measures employed and adopted include:

- Promotion of walking through lunchtime lead walks during summer
- Promotion of cycle usage through:
  - Cycle discounts (5%-11%) with the local cycle shops within Cambridge area
  - Access to two free TP+ e-bikes
  - Access to cycle maps
  - Personalised TP+ hi-vis vests for cyclists
  - Dr Bike sessions
  - Organising mobile cycle repairs (Crazy Spanners) to provide a service at CSP every Tuesday and Thursday, at CBP on Wednesday and at St John's Innovation Park on Monday and Friday
- Promotion of bus usage through:
  - Free taster tickets for those who have never been on a bus
  - Access to bus timetables
- Promotion of rail travel through:
  - Offering a 10% discount on monthly and annual season tickets for TP+ members
  - Shuttle service from Cambridge North Station to the CSP in partnership with the CSP

- Promotion of car sharing through employee home postcode analysis and matching
- Promotion of TP+ scheme engagement through:
  - Assisting employers with Travel Plan and Welcome Pack documentation
  - Quarterly TP+ Steering Group meetings open to CSP and CBP employers
  - Annual green transport expos at CSP and CBP
  - Annual travel survey in October

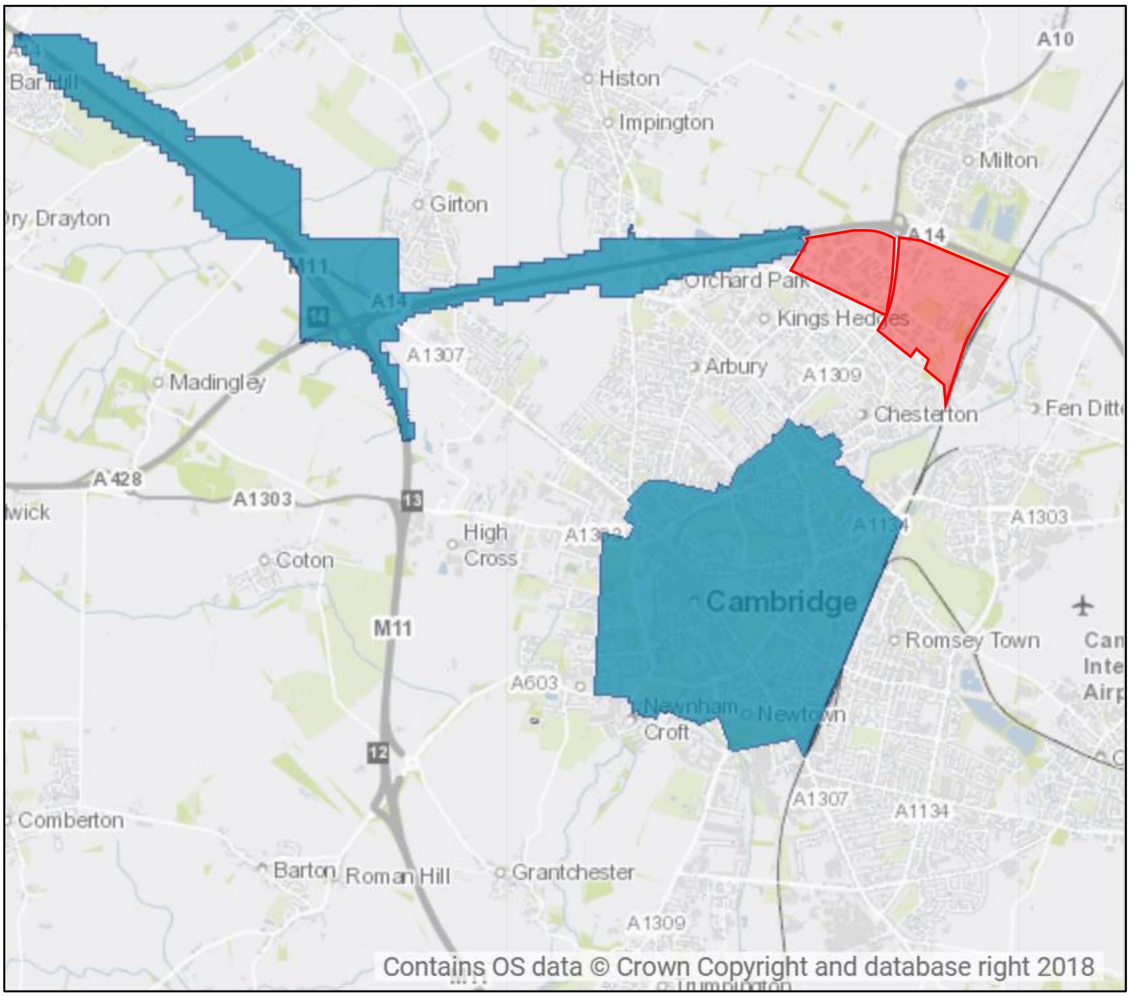
These measures collectively have enabled the progressive growth of TP+ area employment levels since the inception of the scheme in 2011 without an associated increase in car mode share, seeing this drop by up to 2% instead by 2018[6].

2.4 Baseline air quality conditions

There are two Air Quality Management Areas (AQMAs) in Cambridge. These are shown in Figure 9 below as extracted from the Department for Environment, Food & Rural Affairs (DEFRA) website. The NEC area is shown indicatively in red.

[6] Based on data provided in latest 2018 'Travel to Work Survey Report'

Figure 9: AQMAs in Cambridge



Source: DEFRA, UK Air website. AQMAs showed for NO2 pollutant. PM10 only affects the A14 corridor.

As can be seen above, although the NEC is not directly impacted by any AQMA, it sits adjacent to the eastern boundary of the A14 corridor AQMA. This area does suffer from poor air quality and, as a result, ongoing monitoring is undertaken. Data is available on South Cambridgeshire District Council's website[7]. The latest available report on the website, the 2018 Air Quality Annual Status Report, states that the annual mean objectives for this area were achieved.

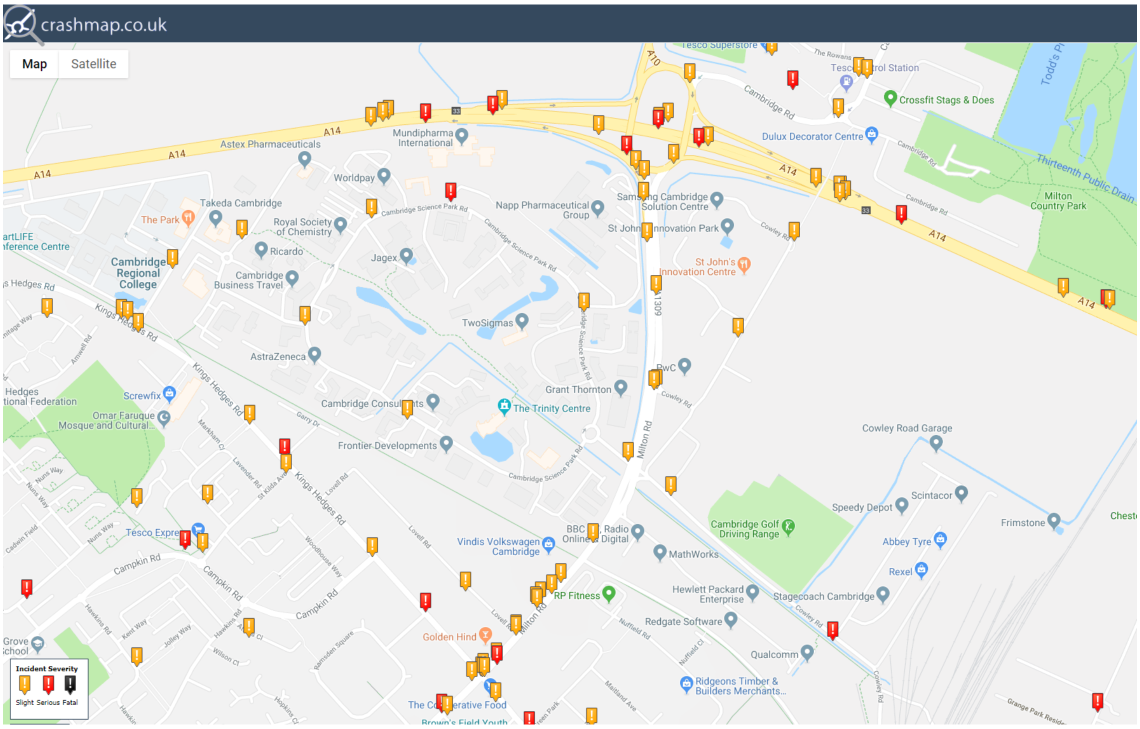
2.5 Baseline highways safety review

A review of personal injury accident data on public roads around the NEC area has been undertaken via the CrashMap interactive map tool online of the last available 5-year period. This displays STATS19 accident data published by the Department for Transport, and thus provides a reliable source of information to

[7] https://www.scambs.gov.uk/environment/pollution/air-pollution/local-air-quality-management/

carry out a high-level review of highway safety issues. An extract map of the area is shown in Figure 10 below.

Figure 10: Personal injury accident data



Source: CrashMap online, years displayed 2014-18. Accessed on March 2019.All casualty types and severities.

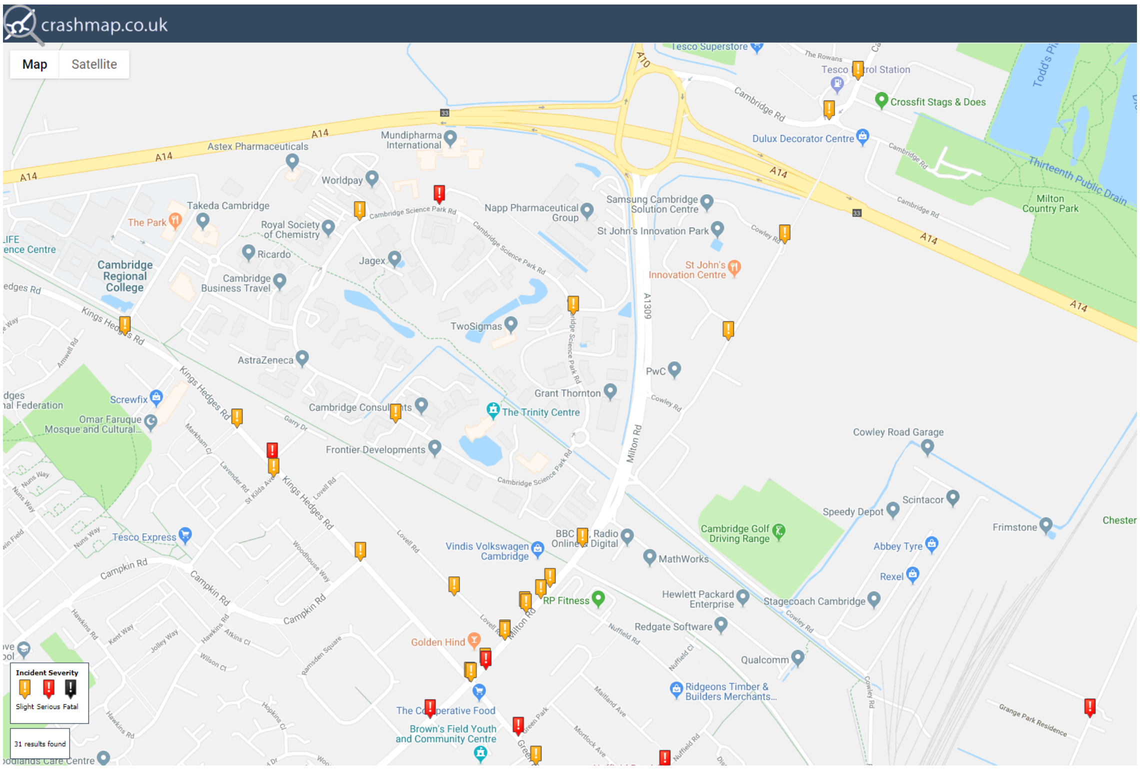
Figure 10 shows that, over the last 5 years, no fatal casualties were recorded, with 19 categorised as serious and about 70 categorised as slight. When focusing on the main roads, hotspots can be identified on the approaches to the Milton interchange and on Milton Road, particularly to the north of Kings Hedges Road. No particular accident clusters can be identified on other roads surrounding the NEC area.

In terms of pedal cycle casualties, 31 could be identified in the area over the study period. These are mainly of slight severity, however 7 are categorised as serious. Figure 11 displays this data where it can be seen that most of these accidents occurred along Milton Road, immediately to the north of Kings Hedges Road, which suggests a potential issue on that area in particular.

Improvements are planned by the GCP for the Milton Road corridor between the Guided Busway junction with Milton Road and the city centre, which are discussed further in Section 3 of this report. The Milton Road improvement scheme comprises pedestrian and cycling facilities improvements, as well as changes to the road layout, which should address potential accident issues related to highway layout in the area. The aims of this scheme are as follows:

- Allow faster and more reliable public transport journeys
- Provide better cycling and walking links
- Enhance the streetscape with improved and additional landscaping
- Reduce peak time congestion and limit growth in traffic
- Aid future economic growth
- Reduce air pollution and improve public health

Figure 11: Personal injury accident data (involving pedal cycles)



Source: CrashMap online, years displayed 2014-18. Accessed on March 2019. Only accidents involving pedal cycles.

When reviewing pedestrian casualties, ten were recorded within the last 5 years, with two of these being serious. However, all were recorded far apart with no hotspots identified. The lack of pedestrian accident hotspots makes it harder to identify remedial measures. It does, however, suggest that pedestrians might experience difficulties when crossing the roads in the area around the NEC. As noted above, there are improvements planned for Milton Road between the Milton Interchange and the city centre. Among other elements, these are set to improve crossing facilities along the corridor, which should assist in addressing existing accident issues that are potentially related to highway layout in the area.

For Transport Assessments associated with individual planning applications, it is recognised that the County Council requires more detailed data to be provided. However, for the strategic purposes of this study, it is considered that this high-level review provides sufficient information, particularly considering that no fatal accidents have been recorded in the area over the past 5 years and that there are planned highway improvements for Milton Road and the Milton Interchange which should contribute to addressing some of the historic accident problems.

2.6 Baseline travel behaviour

2.6.1 Employment trips

2.6.1.1 Data source

Details on existing commute-trip travel behaviour to the study area are available from two sources: the 2011 Census and the Travel for Cambridgeshire annual Travel Plan Plus (TP+) surveys. The strengths and weaknesses of each source as a means of identifying existing travel characteristics are as follows:

Table 6: Commute-trip data source strengths and weaknesses

Data source	Strengths	Weaknesses
2011 census	• Full sample • Disaggregation by mode and origin location possible • Provides both in-commuting and out-commuting data for area	• 2011 data most recent • Busway and Cambridge North station not yet open at time of survey • Geographic area not specific to CNF area
TP+ surveys	• 2018 data most recent • Includes impact of busway and Cambridge North station • Geographic area specific to CNF area	• Partial sample (approx 30%) • Potential for respondent self-selection bias • Disaggregation by origin location not possible • Provides in-commuting data for area only

Source: Mott MacDonald

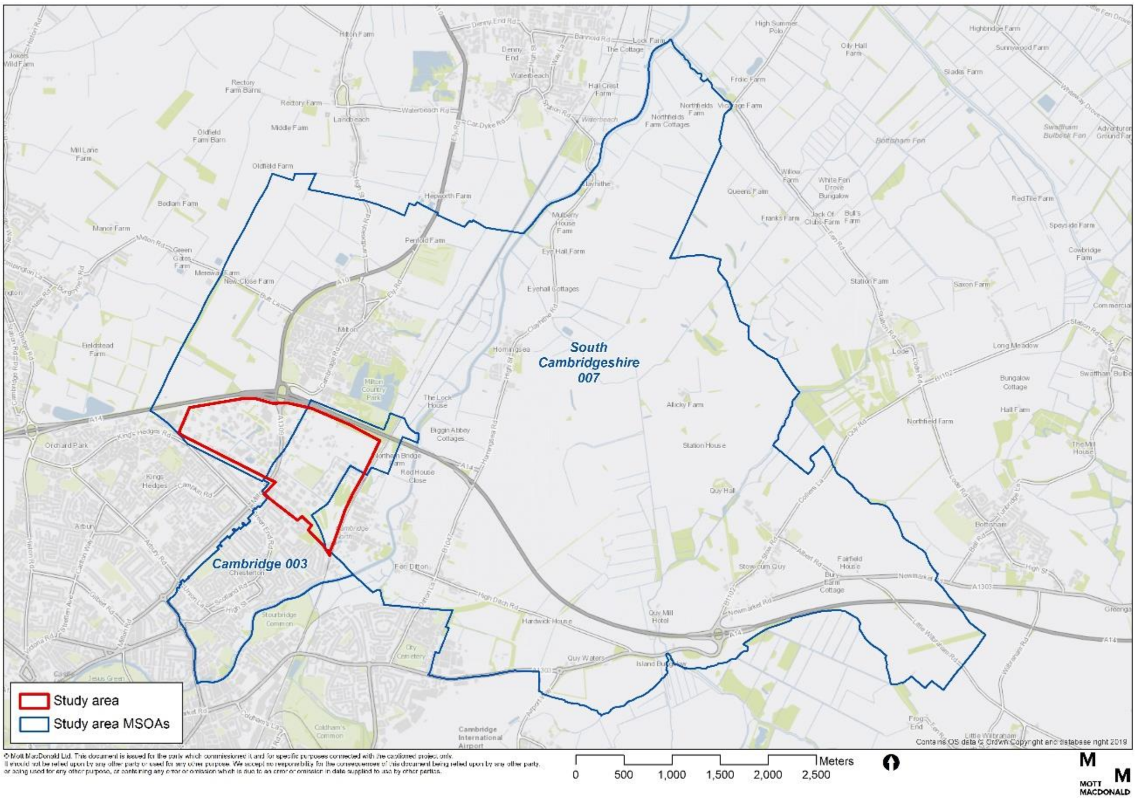
Based on these relative strengths and weaknesses, the Census data provides the preferable dataset because of its considerably higher sample rate, its capacity for being disaggregated by trip origin location and its coverage of both in- and out-commuting, all of which allows for the depth of analysis and segmentation required by this study.

One of the main advantages of the TP+ data for the purposes of this assessment is that it is more recent and includes the impacts of both the guided busway and Cambridge North station, but comparison of the 2018 TP+ results with the equivalent 2011 TP+ results shows that the commuter car driver mode share to the study area has remained relatively stable since the Census, dropping about 1.4%. The bus and rail mode share increased about 1.1% over the same period.

It is also recognised that the TP+ data provides a better geographic representation of the study area than does the Census, where the MSOAs (Middle Layer Super Output Area) which include the study area also include adjacent Milton and Chesterton ('South Cambridgeshire 007' and 'Cambridge 003' respectively – see figure below). However, as the study area lies in the centre of the built-up areas in these two combined MSOAs and contains the majority of commuter destinations in them both, it would be expected that the average commute trips patterns generated by these MSOAs would be similar to those generated by CNF.

Overall, therefore, it is considered that the 2011 Census travel-to-work data is still reliable to describe travel behaviour to and from the study area today and provides the depth of data required for this analysis, and other assessments contained within this report.

Figure 12: Milton and Chesterton MSOA boundaries and study area location

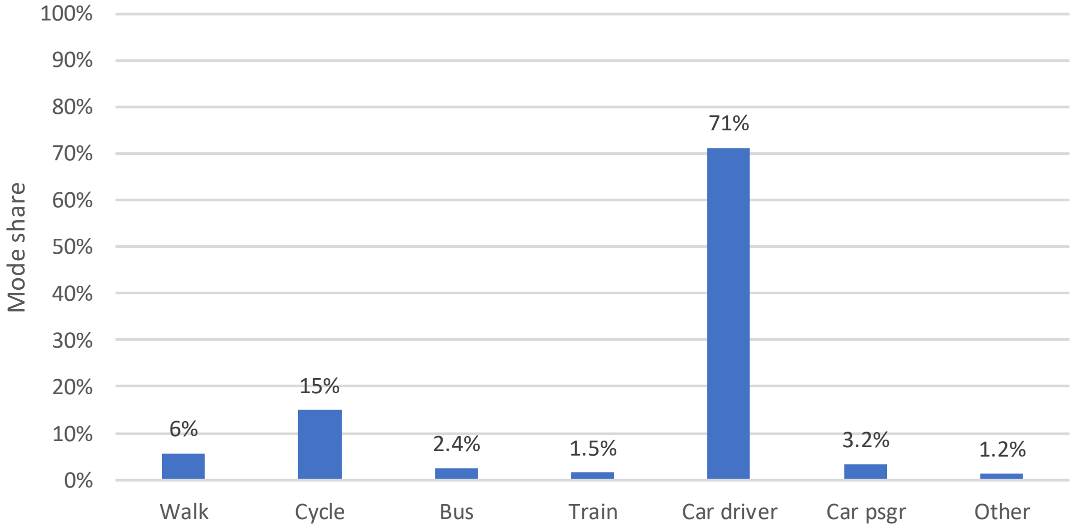


Source: 2011 Census

2.6.1.2 Commute-trip mode share

The following figure shows the 2011 Census commute mode share for trips to the study area MSOAs.

Figure 13: Existing mode share for commute-trips to study area



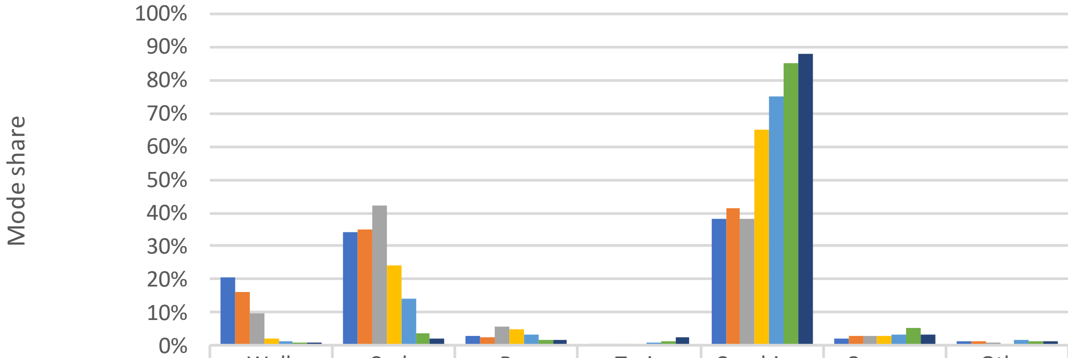
Source: 2011 Census, Chesterton and Milton MSOAs

This shows that nearly three-quarters of trips to the MSOAs in 2011 were made by car, with the majority of the remainder being taken up by walk and cycle modes. Trips by public transport constituted just less than 4%, while the car passenger proportion suggests an average car occupancy of 1.05 persons per car[8].

The following figure shows how the above mode share result varies depending on the public transport travel-time available from trip origin, as per the isochrones shown in Figure 4 above. This provides a useful indicator of how much alternatives to the car are used where they are available.

[8] This is based on the ratio of car passengers to car drivers, as each car driver represents a single vehicle. The above value is calculated as follows: 1 + 0.032/0.710

Figure 14: Commute mode share by public transport travel-time availability



	Walk	Cycle	Bus	Train	Car driver	Car psgr	Other
< 10 minutes	21%	34%	3.0%	0.5%	38%	2.1%	1.4%
10 to 20 minutes	16%	35%	2.6%	0.2%	42%	2.9%	1.5%
20 to 30 minutes	10%	42%	5.6%	0.5%	38%	3.0%	0.8%
30 to 40 minutes	2%	24%	5.1%	0.3%	65%	2.8%	0.5%
40 to 50 minutes	2%	14%	3.2%	1.0%	75%	3.3%	1.6%
50 to 60 minutes	1%	4%	1.8%	1.5%	85%	5.5%	1.4%
> 60 minutes	1%	2%	1.6%	2.5%	88%	3.3%	1.2%

Source: 2011 census commute mode share data applied to TRACC PT isochrones

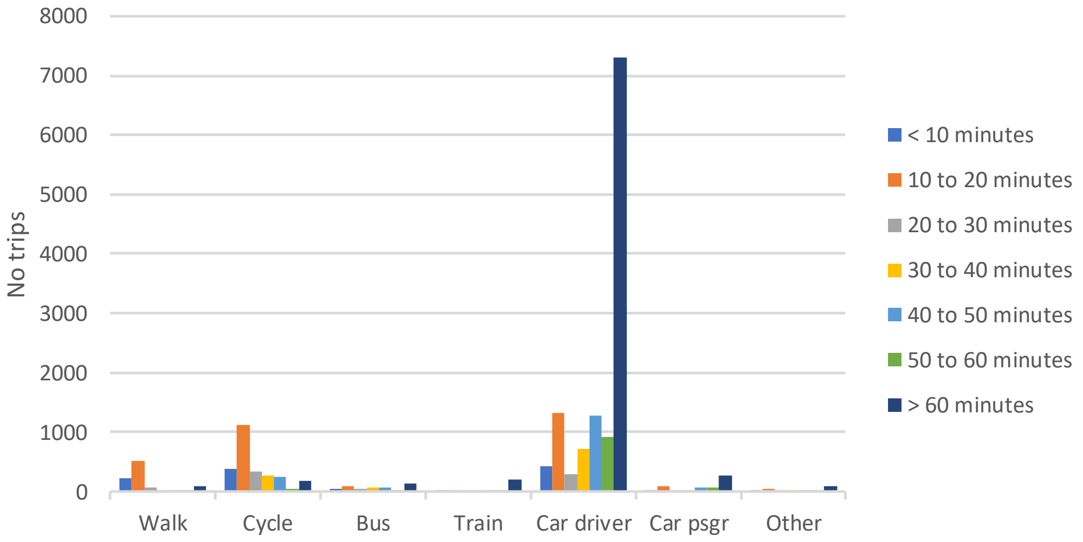
This figure shows that:

- Walking best serves the shorter distance trips, followed by cycling, bus, car and train.
- Bus use peaks for trips between 20 and 30 minutes travel time, but still at only 5.6% (although it is noted that the busway was not operational at the time of the 2011 Census. The TP+ surveys showed a 2% increase in bus mode share in the two to three years after the busway opened in August 2011 but, according to 2018 TP+ data, this gain seems to have been lost in recent years).
- Rail peaks for trips beyond the 60-minute PT isochrone, but again only at 2.5% (though it is noted that Cambridge North station was not operational at the time of the 2011 Census. The TP+ surveys showed a 3% increase in the rail mode share 2017, the year of opening, followed by a 1% drop in 2018).
- The car driver mode share is also highest for trips outside the 60-minute PT isochrone at 88%, but even where there are viable alternatives, the lowest this mode share drops to is 38%.

This result therefore shows that, even where a reasonable public transport alternative is available for travelling to the site, car use and, where viable, walking and cycling are considerably more popular choices.

When the above mode shares by isochrone are applied to the actual distribution of commute trip origins as shown in Figure 5 above, the actual number of trips by each mode are as follows.

Figure 15: Actual commute trips by mode per public transport travel time isochrone



Source: 2011 census commute mode share data applied to TRACC PT isochrones

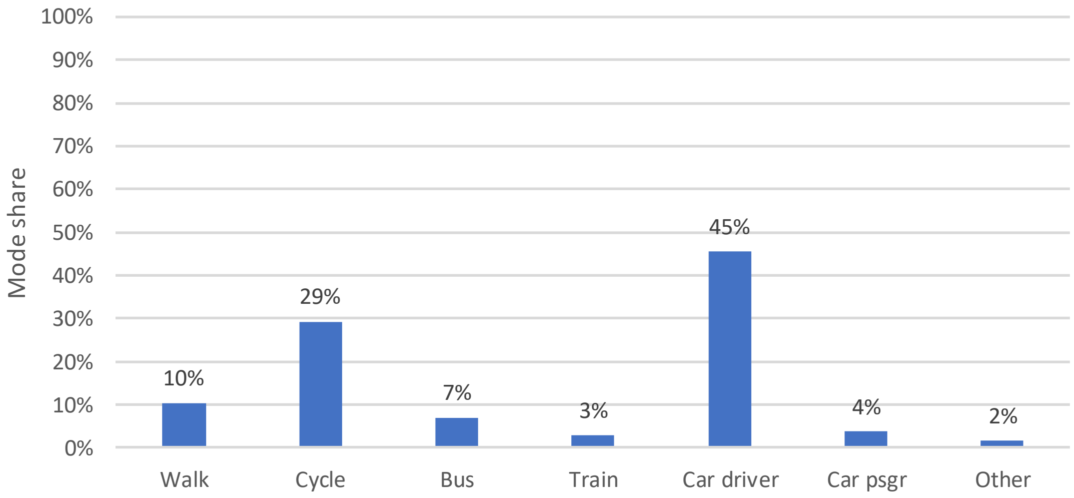
This chart clearly shows the impact of 48% of study-area commuters living beyond a 60-minute travel time by public transport, with 59% of all car driver trips originating from this region. The dispersed and distant distribution of commuter origins where there is no mode alternative is therefore the predominant factor in the 71% overall car mode share for travel to the study area.

2.6.2 Residential trips

2.6.2.1 Commute-trip mode share

There are currently no dwellings within the study area. However, the following Census travel-to-work mode share is for trips originating in the Chesterton and Milton MSOAs which include the study area and the residential areas which lie either side. Combined, these MSOAs therefore provide a reasonable proxy for the location of the study area.

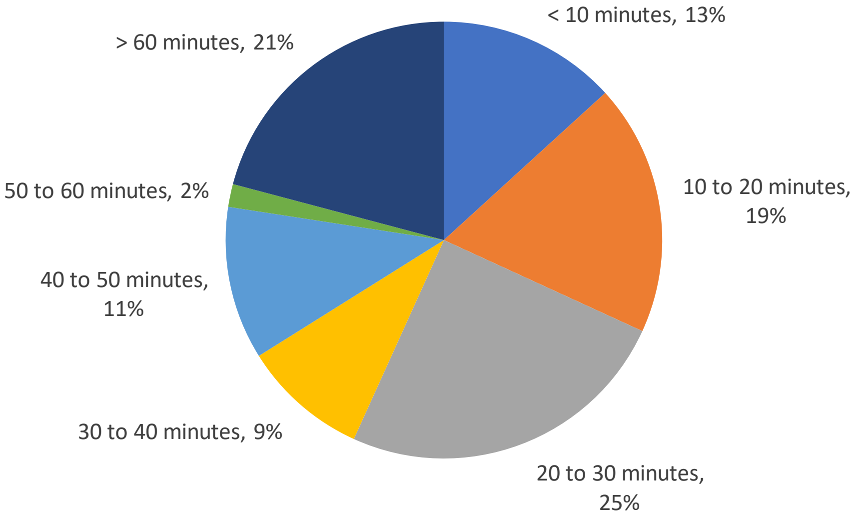
Figure 16: Existing mode share for commute-trips from study area residential areas



Source: 2011 Census, Chesterton and Milton MSOAs

This chart shows greater use of non-car driver modes than the equivalent inbound commuting mode share shown above, with a consequent lower car mode share. This is primarily because the workplaces of study area residents are not as dispersed as are the origin points of study area workers, as illustrated by the following chart which shows the distribution of outbound commute trip destinations by public transport travel time availability.

Figure 17: Distribution of study area resident workplaces by PT isochrone

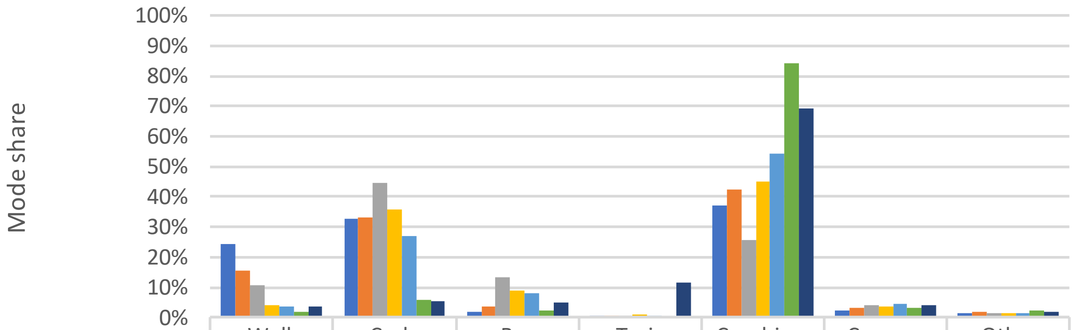


Source: TRACC and 2011 census

Compared to Figure 5 above where 48% of commute trips to the study area originate outside of 60-minute travel time by public transport, only 21% of commute trips from the study area are destined outside this zone (mainly to wider parts of the county and in London). Likewise, only 29% of in-commute trip origins fall within 30 minutes by public transport, whereas 57% of out-commute destinations are covered by these travel times.

The other reason for the lower car driver commute mode share for residents is a greater propensity to use alternative modes when available. The following chart shows how this mode share varies according to public transport availability for travelling from the study area to work.

Figure 18: Outbound commute mode share by public transport travel-time availability



	Walk	Cycle	Bus	Train	Car driver	Car psgr	Other
< 10 minutes	24%	33%	1.8%	0.2%	37%	2.4%	1.6%
10 to 20 minutes	16%	33%	3.5%	0.3%	43%	3.3%	1.6%
20 to 30 minutes	11%	45%	13.1%	0.4%	25%	4.1%	1.5%
30 to 40 minutes	4%	36%	9.1%	0.9%	45%	3.7%	1.2%
40 to 50 minutes	4%	27%	8.2%	0.7%	54%	4.5%	1.5%
50 to 60 minutes	2%	6%	2.5%	0.0%	84%	3.3%	2.5%
> 60 minutes	3%	5%	4.7%	11.7%	69%	3.9%	1.7%

Source: 2011 census commute mode share data applied to TRACC PT isochrones, Chesterton and Milton MSOAs

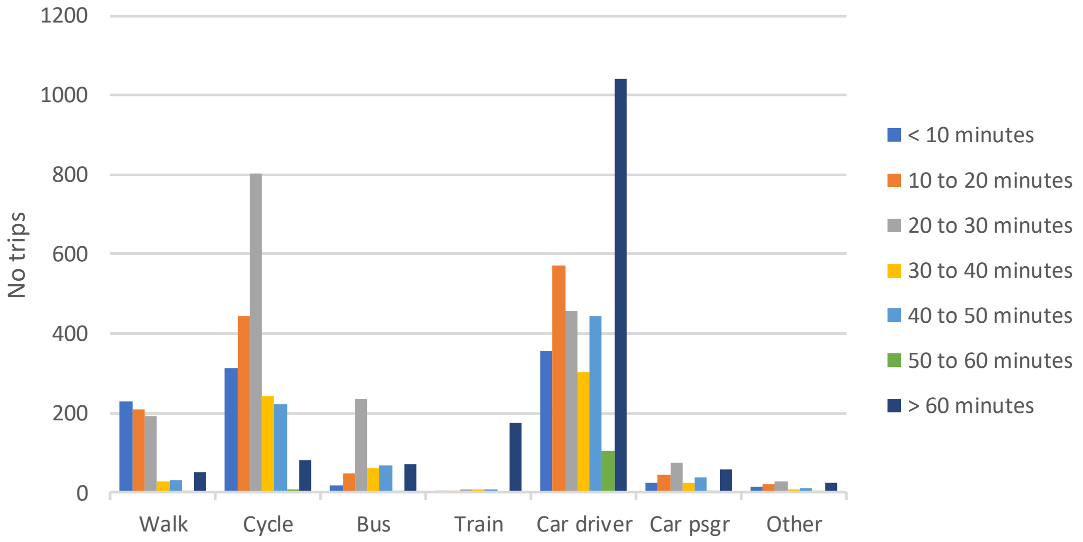
Compared to the equivalent result above for in-commuting to the study area, these results show:

- Similar levels of walking and cycling, though a little more short-distance walking and more longer distance cycling
- Significantly higher bus use for mid-distance trips, possibly as parking supply at work destinations is not as available as it is for trips to the study area
- More long-distance rail use, and
- Slightly higher car passenger use

This greater propensity for uptake of alternative modes where they are available therefore further contributes to the lower overall car-driver mode share for commute trips originating in or near the study area.

This combination of lower car mode shares per PT isochrone band and a more compact travel destination distribution result in the following distribution of actual trips per isochrone band.

Figure 19: Actual commute trips by mode per public transport travel time isochrone



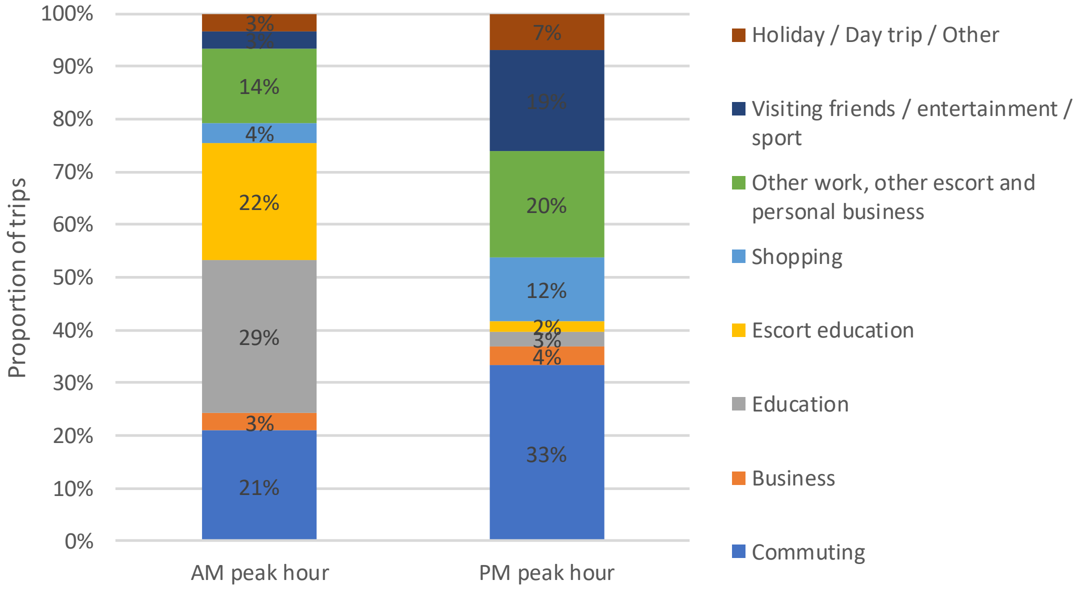
Source: 2011 census commute mode share data applied to TRACC PT isochrones

This shows how car driver trips are more evenly distributed than for the equivalent in-commuting trips shown in Figure 15 above, though with still a large number of trips to locations outside of public transport availability.

2.6.2.2 Conversion to all-trip mode share

Although 2011 Census provides detailed data on commuter trips from the residential areas around the study area, commute trips are only one of many trip purposes generated by residential areas, as shown by the following weekday peak-hour trip-purpose distributions from the National Travel Survey (NTS).

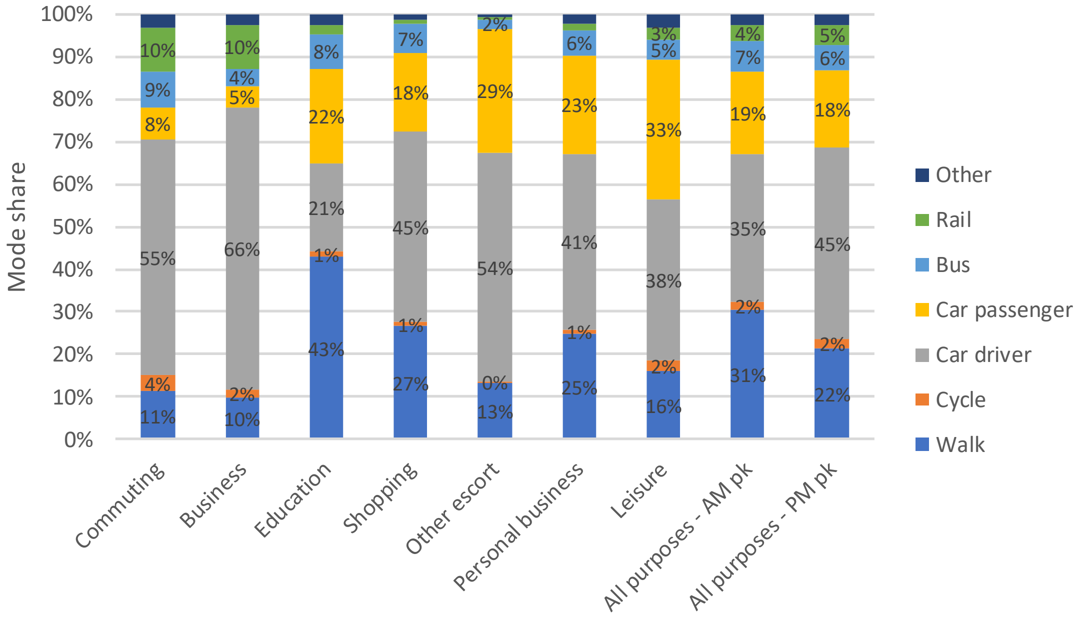
Figure 20: Distribution of residential trip purposes by weekday peak hour



Source: NTS 2017, table nts0502

The National Travel Survey also shows how average mode share varies by trip purpose as follows:

Figure 21: Residential mode share by trip purpose (national data)



Source: NTS 2017

This chart shows how the overall car driver mode share for all residential trip purposes in both peak hours is lower than the equivalent for just residential commuting trips, as most other residential trip purposes tend to be less reliant on car use. It can be expected that the overall car driver mode share for all residential trips generated by the study area environs will follow this national trend and also be lower than the 45% residential commute-trip mode share derived from the Census (see Figure 16 above) by a similar margin.

In order to convert the Census-based residential commute car driver mode share to an equivalent residential all-purpose car driver mode share, therefore, the above NTS ratio between the two has been applied, as follows:

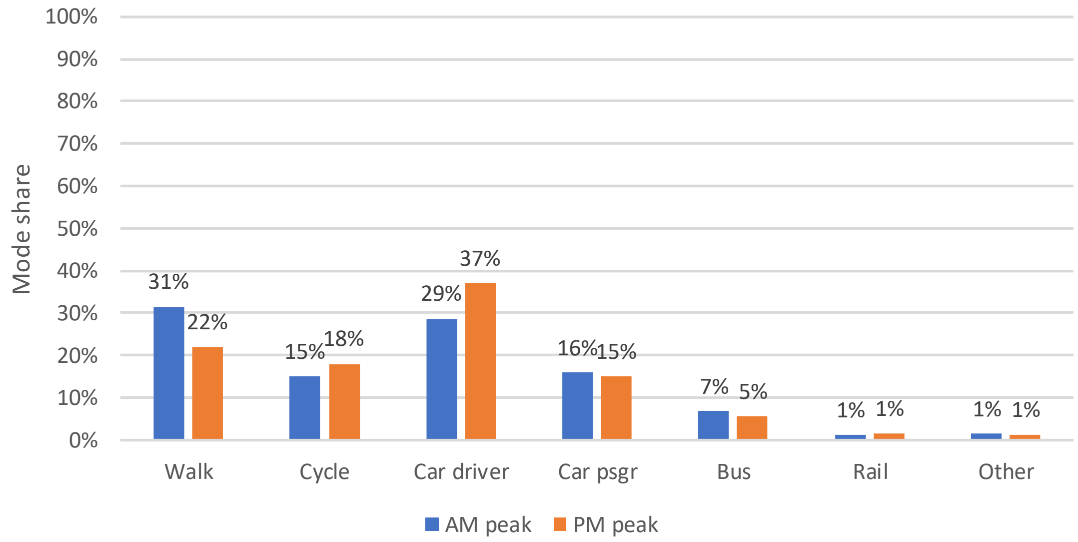
- [NTS all-purpose %] / [NTS commute %] x [Census commute %] = [Census all-purpose %]
- i.e., 35% / 55% x 45% = 29% in AM peak
- and, 45% / 55% x 45% = 37% in PM peak

The estimated existing all-purpose residential car-driver mode-share for the study area is therefore 29% in the AM peak and 37% in the PM peak.

This has been expanded into an estimated all-mode result shown below as follows:

- The car driver mode share has been derived as described above.
- The car passenger mode share has been proportionally reduced to maintain the same car occupancy level as in the above NTS result, on the reasonable assumption that average car occupancy for residential trips by purpose is similar across the country.
- For all other modes, the ratio of difference between the NTS commute result and the NTS all-trip result for each mode has been applied to the census commute result for that mode, on the assumption that the national relationship between trip-purpose mode shares is also valid for the study area, e.g. if the all-trip result for a mode is double the commute result for that mode in the NTS survey, then the census commute result has also been doubled for that mode also.
- Lastly, as the above method results in a 4-5% shortfall across all modes, this has been proportionally added to all non-car mode results to make up the difference.

Figure 22: Estimated existing mode shares for all-trips from study area residential areas



Source: Mott MacDonald

This shows an estimated all-purpose residential trip mode share for the study area which incorporates the national relationships between trip purposes revealed by NTS but also reflects the local travel characteristics of the area revealed by the Census. In particular, the latter is seen in the high level of walking and cycling estimated, which tends to be significantly higher in Cambridge than the national average.

2.7 Baseline context summary

A review of baseline transport conditions in and around the study area shows that North East Cambridge is well connected to surrounding multi-modal networks, but the effectiveness of these connections is hampered by performance limitations at peak times. Examples of such limitations are:

- Highway congestion on the A10, A14, at Milton Interchange and on Milton Road and King Hedges Road.
- Delays within the CSP site in the PM peak period for vehicles waiting to exit the park via the two site exits.
- Overcrowding on busway and rail services.
- Congestion and delays for non-busway bus services and lack of direct routes to study area.

There are also some significant barriers to pedestrian and cycle movements within and around the study area which reduce the potential permeability of the sites for these modes, while options for introducing new highway access points and/or increasing existing highway network capacity are also limited by the same physical constraints.

In addition, a review of Census data shows that nearly half of employees travelling to the study area have no public transport alternative from point-of-origin and that nearly 90% of these travel to the site by car. The fact that there is currently an over-abundance of free parking within the study area exacerbates this situation and disincentivises use of public transport even where it is available so that, overall, 71% of employees drive to the study area to work and nearby P&R sites are under-utilised.

In summary, therefore, given the current lack of spare highway network capacity in and around the study area at peak times and the limited opportunities to increase this in future, it will be necessary for any further development to be delivered within a 'trip budget' that ensures no increase in peak-period impacts on the local highway network. Remaining within this trip budget will require the relatively unconstrained car mode-share level of today to be significantly reduced in future.

The definition of the trip budget, the potential scale of the associated car mode-shift, and the various measures required to deliver this are considered in the remainder of this document.

3 Future context

3.1 Introduction

The purpose of this section is to consider planned developments which will affect the land use, accessibility and travel behaviour characteristics of the study area and to consider potential future site development options within this context.

3.2 Land use development

3.2.1 Consented study area development

Details of consented schemes for the study area were provided to Mott MacDonald by CCC. These schemes are summarised in the following table for reference.

Table 7: Consented study area schemes

Site	Land use	Description	GFA (m^2)
CSP	B1, B1a, B1b	Plots 1/21, 22, 25, 29-30, 420, 440 & 250	89,024
CNFE	B1a	Coulson Group office by existing building	2,593
	B1a	Brookgate office by Cambridge North station	9,762
	C1	Brookgate hotel (217 beds) by Cambridge North station	9,940

Source: CCC

3.2.2 Potential study area development

Mott MacDonald were supplied with five potential future development scenarios for the study area. In order to maximise opportunities for internalised trips and the effective use of available highway capacity, all scenarios are mixed-use housing and commercial schemes, with accompanying ancillary uses.

The scenarios are distinguished as follows:

- HIF scenario – this reflects the successful Housing Infrastructure Bid (HIF) submitted to Government by the local authorities in 2018
- Options 1 to 4 – these are land use options tested as part of this study which range from lower to higher scales of mixed-use development, chosen to enable the sensitivity of the site and its impact on the surrounding highway network to be assessed.

The following table shows gross land use details for each scenario and site. It should be noted that the A1-A5 and D1/D2 uses are proposed to be ancillary uses to serve the needs of the study area employees and residents only and so are not expected to be significant generators of external transport demand in their own right.

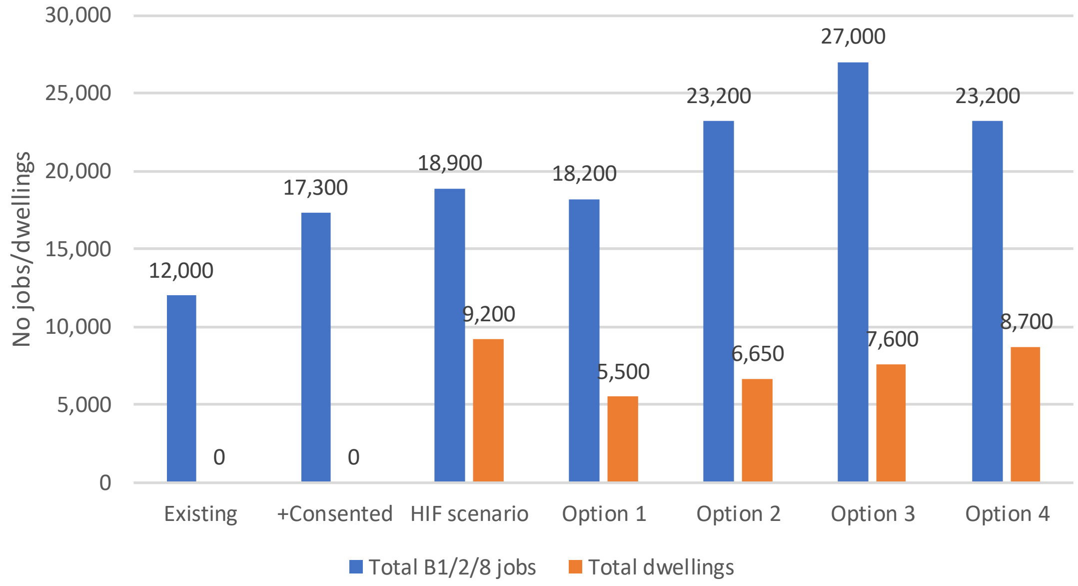
Table 8: NEC development scenario details

Scenario	Site	A1-A5 ancillary retail (m2 GFA)	B1 (m2 GFA)	B2/8 (m2 GFA)	C1 Hotels (m2 GFA)	C3 Dwellings	D1 public services (m2 GFA)	D2 primary education (m2 GFA)
HIF	CSP	1,000	279,937		10,000	564	2,000	
	CNFE	11,164	56,407	0	10,013	8,071	6,817	12,900
	CBP		28,024					
	NRIE					553		
	Total	**12,164**	**364,368**	**0**	**20,013**	**9,188**	**8,817**	**12,900**
Option 1	CSP	1,000	175,048		10,000	900	2,000	
	CNFE	11,164	126,391	24,000	9,940	4,300	6,817	12,900
	CBP		28,024					
	NRIE					300		
	Total	**12,164**	**329,463**	**24,000**	**19,940**	**5,500**	**8,817**	**12,900**
Option 2	CSP	1,000	245,048		10,000	650	2,000	
	CNFE	11,164	146,391	36,000	9,940	5,600	6,817	12,900
	CBP		28,024					
	NRIE					400		
	Total	**12,164**	**419,463**	**36,000**	**19,940**	**6,650**	**8,817**	**12,900**
Option 3	CSP	1,000	290,048		10,000	300	2,000	
	CNFE	11,164	166,391	54,000	9,940	6,800	6,817	12,900
	CBP		28,024					
	NRIE					500		
	Total	**12,164**	**484,463**	**54,000**	**19,940**	**7,600**	**8,817**	**12,900**
Option 4	CSP	1,000	345,048		10,000	0	2,000	
	CNFE	11,164	66,391	0	9,940	8,140	6,817	12,900
	CBP		28,024					
	NRIE					560		
	Total	**12,164**	**439,463**	**0**	**19,940**	**8,700**	**8,817**	**12,900**

Source: Project Team

To help with comparison between the above scenarios, the following figure shows the number of dwellings and estimated total number of B1/B2 jobs per scenario. The B1/B2 GFAs have been converted to job numbers based on the job density ratios listed in Table 3 above. Only B1/B2 jobs are presented as these will be the primary external employment trip generators within the study area. Equivalent data for the existing and consented situations is also shown for reference.

Figure 23: Dwelling and estimated B1/B2 jobs summary per scenario



Source: Project Team / Mott MacDonald

Currently, there is estimated to be about 12,000 jobs within the study area and no dwellings, so the above scenarios represent an increase in jobs of between 6,200 and 15,000 and an increase in dwellings of between 5,500 and 9,200. The transport implications of this growth are considered in Sections 4 and 5 below.

3.2.3 Other relevant development

Employment and population growth is expected within Cambridge and across the wider Greater Cambridge area for the foreseeable future, but the development most likely to directly affect the study area is the proposed new town north of Waterbeach. The planned development scale for the latter is 11,000 homes, with the first phase of 1,500 homes likely to be delivered within the current Local Plan horizon of 2031.

The new town north of Waterbeach should have a positive impact on the NEC area, and vice versa, in providing a potential new employee resource pool within viable cycling, bus and rail range of the site. Similarly, Northstowe, the currently developing 10,000 dwelling new town located on the busway 6 miles to the north west of the site, will also provide potential new home locations for employees based at the NEC area.

3.3 Transport network development

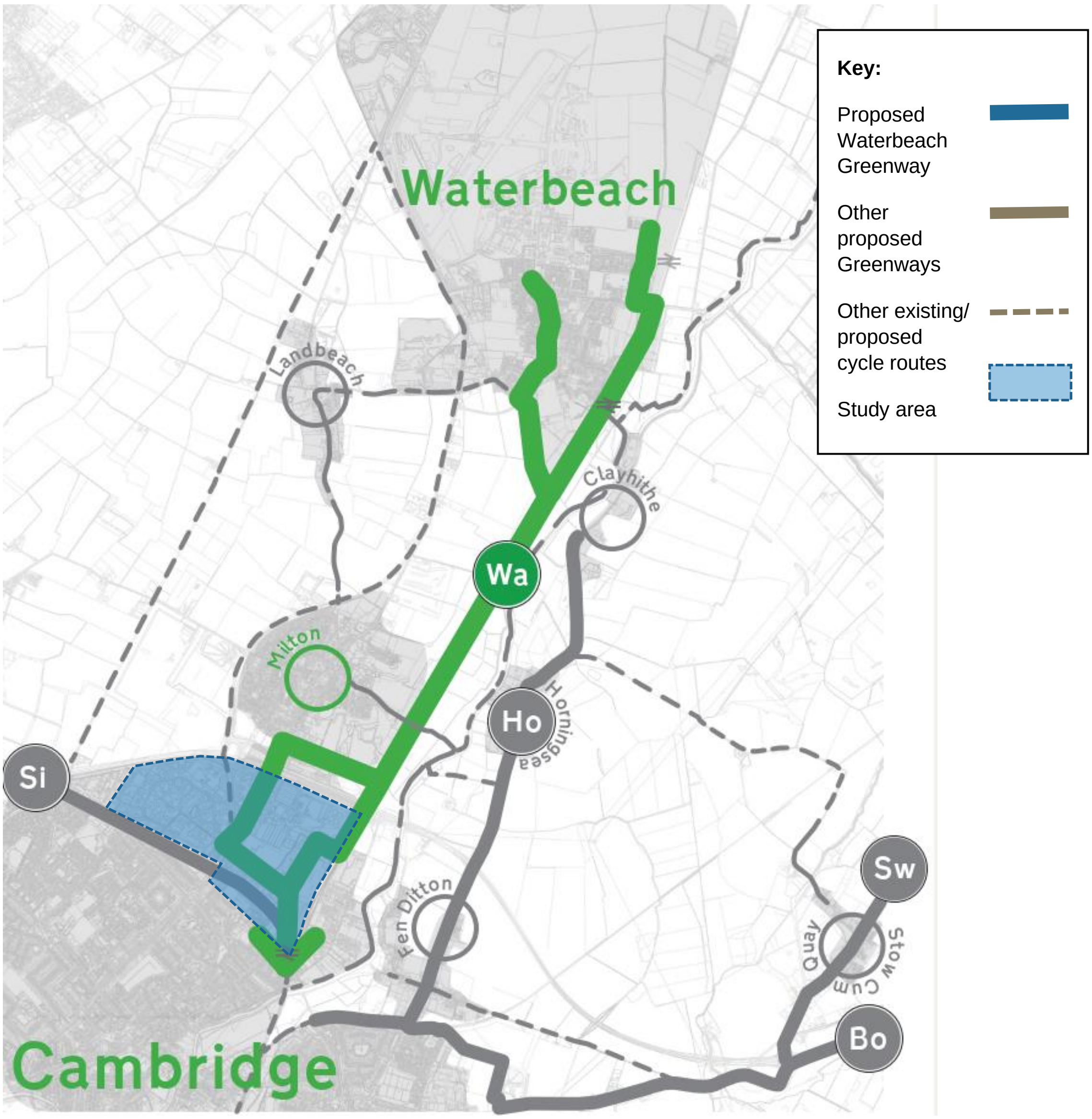
3.3.1 Pedestrian and cycle schemes

3.3.1.1 Waterbeach Greenway

The Greater Cambridge Partnership (GCP) is in the process of planning and implementing a network of walking, cycling and equestrian travel ‘Greenways’, made of 12 routes that will link local villages and Cambridge. One of those routes will link both the new town and the existing settlement of Waterbeach to Cambridge city centre via the study area, as shown in the following figure. This shows how the Greenway will provide a continuous mainly off-road link from the proposed new town north of Waterbeach, and from the existing Waterbeach village, to the study area. A similar busway-based Greenway runs to the study area from St Ives, while the Horningsea Greenway will also run near to the NEC sites, in addition to the other existing and potential cycle route options shown as dashed lines on the plan.

These new links will help to promote and increase trips to and from the study area by non-motorised modes.

Figure 24: Indicative Waterbeach Greenway alignment



Source: www.greatercambridge.org.uk/transport/transport-projects/greenways/waterbeach-greenway/

3.3.1.2 Links to support new town north of Waterbeach

To support cycle use between the new town north of Waterbeach and the NEC area, the following schemes have been proposed for implementation as part of the development:

- NMU link from the development to the Waterbeach Greenway
- Improvement to cycle route alongside the A10 between Waterbeach and Milton, and to the cycle route through Milton village to link to the Jane Coston Bridge crossing over the A14 to the St Johns Innovation Centre

- Upgrade of the Mereway route to a tarmac path between Landbeach and Cambridge Regional College, passing under the A14 via existing underpass. This will also connect into a new link from Landbeach into the new town

These new and improved links will help to increase cycle usage between the new town north of Waterbeach and the NEC area.

3.3.1.3 Milton Road improvements

The Greater Cambridge Partnership is planning to introduce improvements to the Milton Road Corridor between the Cambridgeshire Guided Busway junction with Milton Road and the city centre to promote greater use of the corridor by sustainable modes. As described on the scheme's consultation webpage, the Milton Road scheme includes:

- Public transport priority measures that include new sections of outbound bus lane and new floating bus stops.
- Improved cycle facilities with segregated cycle provision along both sides of Milton Road and priority over side roads. This requires the removal of the existing pavement parking on Milton Road.
- Improved pedestrian and cycle facilities, including Copenhagen style priority crossings at side roads, segregated features at all main junctions, and the relocation of some crossings
- Landscaping to areas where more greenery can be included.
- The development of a traffic regulation order to ban all parking on verges

Once implemented, this scheme will increase the appeal of undertaking trips along this corridor by foot or cycle, and so help to increase the use of these modes for travel to and from the study area.

3.3.1.4 Chisholm Trail

The Chisholm Trail is a new walking and cycling route which will link Addenbrooke's Hospital and the Biomedical Campus in the south to the study area in the north. Taking advantage of low traffic or traffic-free routes, this will provide a route to connect the busway from Trumpington with the busway to St Ives, and so creating a 26km continuous route between these two locations. A schematic of the route can be seen in the figure below.

Figure 25: Proposed Chisholm Trail route

Source: https://www.camcycle.org.uk/campaigning/cycleroutes/chisholmtrail/

This trail will provide an important new cycle route between the study area, the city centre and south Cambridge and so help to increase the viability of cycle usage to and from the NEC sites.

3.3.2 Bus and rail schemes

3.3.2.1 Milton Road bus improvements

As noted above, the Milton Road scheme will improve bus reliability on the all-important link between the busway and city centre, thus potentially increasing the attractiveness of this mode for travel to the study area.

3.3.2.2 Rail network improvements

In 2018, Cambridge North station transported 546,717 passengers; a 28% increase on the previous year[9]. 10 trains now alight at Cambridge North between 08:00-09:00 and 14:00-15:00, with 12 trains stopping between 17:00-18:00 on Monday to Friday[10]. As of May 2019, there are alterations to the timetable which will add several more trains to Cambridge's Stations[11]. An additional Thameslink train each hour will run direct between Brighton and Cambridge, with two direct trains per hour now running each way. During peak hours, this will add 36 carriages and around 2,000 extra seats from these towns into London[11]. Additionally, improvements are planned to services between London and Norwich / Ipswich for the Greater Anglia Services[11], but these have yet to be released. The only change to the Great Northern services is on a Saturday, with a revised Great Northern service operating on the Cambridge route, with a second 'Cambridge Flyer' each hour[12].

Capacity enhancements in the Ely area[13], which encompasses Ely North Junction[14], are currently being developed. Analysis by Network Rail has indicated that the Ely area is currently unable to accommodate any increase in the current level of service, due to a combination of complex infrastructure constraints and train service patterns that affect the achievable timetable[13]. Ely is identified as a pivotal node on the rail network that is key to the increase of both passenger and freight capacity across the East, London and the Midlands[13]. All trains travelling south from Ely pass through Cambridge North, meaning any increase in capacity in Ely will have ramifications for Cambridge North. The current public state of the

[9] https://www.greateranglia.co.uk/about-us/news-desk/news-articles/over-1-million-passenger-journeys-norwich-%E2%80%93-cambridge-rail-line

[10] http://www.realtimetrains.co.uk/search/advanced/CMB/2019/03/21/1705?stp=WVS&show=all&order=wtt

[11] http://www.nationalrail.co.uk/service_disruptions/48.aspx#Thameslink

[12] https://www.greatnorthernrail.com/travel-information/plan-your-journey/timetables

[13] https://newanglia.co.uk/wp-content/uploads/2017/11/07_BodyItem3ElyAreaCapacityEnhancementBusinessCaseCoveringReport2.pdf

[14] https://newanglia.co.uk/vital-ely-rail-project-on-track-with-3-3m-from-lep/

project as of November 2018 is to start testing train planning rules, with model completion and a report by January 2019[15].

The proposed Cambridge South station, to be situated adjacent to Cambridge Biomedical Campus (CBC), will also have impacts on Cambridge North station[16]. CBC is expected to almost double in size, accommodating 27,000 jobs by 2031, with transport access to the site being vital for businesses on the CBC to grow[16]. The station would support connections across Cambridgeshire and East Anglia, and provide for journeys to Stansted Airport, Kings Cross, Liverpool Street, and potentially in the future, a range of destinations en-route to Oxford via East West Rail[16]. Due to the surrounding rail network being at capacity, the current proposal includes expanding the current two and three track sections to four tracks north and south of the new station, and improving Shepreth Junction to the south, where the Stansted / Liverpool Street and Kings Cross bound trains currently diverge[16]. In December 2018, the Cambridgeshire and Peterborough Combined Authority agreed to release further funds to continue with the feasibility and design of the project to Outline Business Case stage with a planned completion date of summer 2020[17]. Option selection is expected to be complete by March 2021[17].

Shepreth Junction has been highlighted as a key constraint on the development of East West Rail (EWR)[18] and Cambridge South station[19]. As of March 2019, the public consultation on the potential different routes for the Bedford to Cambridge section was undertaken[20], with four of the five options connecting to Cambridge via joining the West Anglia Main Line at Shepreth Junction. EWR could therefore serve Cambridge South Station but can only do so if infrastructure is improved between Cambridge South Station and Shepreth Junction[19].

Another potential scheme that could have ramifications for Cambridge North station is the Foxton Travel Hub[21]. The site is located at the Foxton train station, which sits on the Cambridge to Kings Cross rail line[21]. This hub would allow users to access Cambridge North by train from Foxton, including via park and ride. The SOBC for the hub was considered by the Greater Cambridge Partnership Executive Board at their March 2019 meeting. The Board agreed to consult the public on the proposals and, as part of that process, develop an Outline Business Case. This is expected to be completed during Spring 2020.

[15] https://newanglia.co.uk/wp-content/uploads/2018/12/Ely-area-improvements-update-Network-Rail.pdf

[16] https://democracy.cambridge.gov.uk/documents/s42853/Cambridge%20South%20Station%20Briefing%20Note.pdf

[17] http://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/MDN12-2018-Release-of-Cambridge-South-Station-Funding.pdf

[18] https://eastwestrail-production.s3.eu-west-2.amazonaws.com/public/Central-Section-Consultation/db652106d4/EWR-Technical-Report.pdf

[19] https://tinyurl.com/y5lb36le

[20] https://eastwestrail.co.uk/haveyoursay

[21] Foxton Park and Rail Transport Hub Strategic outline Business Case

Also, of relevance to the study areas are plans from developers RLW Estates to re-locate Waterbeach Railway Station from its current location south of the village to a new site to the north adjacent to the site of the proposed new town, which were formally approved by South Cambridgeshire District Council's Planning Committee in November 2018. The approval was subject to the Secretary of State for Housing, Communities and Local Government deciding whether to "call in" the decision and make it himself but the authority has since received confirmation that the decision will not be "called in" and so the Planning Committee's approval stands.

The permission given to re-locate Waterbeach Railway Station includes:

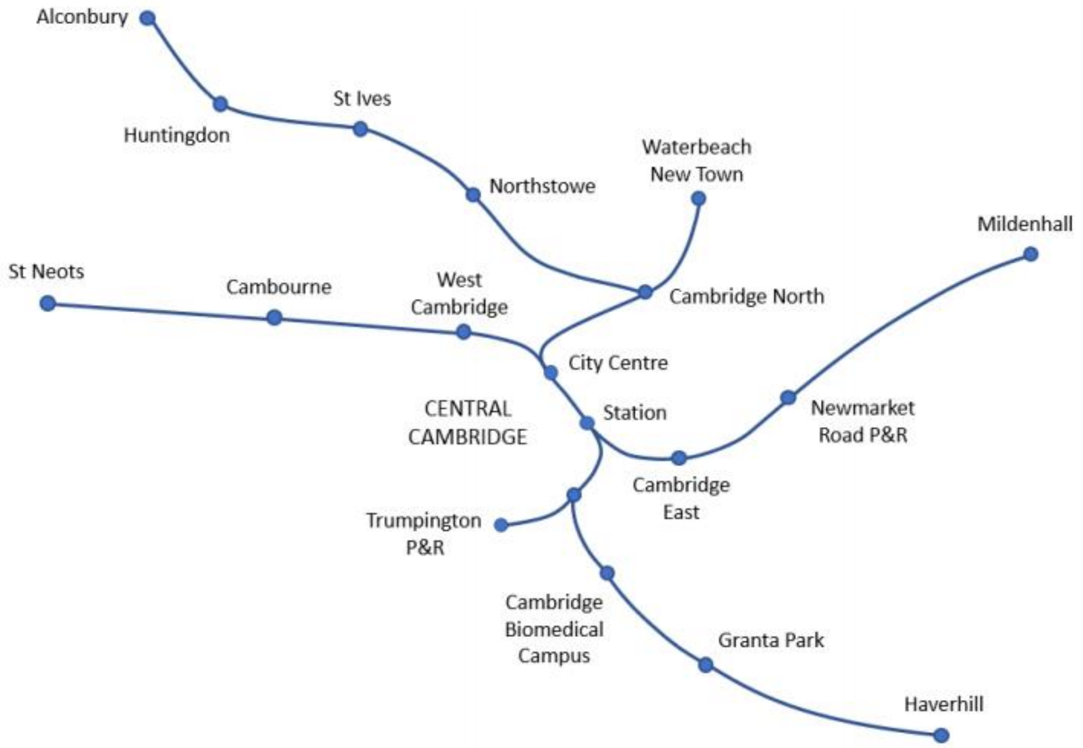
- A two-platform station, with platforms long enough for eight carriage trains
- Two pedestrian bridges, including one with a lift
- A car park and cycle parking
- Bus stops
- A taxi rank
- A passenger drop-off area
- A shuttle bus service between the village and relocated station
- An access road from Cody Road to the station car park
- Platform lighting, station information and surveillance systems

At the time of writing, delivery timescales for the new station are still evolving as part of the wider development proposals for the new town.

3.3.2.3 Cambridgeshire Autonomous Metro

The Cambridgeshire & Peterborough Combined Authority (CPCA) recently issued a strategic outline business case (SOBC) for the Cambridgeshire Autonomous Metro (CAM), which concludes that the scheme would offer 'good' value-for-money. The current proposal is a fleet of frequent 'trackless metro' electric vehicles traversing the proposed network shown in Figure 26, which would pass under the city centre in tunnels.

Figure 26: Potential CAM network



Source: https://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/CAM-SOBC-v2.1.pdf

If implemented, the scheme could deliver significant changes and transform the accessibility of the study area, making it accessible to the Cambridge hinterland by public transport. The routes illustrated above will provide direct and largely segregated metro routes from Waterbeach new town and Waterbeach to the north, Alconbury and St Neots to the west, Trumpington and Haverhill to the south, and Mildenhall to the east.

The SOBC states that construction of the new scheme could begin from 2021. The Greater Cambridge Partnership Schemes currently in development will form phase 1 of this scheme providing links from the AAP area to places such as Waterbeach, Cambourne and Haverhill.

3.3.2.4 New Town North of Waterbeach to North East Cambridge Public Transport Study

The Greater Cambridge Partnership (GCP) are undertaking a study to understand, in more detail, the options to deliver the most effective public transport connections between the proposed new town north of Waterbeach and North East Cambridge. The GCP are currently in the initial stages of the study which will build upon historic work in the corridor and surrounding areas to assist with the identification and selection of options. A key aim of any intervention within the corridor is to ensure that employment and housing growth can be accommodated without increasing levels of vehicular traffic in Cambridge. Options identified and selected as part of this piece of work will be focussed on making public transport journeys more reliable and attractive. This will include the consideration of safe, segregated routes and relocation or extension to Park and Ride Provision as appropriate. Provision for Non-motorised Users (NMU) will be inherent in all options considered. This study will be required to integrate with schemes being taken forward by the CPCA and GCP including CAM and the Waterbeach Greenway.

3.3.3 Highway schemes

3.3.3.1 Milton Interchange improvements

As part of the current Highways England Cambridge to Huntingdon A14 improvement scheme, the following enhancements are planned in the vicinity of the A14 Milton Interchange junction:

- Additional eastbound approach lane on A14 mainline.
- New segregated left-turn lane between A14 eastbound off-slip and A10 northbound.
- An additional gyratory lane on the eastern A14 overbridge.

These measures will increase the capacity of this junction and will help to address some of the current congestion issues noted in Section 2.3.3.2 above.

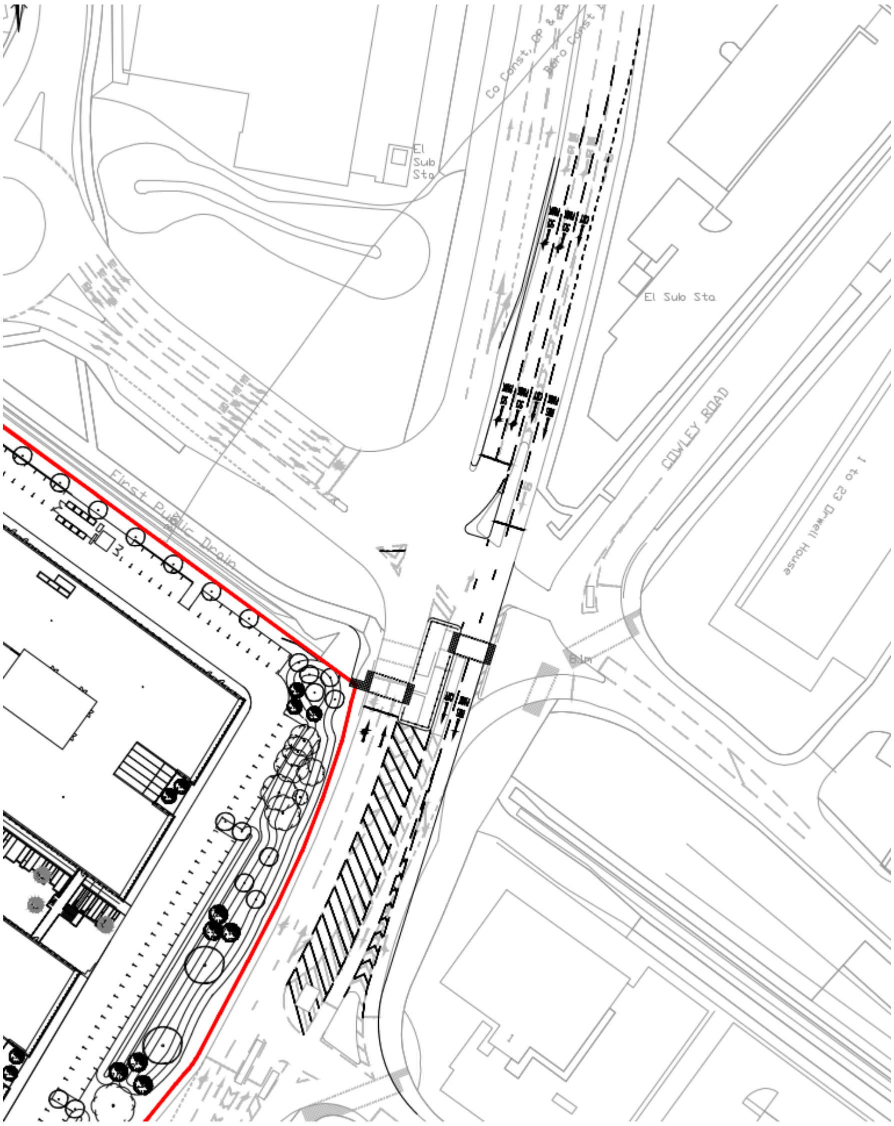
In addition, as part of Phase 1 of the new town north of Waterbeach, the developer is currently proposing to fund, or deliver, an extension of the existing A10 southbound approach nearside flare from the current c.40m to c.70m. This improvement seeks to provide some local increase in junction capacity to help accommodate the extra flows to be generated by the new development.

3.3.3.2 Cambridge Science Park access improvement

To facilitate consented development at the Science Park, the changes shown in the following figure are proposed for the Milton Road site accesses. These comprise:

- southbound nearside left-slip lane extension for CBP site, and
- removal of Milton Road right-turn and CSP ahead movements into Cowley Road

Figure 27: Proposed Milton Road site access improvements preliminary design



Source: Plots 1 to 21 CSP Transport Assessment Addendum, November 2017, prepared by Odyssey

3.3.4 Parking proposals

3.3.4.1 On-site parking

There are currently no committed plans to change on-site parking within the study area sites.

3.3.4.2 P&R parking

As part of the new town north of Waterbeach proposals, there are plans to introduce a new P&R site adjacent to the A10, and at the relocated Waterbeach railway station for trips towards Cambridge and the study area.

There are currently no further proposals to make changes to the existing P&R sites serving the study area (see Section 2.3.4.2 above).

3.4 Travel trends and technologies affecting future mobility

In addition to planned changes to land uses and transport networks in and around the study area, there are also wider socio-economic and technological change factors which are likely to affect the way people and goods travel to and from the study area in future.

3.4.1 Impact of travel trends

Travel demand and travel behaviour in the UK is undergoing some marked changes which signal a transformation in the way people engage in activities of working, living and shopping. Since the 1990s and early 2000s, the following trends have been observed:

Figure 28: Travel behaviour trends since the 1990s and early 2000s

	Reduced individual travel, with one of the reasons behind this being a decline in commuting. Between 1995 and 2014, while England's population grew by 11% and employment grew by 18%, commuting journeys fell by 16%[22].
	Between 1995/7 and 2013/14, despite a 12% increase in population and 18% economic growth, there has been a decline in annual commuting journeys from 8.5 billion to 7.9 billion[23].
	Similarly, a decline in leisure and shopping trips has been observed in recent years. The 2015 factsheet from the DfT "Why people travel: Shopping", indicates a decline equivalent to 18% in the average number of shopping trips per person from 2002 to 2015[24].

Alongside the shift in travel behaviour are technological innovations which have begun to influence mobility opportunities and how they are accessed and consumed by transforming the way in which society generates, shares and consumes data, information and knowledge. In recent years, technological

[22] Department for Transport, (2019). *Future of Mobility: Urban Strategy.*
[23] Department for Transport, (2016). *Commuting Trends in England 1988-2015.*
[24] Department for Transport, (2015). *National Travel Survey. Why people travel: Shopping.*

innovations have enabled the rise of transportation intermediaries, which provide a digital platform for individuals to plan, book and pay for their journeys on a pay-as-you-go or (in some emergent cases) monthly-subscription basis. These platforms enable individuals to have on-demand access to vehicles, making the distinction between ownership and temporary ownership of vehicles less clear. These services are generally more popular with younger cohorts as they are driven by accessibility to smartphone applications and offer a lower cost-point per journey in comparison to equivalent services like taxis. This concept is called ride-sharing and includes operators like Uber and Lyft.

Recent American research suggests there is a link between the rise of Uber and Lyft and declines in rail and bus ridership[25]. Therefore, other start-up mobility intermediaries have capitalised on combining various modes of transport, including public transport, ride-hailing and active travel. Mobility as a Service (MaaS) Global introduced their 'Whim' application on a trial basis in the West Midlands in 2018 following an earlier trial in Helsinki. This application provides the possibility to choose among a range of non-car modes to travel between two points, making it much easier for the user to find out about alternative and more sustainable travel modes to car. This concept is called Mobility as a Service (MaaS) and, although it is still too early to confirm how it influences travel behaviour, it is considered likely to lead to broader and wider opportunities and alternatives to car ownership.

A combination of other factors impacts longer-term shifts in travel demand trends including demographics, changing income, and economic capabilities; as well as the increasing urbanisation of areas. For instance, the average life expectancy in the UK is increasing and older people will make up a growing proportion of the UK's population. 'Baby boomers' are entering retirement now, and in general, retirees have higher car ownership levels than previous cohorts. According to the Commission on Travel Demand, older cohorts are the only part of the population showing a growth in car travel today[26].

On the other hand, younger generations are less likely to be making driving trips (from 55% for males and 42% for females in 1993, to 33% for males and 29% for females in 2014), which can be attributed to lower uptake of driving licenses. The causes to that lie largely outside transport for reasons such as socio-economic situations (rise of lower-paid less-secure jobs and decline in disposable income, having families at a later age), living situations (decline in home ownership and re-urbanisation), or symbolic conditions (attaching less importance to driving)[27]. In addition, changing structures of employment can impact traffic significantly as

[25] Graehler et al, 2019. Understanding the Recent Understanding the Recent Transit Ridership Decline in Major US Cities: Service Cuts or Emerging Modes? 98th Annual Meeting of the Transportation Research Board, Washington, January. As of 12 February 2019: http://usa.streetsblog.org/wp-content/uploads/sites/5/2019/01/19-04931-TransitTrends.pdf

[26] Commission for Travel Demand, 2018. All Change: The Future of Travel Demand and the Implications for Policy and Planning.

[27] DfT, 2018. Young people's travel – what's changed and why?

it presents commuters with the opportunity of flexible working. Flexible working can reduce the number of trips on the network or the times of day at which trips take place. The scope of innovation in working practices seems considerable as it would not only assist with further reduction of trips on the network, but it could also help employees in more efficient use of rented space and in maximising flexibility and quality of life.

This combination of demographics and technological innovation deployment has meant that the impact of trip reduction is felt more significantly in urban areas. This is because, generally, urban areas are better equipped with infrastructure that facilitates the adaptation of new technologies and provide development and population densities that better support non-car trip options. In addition, urban centres are being re-populated with younger residents, further contributing to these reductions.

However, it is important to note that where few alternative public transport options are made available, a 20% increase of longer-commute journeys have been observed as evidence from Buckinghamshire County Council showed[26].

3.4.2 Impact of modal technologies

Technological innovation within the transport sector could have significant implications for future supply and demand of transport services in the area, in tandem with the change in travel behaviour. There is a variety of transport technologies which can have substantial influence over land-use, car ownership and travel patterns over time.

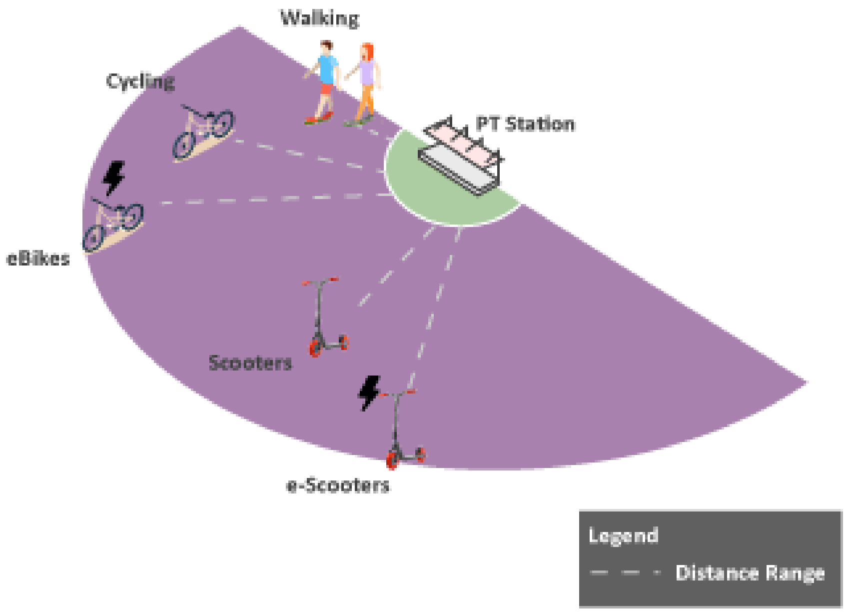
Future Mobility trends can largely be grouped into three categories: electrification, shared mobility and automation. Shared mobility refers to schemes where travellers can have temporary access to vehicles, either as part of independent journeys through ride-hailing operators, or as part of multi-modal journeys through MaaS operators. These new technologies can be employed to introduce cleaner transport modes, encourage multi-modal travel by enabling First and Last Mile travel (FLM), and introduce new mobility models enabling less dependency on car ownership.

FLM travel is considered key in the uptake of public transport and it ranges from active travel FLM solutions, to motorised vehicles, and is considered critical for the future of NEC. Therefore, the new mobility models focused on below are those that that have the greater potential to encourage further opportunities for FLM in the area.

It is important to note the potential role that technology can play in improving the flexibility and widening access to existing active travel and making public transport more integrated and reliable[28]. Therefore, future modes of FLM travel should be introduced to complement existing solutions (such as cycling and walking) and not instead of them. Future FLM modes which could be potentially introduced are:

- Electrified micromobility modes: enabling the completion of small to medium length journeys, making them a suitable solution to undertake FLM travel. Examples include e-scooters and e-bikes, and they fall under the future mobility trend of electrification but can also be categories as a shared mobility trend when they're offered as part of dynamic share schemes. Electrification is introduced to these otherwise existing modes in order to increase the range of their operation. The diagram below compares existing active travel modes against future micromobility modes in relation to their potential user range.

Figure 29: Existing active travel and future micromobility modes enabling FLM travel



Source: Adapted from Alkhanizi, 2018[29].

Micromobility modes can be integrated into the site to connect the residential housing within the NEC area with Cambridge North Station to the south east of the site, or to the bus stops provided along corridors. At present, micromobility modes are considered 'disruptive' and there are regulatory issues now starting to be picked up and addressed, but their future appeal could be considerable. Sales of e-bikes have grown substantially, which is reflective of their popularity

[28] Department for Transport, (2019). *Future of Mobility: Urban Strategy.*

[29] Alkhanizi, 2018. Enabling First and Last Mile Travel Solutions, Produced for the Transport Practitioners Meeting (TPM) Conference.

concerning greater ease of handling difficult topography and requiring less effort.

- Mobility as a Service (MaaS): enabling the integration of various modes of transport along with the enabling integrated ticketing. MaaS would be able to present the full range of available FLM travel solutions on-site and allow travellers to combine their preferred modal choices to complete their journey. MaaS combines active travel FLM solutions, in addition to integrating ride-hailing services with public transport modes. By granting travellers temporary access to vehicles via an on-demand MaaS service, users gradually start to attach less importance to car ownership as trends by younger cohorts have indicated[26].

  MaaS and other shared mobility schemes (such as ride-hailing) should be enabled throughout the site and beyond. Policies should be explored to ensure that the cost effectiveness and flexibility of the new future mobility services do not deter travellers from using existing public transport modes. Incentivising people to undertake multi-modal journeys can be done through introducing pricing measures, in addition to facilitating policies that limit the convenience of car-based mobility options.

3.4.3 Facilitating the integration of future modes

In order to enable greater opportunities for FLM travel, technological advancements can be utilised to support existing FLM solutions. The integration of both does not only rely on the provision of the required infrastructure, but also on introducing policies to support the management and operation of both.

It is also equally important to explore the on-going tendency to over-estimate future traffic growth on roads. The DfT believes that “this is substantially attributable to over-forecasts in key inputs to the model rather than modelling error” [26]. Future demand policy will need to be decision-driven rather than forecast-driven and it should be asking “what kind of place do we want to live in, and which activities do we need to travel for?” in order to answer the question of “which actions should be taken to provide a congestion-free transportation network”.

3.5 Future context summary

There are a number of land use schemes already consented for the study area which will increase employment levels on these sites. The development scenarios being potentially considered for the emerging study area AAP involve a further significant increase in employment levels, plus a mix of housing and ancillary uses to maximise internalisation and make best use of available highway capacity. These scenarios would result in an increase in jobs of between 6,200 and 15,000 and an increase in dwellings of between 5,500 and 9,200.

A review of committed, planned or potential transport improvements in the area show that accessibility to the study area by non-car modes will improve in coming years, but any highway capacity improvements will be relatively minor. This confirms the principle established at the end of the previous chapter that any future development growth in the study area should be delivered without an associated increase in peak-period impacts on the local highway network.

A review of recent and future travel trends and emerging technologies also suggests that such a principle is consistent with and complementary to the way in which travel behaviour and transport policy is likely to continue developing. The policy focus should move away from the forecast-led paradigm of 'predict and provide' towards a vision-led paradigm of 'decide and provide' – decide on what characterises the future that is desired and then put in place measures to move towards realising that future. The emergence of app-driven innovations such as ride-sharing and new micromobility options such as e-bikes and e-scooters are the sort of measures which will play an important role in delivering the accessibility and connectivity changes which are required.

In order to understand what future mode shares would be necessary to deliver additional study area development within a defined highway trip budget, the next section establishes the volume of person trips likely to be generated by each scenario.

4 Predicting development trip generation

4.1 Introduction

The purpose of this section is to describe how the volume of peak-period person trips has been predicted for each development scenario.

4.2 Employment trips

4.2.1 Existing car trips

CCC provided Mott MacDonald with weekday peak-hour traffic counts for the study area highway network, which were collected on a neutral day in March 2017. The counts apply to:

- Milton Road, between Milton Interchange and the junction with Kings Hedges Road (known locally as the Golden Hind junction) inclusive, and to
- Kings Hedges Road, between the Golden Hind junction and the secondary CSP access inclusive

This network covers all the NEC site highway access points except for NRIE, which is accessed at the end of Nuffield Road. Apart from for this latter site, therefore, the counts provide a record of existing development highway trip generation during a typical weekday AM and PM peak hour. The full turning counts are included in Appendix A, but site-specific trip-generation levels are summarised in the following table.

Table 9: Observed 2017 weekday peak-hour highway-trip generation per NEC site (vehicles)

Site	Access	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
		Arr	Dep	Total	Arr	Dep	Total
CSP	Off Milton Rd	1,438	196	1,634	322	1,042	1,364
	Off King Hedges Rd	656	115	771	102	652	754
	Combined	2,094	311	2,405	424	1,694	2,118
CNFE	Off Milton Rd	659	254	913	116	573	689
CBP	Off Milton Rd	369	31	400	34	383	417
All	**All**	**3,122**	**596**	**3,718**	**574**	**2,650**	**3,224**

Source: CCC/Odyssey

4.2.2 Estimated existing trip rates

For the purpose of this assessment, it is necessary to use person trip rates for each site and land use type so that the impact of future mode shift on both existing and future trips can be understood from first principles. The following subsections describe how standard trip rates from the TRICS database were identified which best fit the estimated level of jobs on each site and the corresponding observed highway flows noted above. These evidence-based rates are then applied to predict future development flows in Section 4.4 below.

4.2.2.1 CSP trip rate

For CSP, available site-specific data is as follows:

- Observed peak-hour vehicle flows (see Table 9 above)
- A total jobs estimate of 7,459 (see Section 2.2.2)
- Census car driver mode share of 71% (see Section 2.6.1.2)

The TRICS database was interrogated to derive suitable B1 Business Park vehicle trip rates per job (see Appendix B.1 for details). Multiplying these by the total number of jobs provides an estimate of the peak hour vehicle trips which would be generated by the CSP site. This is shown in the following table and compared with observed vehicle counts.

Table 10: CSP vehicle trip-rate derived flow versus actual flow

Parameter	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
TRICS veh trip rate per job (B1 Business Pk)	0.313	0.032	0.345	0.018	0.221	0.239
Predicted veh flows	2,335	239	2,573	134	1,648	1,783
Actual veh flows	2,094	311	2,405	424	1,694	2,118
Flow difference (predicted minus actual)	**241**	**-72**	**168**	**-290**	**-46**	**-335**

Source: Mott MacDonald

This comparison shows that the TRICS vehicle-trip-rate per job estimate, when applied to the estimated number of jobs on the CSP site, predicts flows which are reasonably close to actual observed flows. The peak flows are about 11% too high in the critical arrivals direction (AM peak), and about 3% too low in the critical departures direction (PM peak), so provide a balanced approximation which errs towards robustness. These vehicle trip rates have therefore been adopted to represent study area B1 uses.

To then convert these to person trip rates per job, the Census car driver mode share of 71% has been applied. The following table shows how the resulting trip rate compares with the equivalent TRICS trip rate (see Appendix B.1 for details).

Table 11: Census derived person trip-rate versus TRICS equivalent

Parameter	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
Person trip rate per job based on Census	0.440	0.045	0.485	0.025	0.311	0.336
Equivalent TRICS person trip rate per job	0.439	0.052	0.491	0.032	0.323	0.355
Difference (census minus TRICS)	**0.001**	**-0.007**	**-0.006**	**-0.007**	**-0.012**	**-0.019**

Source: Mott MacDonald

This shows a close match between the Census derived trip rate and the equivalent TRICS rate. The Census derived person trip rate has therefore been adopted to represent study area B1 uses.

In summary, the vehicle and person trip rates per job adopted to reflect study area B1 uses for this study are as follows:

Table 12: Vehicle and person trip rates per job adopted for study area B1 uses

Trip rate type	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
Vehicle trip rate per job (B1 Business Park)	0.313	0.032	0.345	0.018	0.221	0.239
Person trip rate per job (B1 Business Park)	0.440	0.045	0.485	0.025	0.311	0.336

Source: Mott MacDonald

These trip rates show a strong correspondence against observed trips and estimated jobs for this site, and so provide a good basis from which to model the impact of future land use scale and mode share changes for B1 uses in the study area.

4.2.2.2 CNFE and CBP trip rates

For CNFE and CBP, available site-specific data is as follows:

- Observed peak-hour vehicle flows (see Table 9 above)
- Census car driver mode share of 71% (see Section 2.6.1.2)

As the trip rates derived for CSP provided a good correspondence between observed trips and estimated B1 jobs, these trip rates were applied to the observed counts in order to derive an inferred associated level of jobs.

For CBP, this was a straightforward exercise, as all the trips generated by this site are B1 trips. For CNFE, however, it was slightly more complicated in that the trips generated by this site are the result of a combination of B1 and B2 uses, so a B2 trip rate was required. Given the good fit between the TRICS B1 Business Park rates and CSP jobs and trips, the TRICS B2 Industrial Park vehicle trip rates (see Appendix 0) have been applied to estimate B2 job levels.

See Sections 2.2.3 and 2.2.4 for the job numbers derived from this process for these two sites.

The following table shows the TRICS vehicle-trip-rate per job adopted to reflect B2 uses and the corresponding person-trip-rate per job derived by applying the census car driver mode share of 71%.

Table 13: Vehicle and person trip rates per job adopted for study area B2 uses

Trip rate type	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
Vehicle trip rate per job (B2 Industrial Park)	0.301	0.162	0.463	0.076	0.276	0.352
Person trip rate per job (B2 Industrial Park)	0.423	0.228	0.651	0.107	0.388	0.495

Source: TRICS and 2011 Census

4.2.2.3 NRIE trip rates

For NRIE, available site-specific data is as follows:

- Existing floor areas (see Section 2.2.5 above)
- Census car driver mode share of 71% (see Section 2.6.1.2)

As shown above in Table 8 in Section 3.2.2, all development scenarios propose to replace all existing commercial uses with housing. For this site, therefore, commercial trip rates are only required to estimate the existing number of trips to be removed from the above observed counts. As the known data for this site its existing floor areas, TRICS vehicle trip rate per 100m^2 GFA for B1 and B2 uses have been applied. Details of these are provided in Appendices 0 and 0 and summarised in the following table.

Table 14: Vehicle trip rates per 100m^2 GFA adopted for B1 and B2 uses

Trip rate type	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
B1 Business Park trip rate	1.208	0.123	1.331	0.069	0.851	0.920
B2 Industrial Park trip rate	0.382	0.205	0.587	0.096	0.350	0.446

Source: TRICS

4.3 Residential trips

As there are currently no dwellings within the study area, applicable residential trip rates from TRICS have been adopted in order to predict future residential use person and vehicle trip generation levels. Trip rates were drawn from the 'Mixed Private / Affordable Housing' category and full details are attached in Appendix 0. A summary of the rates is provided in the following table.

Table 15: Vehicle and person trip rates per dwelling adopted for study area C3 uses

Trip rate type	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	Arr	Dep	Total	Arr	Dep	Total
Vehicle trip rate per dwelling (C3 housing)	0.125	0.366	0.491	0.3	0.141	0.441
Person trip rate per dwelling (C3 housing)	0.185	0.791	0.976	0.507	0.231	0.738

Source: Mott MacDonald

4.4 Development scenario trip generation

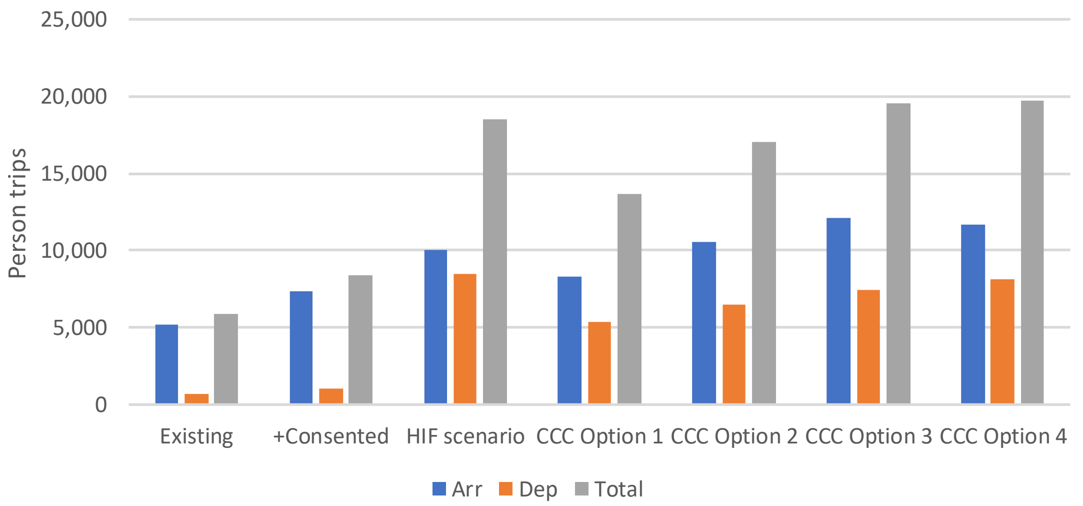
By applying the above person trip rates to the development scenario land use details set out in Section 3.2.2, the following table and charts show the level of person trips predicted for each scenario, broken down by peak hour and direction[30]. The equivalent data for the existing (see Section 2.2.1) and 'existing + consented' (see Section 3.2.1) situations are also shown for comparison purposes.

Table 16: Person trip generation estimated per development scenario, peak and direction

Development scenario	AM			PM		
	Arr	Dep	Total	Arr	Dep	Total
Existing	5,190	690	5,890	370	3,750	4,120
+Consented	7,360	1,010	8,380	560	5,290	5,850
HIF scenario	10,050	8,460	18,500	5,340	8,120	13,460
Option 1	8,320	5,370	13,690	3,390	6,510	9,900
Option 2	10,530	6,510	17,050	4,100	8,210	12,320
Option 3	12,160	7,460	19,620	4,690	9,490	14,180
Option 4	11,660	8,110	19,770	5,130	9,140	14,260

Source: Mott MacDonald

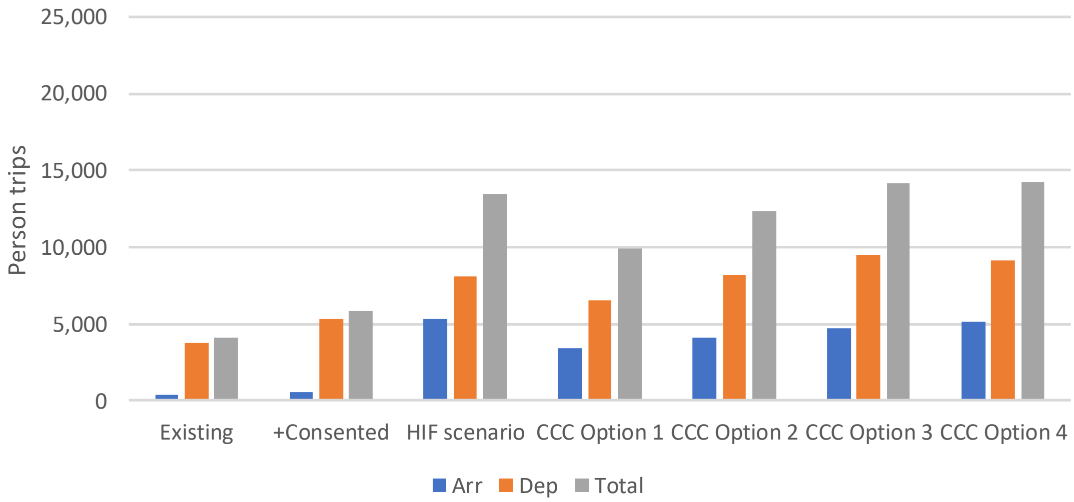
Figure 30: Development scenario predicted person trip generation – AM peak



Source: Mott MacDonald

[30] Note that trips to ancillary uses are not included in these results, as it is assumed that these will be internal to the site. Only land uses which could result in external network trips are included.

Figure 31: Development scenario predicted person trip generation – PM peak



Source: Mott MacDonald

This table and charts show:

- Higher overall flows in the AM than in the PM, though with opposite directional emphasis
- Heavily unbalanced flows in the existing and +consented scenarios due to single land use types, but much more balanced flows in the development scenarios due to proposed mixed-use
- However, development scenario person flows are still in the order of two to three times higher than existing person flows and so will require significant car driver mode shift in order that highway networks impacts are minimised

4.5 Development trip generation summary

Standard trip rates modified to fit local conditions have been derived to allow estimation of both person and vehicle trips for both the existing and future land uses of the study area sites.

The data set out in this section indicates that the person flows generated by the study area development scenarios could be in the region of two to three times higher than existing flows. If the area were to be developed using the ‘business as usual’ approach, there would be a significant increase in the level of traffic in the area which, as set out in Section 2, already experiences significant congestion on local and strategic road networks. The development of this area will therefore require significant car driver mode shift in order that highway networks impacts are minimised. The degree of this shift and the scale of associated ‘trip budget’ level is considered in the next section.

5 Establishing development trip budget

5.1 Introduction

The purpose of this section is to establish a vehicular 'trip budget' for the study area sites within which development expansion can take place without increasing peak-period impacts on the surrounding highway networks, and to identify the level of car driver mode shift required to achieve this.

5.2 Methodology

The principle of the trip budget is to identify the maximum level of external vehicular peak-hour development trips in a future full build-out year which would not result in a deterioration in the performance of the surrounding highway networks over existing levels. The method by which this trip budget has been identified is set out in the following subsections.

5.2.1 Assessing performance

In order to establish existing levels of local highway performance and to test future levels with and without the development scenarios, a LinSig model prepared in support of recent planning applications at the Science Park was used.

5.2.2 Assessment years and periods

The LinSig model is based on the 2017 traffic counts described in Section 4.2.1 above and reflects the network present at that time. This therefore defines the 'existing' assessment scenario.

For the future 'full build-out' assessment scenario, a 2031 year was adopted. This was chosen as it reflects the horizon years for the adopted Local Plans and is also compatible with the future assessment year used in the Ely to Cambridge Transport Study (ECTS).

In both years, two traffic count periods were tested. These reflect the weekday peak hours of:

- AM peak – 08:00-09:00, and
- PM peak – 17:00-18:00

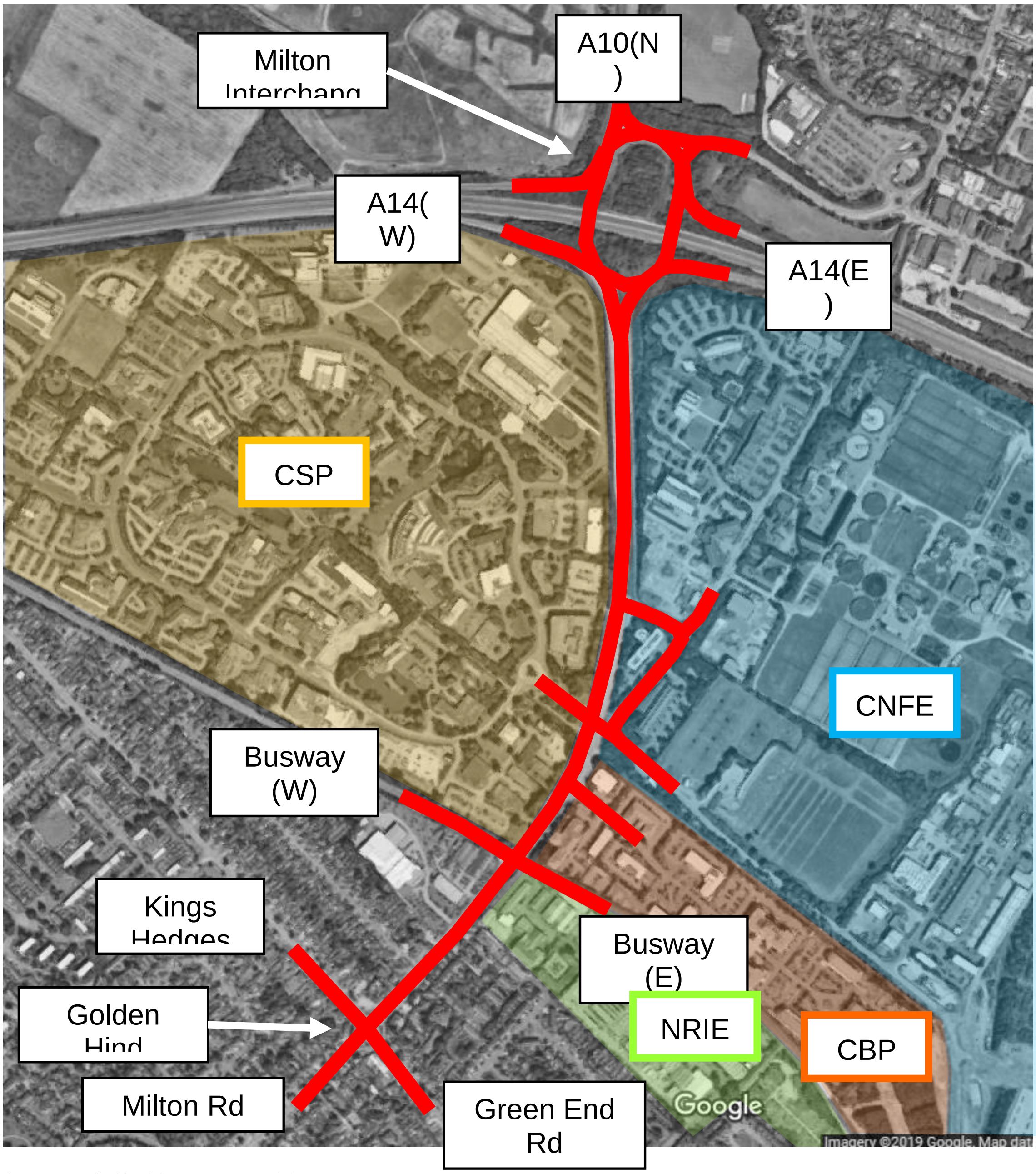
5.2.3 Assessment network

5.2.3.1 2017 'Base' network

The 2017 network reflects the existing 'Base' network provision and covers the area shown in Figure 32 below. This network coverage was agreed with CCC for impact testing because:

- it includes Milton Interchange to the north, which is the junction on the strategic road network that will be most affected by the development and which is already currently operating at or over capacity in peak periods
- it includes the junction of Milton Road with Kings Hedges Road and Green End Road – known locally as the 'Golden Hind junction' – to the south, which is the junction on the local road network that will be most affected by the development and which also operates at or over capacity in peak periods, and
- it includes all the main development access points

Figure 32: 2017 Base network coverage



Source: LinSig 2017 Base model

5.2.3.2 2031 ‘Do Minimum’ network

The Base network has been developed into a 2031 ‘Do Minimum’ network by adding in the highway schemes described in Section 3.3.3 above, namely:

- Highways England and Waterbeach developer-led Milton Interchange improvements
- Golden Hind improvements associated with the GCP Milton Road scheme

- Developer-led CSP Milton Road access improvements

This form of network represents the configuration that would exist in future without the AAP development scenarios in place.

5.2.3.3 2031 'Do Something' network

The 2031 'Do Something' network is the Do Minimum network plus any modifications necessary to facilitate the AAP development scenarios. Such modifications are identified through the modelling process described below.

5.2.4 Assessment demand

5.2.4.1 2017 existing demand

Existing demand is based on the 2017 traffic counts described in Section 4.2.1 above.

5.2.4.2 2031 'With Dev' demand

All 2031 demand matrices are comprised of two elements:

- Non-study-area-development-related background traffic, growthed up to 2031, and
- 2031 study area development traffic

The background traffic element is identified by removing all development-related flows from the 2017 traffic count matrix. This was then growthed up to 2031 by applying the following method:

- Zero growth was applied to background traffic flows south of Milton Interchange on the basis that this reflects the principle of Local Authority and Greater Cambridge Partnership targets for reducing traffic levels within Cambridge.
- For Milton Interchange and the A10, growth factors were derived by comparing CSRM2 model run outputs from the ECTS study, on the basis that the strategic network is more likely to experience some growth. In particular, the 2031 Scenario 4 model, which included full build-out at the new town north of Waterbeach and within the CNF AAP sites, was compared with the 2015 CSRM2 Base model. This method derived a 13% growth in non-development related flows for the AM peak and 17% for the PM peak by 2031.

Future development flows were then added to background traffic flows and the resulting person trip generation results presented in Section 4.4 above. Two development flow cases are considered, as follows:

- The 'Business-as-Usual' case, where future development trips are undertaken at existing car-driver mode-share levels, and

- The 'Trip Budget' case, where future development trips are undertaken at car-driver mode-share levels which result in no significant additional impacts on the surrounding highway networks

5.2.5 Assessment cases

The following assessment cases have been tested in order to determine trip budget and car mode shift levels for each development scenario used in this assessment.

Table 17: Assessment cases tested

Assessment case	Rationale
2017 Base	To establish existing level of highway performance and set a benchmark to measure future performance against.
2031 With-Dev Business-as-Usual Do Minimum	To identify level of highway impact in the hypothetical case where the development scenarios operate at existing car-driver mode-share levels.
2031 With Dev Trip-Budget Do Something	To identify, for each development scenario, the level of car mode shift required to achieve similar performance levels to 2017 Base scenario.

Source: Mott MacDonald

5.3 Modelling results

5.3.1 2017 Base results

Full AM peak and PM peak modelling results for the 2017 Base assessment case are attached in Appendix C.1, while a summary of these results is provided in the following table, in terms of:

- Practical Reserve Capacity (PRC): PRC is a measure used by the LinSig software of how much spare capacity a junction or network is operating with. Once PRC reaches zero (equivalent to a 90% degree of saturation), the junction/network is operating at-capacity, and once it goes below zero, the junction/network is operating over-capacity. It should be noted that PRC for a junction is based on its worst performing links/arms and, for a network, on its worst performing junction. PRC values of zero or less do not therefore necessarily mean that every link or junction is operating at or over capacity, but it does mean that at least one link or junction is. PRC is therefore a useful parameter for understanding overall performance.
- Total vehicle delay: This is the measure of the total delay at a junction or in a network that is experienced across all vehicles using that junction or network within the modelled period. It is measured in PCU-hours[31].

[31] PCU = Passenger Car Unit. This unit is used for converting all vehicle types to a single type for modelling purposes. Larger vehicles equate to more PCUs than smaller vehicles, according to industry-standard conversion factors

Table 18: 2017 Base model results summary

Network element	AM peak		PM peak	
	PRC	Delay	PRC	Delay
Milton Interchange	-8.0%	55.2 pcuHr	6.3%	37.7 pcuHr
Cowley Rd CNFE access	15.3%	15.8 pcuHr	9.4%	13.8 pcuHr
Milton Rd CSP access	5.1%	28.8 pcuHr	-1.3%	39.8 pcuHr
Milton Rd CBP access	33.2%	5.5 pcuHr	9.3%	16.3 pcuHr
Golden Hind junction	-13.1%	60.9 pcuHr	-11.9%	62.4 pcuHr
Overall network	**-13.1%**	**170.4 pcuHr**	**-11.9%**	**172.8 pcuHr**

Source: LinSig 2017 Base model

These results suggest the following about peak-period local highway network performance in 2017:

- Milton Interchange is operating over-capacity in the AM peak but with some spare capacity in the PM peak and lower delays.
- The development access junctions all operate within capacity in the AM peak and with less spare capacity in the PM peak, with the CSP junction operating over-capacity in this peak hour.
- The Golden Hind junction operates over-capacity in both peak hours.

These results define the highway performance envelope within which future development scenarios will need to operate in order not to result in a severe deterioration in existing conditions.

5.3.2 2031 With-Dev Business-as-Usual Do Minimum results

The following table summarises the headline modelling results for the 2031 With-Dev Business-as-Usual Do Minimum case for each development scenario (see Appendix 0 for full results). This scenario assumes:

- Existing network plus some improvements to Milton Interchange and to the CSP Milton Road junction (see Section 1.1)
- Existing traffic levels plus future background traffic growth and future study-area development scenario traffic (see Section 5.2.4.2)
- Existing car driver mode shares (see Section 2.4)

The same results for the 2017 Base are also provided for comparison.

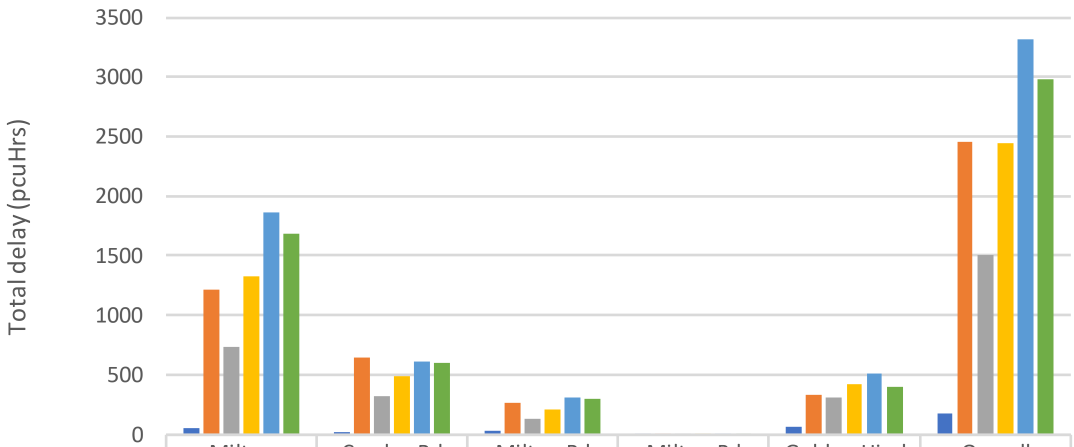
Table 19: 2031 With-Dev Business-as-Usual Do Minimum model results summary

Scenario	AM peak		PM peak	
	Network PRC	Total junction delay	Network PRC	Total junction delay
2017 Base	-13.1%	170 pcuHrs	-11.9%	173 pcuHrs
2031 HIF	-144.0%	2,461 pcuHrs	-66.0%	1,459 pcuHrs
2031 Option 1	-53.1%	1,511 pcuHrs	-59.1%	893 pcuHrs
2031 Option 2	-129.7%	2,450 pcuHrs	-91.2%	1,399 pcuHrs
2031 Option 3	-157.4%	3,314 pcuHrs	-159.0%	1,840 pcuHrs
2031 Option 4	-180.6%	2,984 pcuHrs	-67.2%	1,609 pcuHrs

Source: LinSIg 2017 base and 2031 DM models

The following charts show, for each peak period and in each scenario, total delay results for each junction and for the overall network.

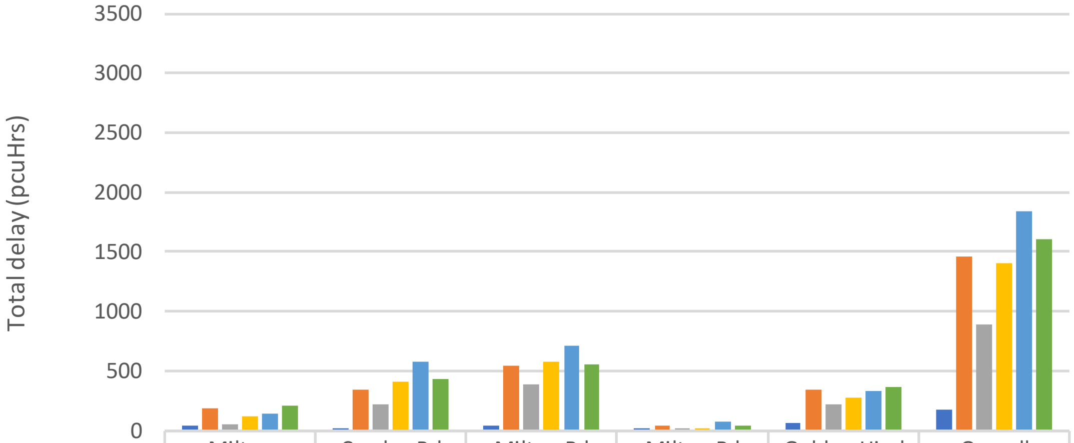
Figure 33: Total delay per junction / network per scenario – AM peak



	Milton Interchange	Cowley Rd CNFE access	Milton Rd CSP access	Milton Rd CBP access	Golden Hind junction	Overall network
Existing	55	16	29	6	61	170
HIF scenario	1214	645	262	7	329	2461
Option 1	739	315	134	6	313	1511
Option 2	1322	485	209	6	423	2450
Option 3	1865	611	312	8	514	3314
Option 4	1680	597	298	6	399	2984

Source: LinSig 2017 base and 2031 DS models

Figure 34: Total delay per junction / network per scenario – PM peak



	Milton Interchange	Cowley Rd CNFE access	Milton Rd CSP access	Milton Rd CBP access	Golden Hind junction	Overall network
Existing	38	14	40	16	62	173
HIF scenario	188	344	540	38	345	1459
Option 1	50	217	389	15	219	893
Option 2	115	408	581	16	276	1399
Option 3	142	572	715	73	332	1840
Option 4	209	433	559	38	365	1609

Source: LinSig 2017 base and 2031 DS models

These results clearly show how, if future development in the study area were to be delivered with no changes to current travel behaviour – on a ‘business as usual’ basis – total delays on the local highway network would multiply by a minimum of 5, and potentially up to 19 times, depending on the scenario delivered.

These results therefore confirm how future development will require significant changes to the way people and goods travel to and from these sites in order for impacts on the local highway network to be minimised.

5.3.3 2031 With-Dev Trip-Budget Do Something results

The purpose of the ‘With AAP’ Do Something tests was to identify the level of car driver mode shift that would be required for each development scenario to achieve similar local highway performance levels to the 2017 Base scenario. The parameter of total network delay was adopted to provide a real-world measure of performance which is comparable between scenarios. The development car mode share, and therefore number of development car trips, was iteratively adjusted downwards until the total network delay in each development scenario became approximately equal to the total network delay in the 2017 Base scenario.

Once this level of mode share reduction was identified, the performance needs of each development access junction was considered. It was found that, once the mode share reduction was applied and as a result of the increased balance between arrivals and departures, the access junctions were generally less stressed in future scenarios than in the base model. Any amendments required to these junctions is therefore to reflect this change in directional distribution rather than to increase overall capacity. These changes are summarised below in Section 5.5.

The following table summarises the headline modelling results for the 2031 With-Dev Trip-Budget Do Something case for each development scenario (see Appendix 0 for full results). This scenario assumes:

- Do Minimum network plus changes detailed in Section 5.5 below
- Existing traffic levels plus future background traffic growth and future study-area development scenario traffic (see Section 5.2.4.2)
- Car driver mode shares reduced to deliver 2017 total delay levels

The same results for the 2017 Base are also provided for comparison.

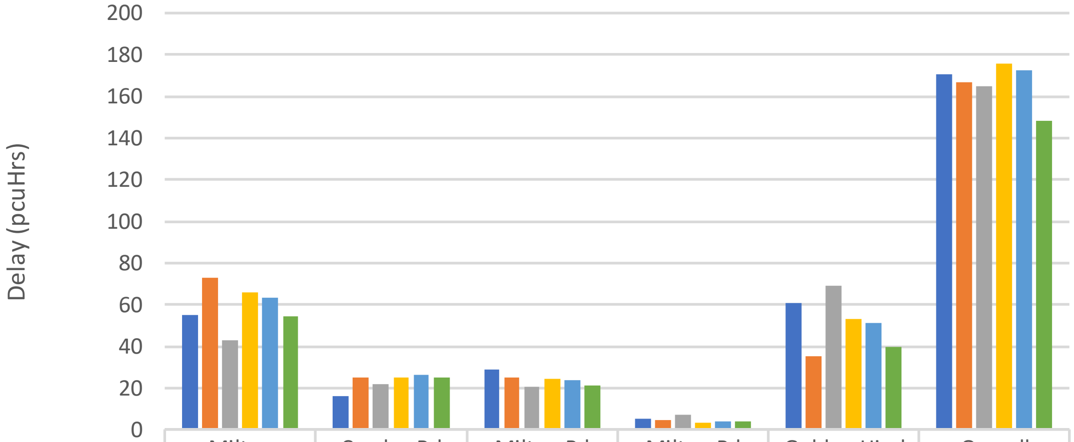
Table 20: 2031 With-Dev Trip-Budget Do Something model results summary

Scenario	AM peak		PM peak	
	Network PRC	Total junction delay	Network PRC	Total junction delay
2017 Base	-13.1%	170 pcuHrs	-11.9%	173 pcuHrs
2031 HIF	-9.3%	167 pcuHrs	-15.7%	172 pcuHrs
2031 Option 1	-14.6%	165 pcuHrs	-14.0%	162 pcuHrs
2031 Option 2	-10.4%	176 pcuHrs	-13.9%	168 pcuHrs
2031 Option 3	-10.4%	172 pcuHrs	-14.2%	161 pcuHrs
2031 Option 4	-4.7%	149 pcuHrs	-15.6%	171 pcuHrs

Source: LinSig 2017 base and 2031 DS models

The following charts show, for each peak period and in each scenario, total delay results for each junction and for the overall network.

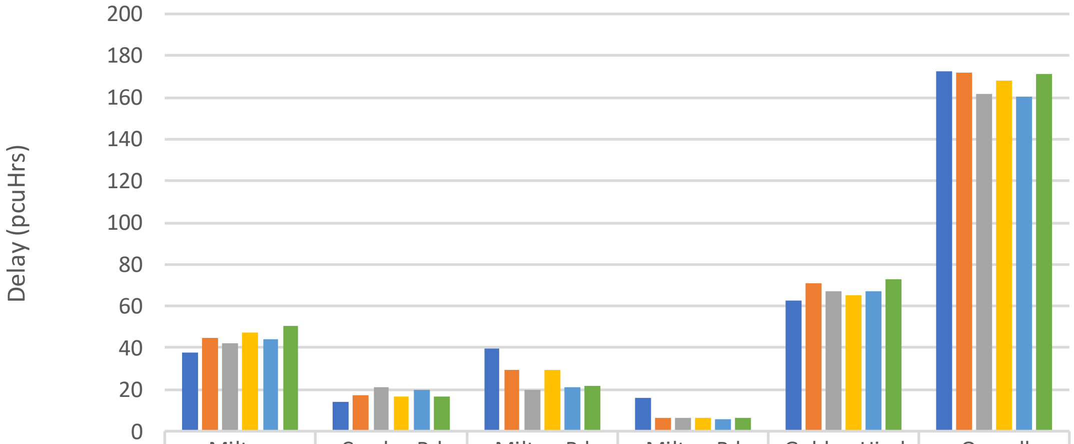
Figure 35: Total delay per junction / network per scenario – AM peak



	Milton Interchange	Cowley Rd CNFE access	Milton Rd CSP access	Milton Rd CBP access	Golden Hind junction	Overall network
Existing	55	16	29	6	61	170
HIF scenario	73	25	25	4	35	167
Option 1	43	22	21	7	69	165
Option 2	66	25	24	4	53	176
Option 3	64	27	24	4	51	172
Option 4	55	25	21	4	40	149

Source: LinSig 2017 base and 2031 DS models

Figure 36: Total delay per junction / network per scenario – PM peak



	Milton Interchange	Cowley Rd CNFE access	Milton Rd CSP access	Milton Rd CBP access	Golden Hind junction	Overall network
Existing	38	14	40	16	62	173
HIF scenario	45	17	30	6	71	172
Option 1	42	21	20	7	67	162
Option 2	48	17	29	7	65	168
Option 3	44	20	21	6	67	161
Option 4	51	17	22	7	73	171

Source: LinSig 2017 base and 2031 DS models

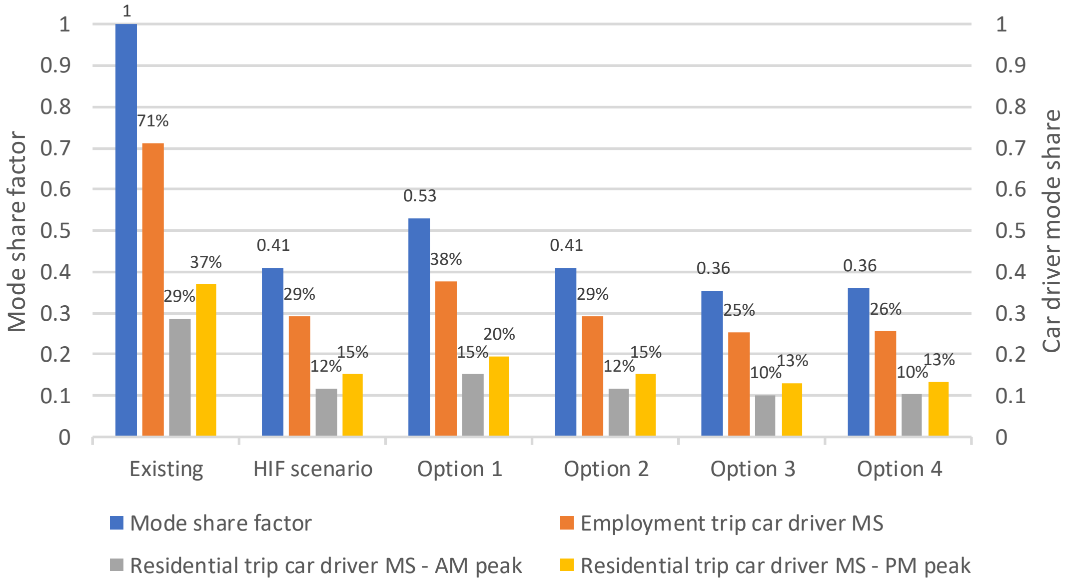
These charts show that, with the development scenarios, both total network delay and individual junction delay is similar to existing in both peak hours.

In terms of the mode shift per development scenario required to achieve these performance results, these are summarised in the following figure, which displays:

- The ‘mode share factor’ shown against the left-hand y-axis – this is the proportion of the existing development car driver mode share that would need to be achieved. For example, a mode share factor of 0.6 would mean that the future car driver mode share needs to be 0.6 of existing values, which would then mean a drop of 0.4 over existing.
- The resulting commute and residential car driver mode shares, shown against the right-hand y-axis – this is the result of applying the mode share factor to the existing mode shares detailed in Section 2.4 above.

The existing results are also included for reference.

Figure 37: Target car driver mode shares per development scenario



Source: Mott MacDonald calculation based on LinSig modelling results

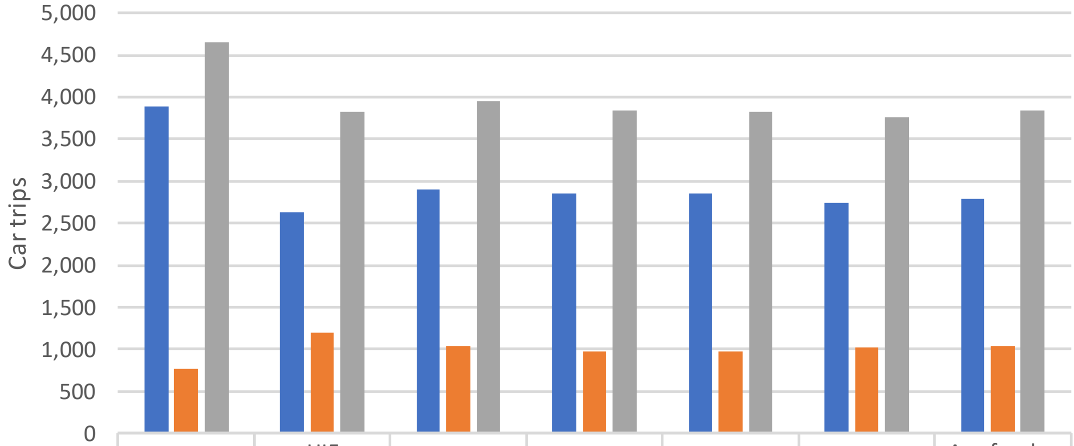
This chart confirms that a substantial change in future travel behaviour will be required to deliver significant levels of development of the AAP area within the existing local highway performance envelope, with drops in car driver mode share required of between 0.47 and 0.64 in order to achieve the 0.53 and 0.36 mode share factor changes.

The development external vehicular trip budget arising from these results is considered in the next section.

5.4 Quantifying the external vehicular trip budget

Based on the above target mode shares and derived from the above Do Something models, the following two charts show study area development trip arrivals, departures and two-way totals for each peak hour, and for the existing situation, each development scenario and for the development scenario average.

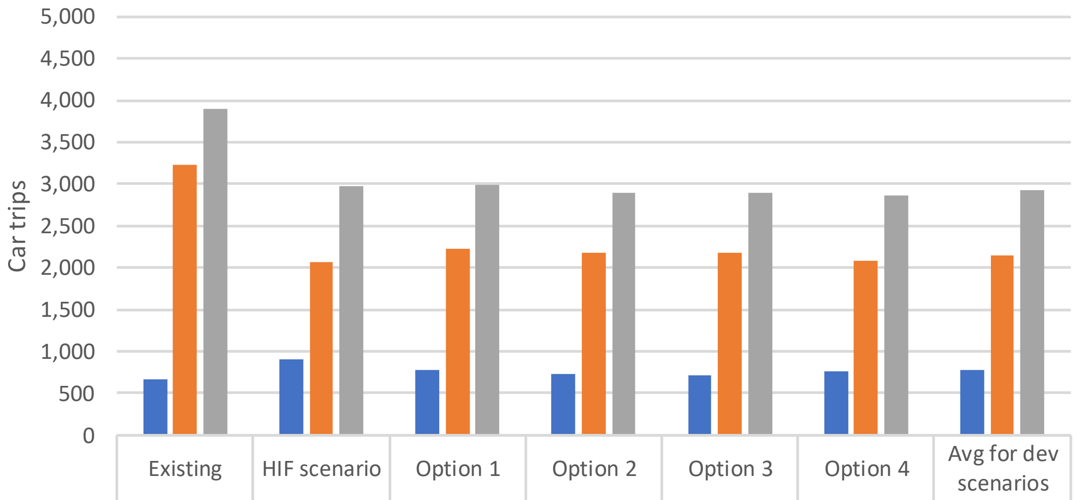
Figure 38: Target development external vehicular trip levels per scenario – AM peak



	Existing	HIF scenario	Option 1	Option 2	Option 3	Option 4	Avg for dev scenarios
Arr	3,891	2,632	2,906	2,855	2,857	2,738	2,797
Dep	765	1,199	1,044	983	976	1,024	1,045
Total	4,656	3,831	3,950	3,838	3,833	3,761	3,843

Source: LinSig 2017 base and 2031 DS models

Figure 39: Target development external vehicular trip levels per scenario – PM peak



	Existing	HIF scenario	Option 1	Option 2	Option 3	Option 4	Avg for dev scenarios
Arr	659	902	771	723	716	769	776
Dep	3,237	2,068	2,224	2,178	2,181	2,091	2,148
Total	3,895	2,970	2,994	2,901	2,897	2,860	2,924

Source: LinSig 2017 base and 2031 DS models

These charts show:

- A change in the distribution of arrivals and departures between the existing scenario, which is more tidal, and the development scenarios which are more balanced.
- Lower total flows in the development scenarios than existing, which compensates for background traffic levels being higher in 2031 than in 2017.

Based on the average of these development scenario results, it is suggested that the following trip budget levels be set for all study area development trips during the two peak hours:

Table 21: Suggested study area development external vehicular trip budget levels

Period	Development external vehicular trip budget level
AM peak hour	3,900 vehicle trips
PM peak hour	3,000 vehicle trips

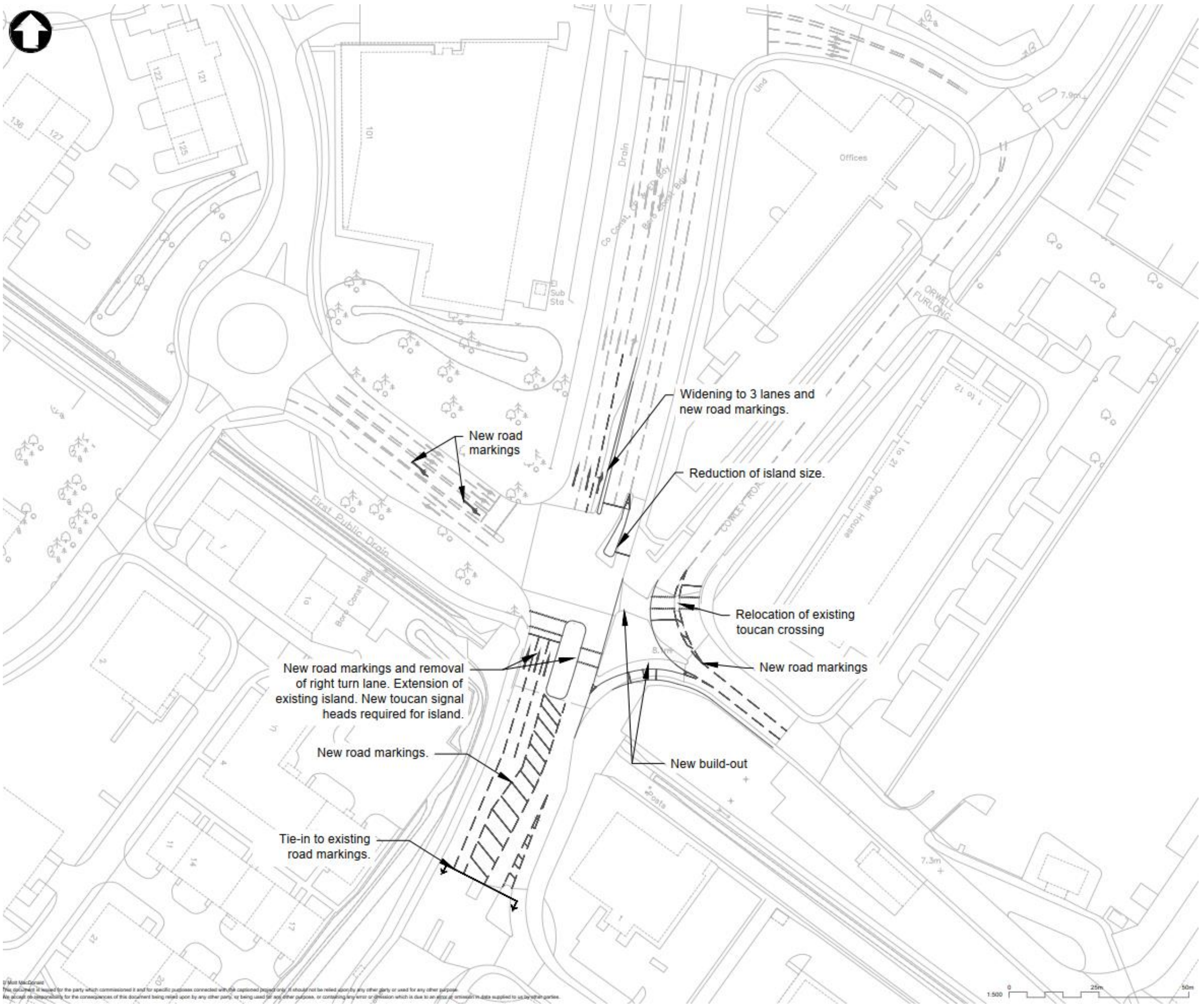
Source: LinSig DS models

5.5 Highway access implications

5.5.1 Development accesses

As noted above, as target development scenario trip levels need to be similar to existing levels to minimise the increase in future highway impacts, only minor adjustments to site access arrangements are needed to reflect changes in development trip distribution. The assumed changes for the above Do Something modelling process are shown in the following figure.

Figure 40: Development access concept-level changes adopted for Do Something modelling



Source: Mott MacDonald

This figure shows the following concept-level changes:

- Extended Milton Road northbound right-turn flare for Cowley Road (north) to accommodate increased turning traffic.
- Removal of Milton Road northbound right-turn to Cowley Road (south) to increase signal capacity available to other movements at this junction.
- Removal of Science Park ahead facility to Cowley Road (south) to increase footway available to pedestrians, to reduce vehicular conflicts with NMUs and

to allow the existing Cowley Road crossing to be placed in a more convenient crossing location.

5.5.2 Wider network implications

If the above development trip budget is not breached with future development scenarios, there should be no requirement for further off-site highway mitigation schemes beyond the committed schemes included in the Do Minimum modelling.

5.6 Development air quality implications

As stated in Section 2, the NEC area falls outside of the designated Cambridge AQMAs. Additionally, the proposed trip budget as identified above aims at retaining or improving existing development traffic levels. Therefore, no worsening of air quality is expected in the area immediately surrounding the NEC. It is also important to note that, in a scenario with no air quality improvements, as the number of residents increases in the NEC, the per capita emissions will be relatively lower.

Increase in provision and usage of P&R spaces could have the potential to generate a slight increase in traffic approaching the Milton Road P&R via the A14 which could potentially impact the AQMA on this corridor. However, vehicles approaching this location from the west via the A14 would only represent a small proportion of the demand for the P&R and, given the parking capacity at the P&R, the degree of this impact on traffic levels is expected to be minor due to the high flows along the A14.

Notwithstanding this, it is noted that this is only a high-level analysis, considered acceptable for this strategic study, and that a more detail assessment of the likely air quality impacts of the proposals should be undertaken as part of the planning process.

5.7 Development highway safety implications

The high-level review of personal injury collisions in the area over the 5 last years shown in Section 2 highlighted only minor accident clusters, with some incidence of cycle accidents on the stretch of Milton Road between the busway and Kings Hedges Road. However, no fatal accidents have been recorded over this period.

As is the case for air quality implications, the proposed external vehicular trip budget aims at retaining or improving existing traffic levels as shown in Section 5.4. Therefore, no significant negative impact is expected on highway safety due to the proposals at NEC.

The work undertaken to date indicates that there will need to be minor changes made to the site access junctions to accommodate the redevelopment of the AAP area. However, the exact form of these changes will be informed by the wider

AAP process as the site access arrangements will be informed by the urban design and place making for the area as a whole rather than just transport requirements.

In addition to this, as part of the measures to maximise internalisation and non-car accessibility (which are discussed in the sections below), improved connections are proposed both around the NEC area, as well as across Milton Road. These measures would further reduce some of the risks to NMUs by physically separating them from the highway environment with any improvements also requiring approvals by the Highway Authorities through the planning, safety audit and technical approvals processes.

5.8 Establishing development trip budget summary

A traffic modelling exercise has been undertaken to establish a vehicular trip budget level for the study area within which development expansion can take place without generating significant additional impacts on the local highway network, and to identify the level of car driver mode shift that would be required to achieve this. The results of the analysis suggest the vehicular trip budget level shown in Table 21 above and repeated here:

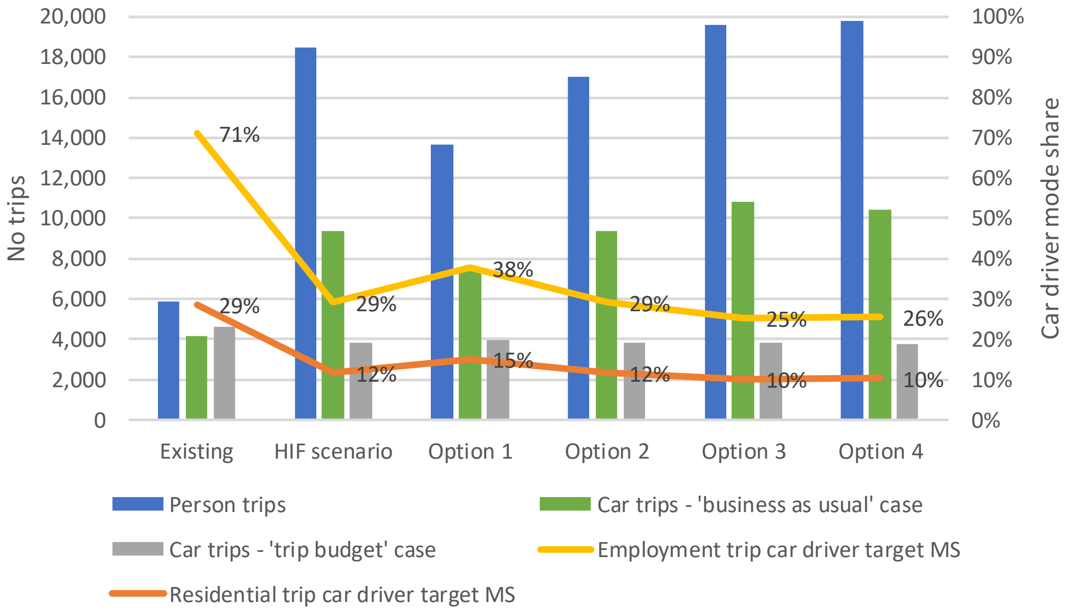
- AM peak hour: 3,900 two-way vehicle trips.
- PM peak hour: 3,000 two-way vehicle trips.

To allow for future background traffic growth, these development trip levels are a little lower than existing levels and therefore require the existing car driver mode share to decrease significantly if development growth is to be accommodated within the external vehicular trip budget limits. This is illustrated by the 'Business-as-Usual' modelling test where the application of the person-trip growth levels without car mode shift multiplies existing local highway delay levels by up to 19 times in the AM peak and by over 10 times in the PM peak. The modelling analysis therefore showed that to deliver this growth without increasing local highway network delays will require the following car mode shift outcomes:

These results are summarised in the following two charts which show, for each development scenario and peak hour:

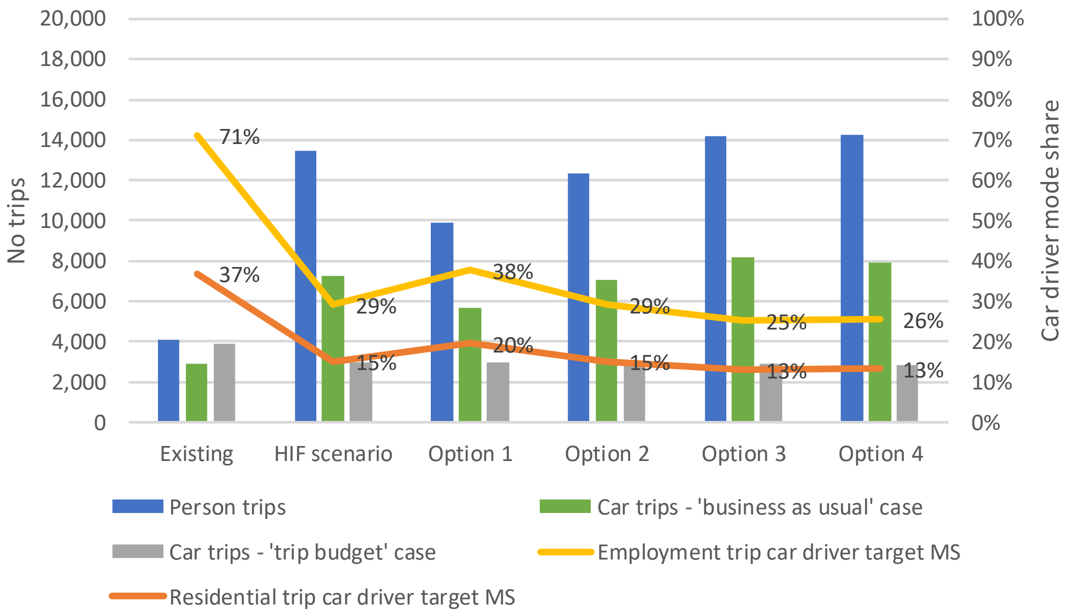
- Predicted total number of development person-trips
- Equivalent total number of development vehicle-trips if no mode shift from existing levels – the 'Business-as-Usual' case
- Equivalent total number of development vehicle-trips if trip budget mode-shift level achieved – the 'Trip-Budget' case
- The resulting car driver mode shares per development scenario and trip purpose

Figure 41: Development person trip, vehicle trip and mode share results – AM peak



Source: Mott MacDonald

Figure 42: Development person trip, vehicle trip and mode share results – PM peak



Source: Mott MacDonald

These charts clearly show how development car trips would more than double in most development scenarios without the significant drops in car driver mode share shown. Strategies and measures to achieve these changes in travel behaviour are discussed in the following sections.

In terms of the impact of the external vehicular trip budget on highway mitigation, air quality and safety, this section shows that:

- Only minor changes are required to the CSP and CNFE Milton Road accesses to accommodate the impacts of redistributed highway traffic.
- No changes are required or recommended for other off-site highway locations as the external vehicular trip budget would not allow for a growth in future development vehicle trips on the surrounding road network.
- Due to the external vehicular trip budget limiting a growth in development flows on the surrounding road network, air quality impacts are not expected.
- Similarly, the limiting of future development-related traffic growth will minimise the potential increase in highway safety impacts, while the measures considered in the next sections to improve NMU connectivity and priority to and between the study area sites should generate further highway safety benefits. Any change to the public highway, both committed and proposed, would also need to be approved via the Highway Authorities' safety audit process which should lead to further improvements.

6 Managing parking supply

6.1 Introduction

The purpose of this section is to consider how the management of parking supply and use in and around the study area can contribute to the achievement of future travel change objectives and sets out how parking levels can be established that are aligned to the level of vehicle trip-making established in Section 5. The chapter therefore provides the required basis from which a parking strategy for the AAP area can be developed.

6.2 The case for managing parking

Car parking provision has a strong relationship with traffic generation and so parking standards have an important role to play in managing traffic levels associated with development.

The NPPF (para 105) notes that, if setting local parking standards for residential and non-residential development, policies should take into account:

a. the accessibility of the development
b. the type, mix and use of development
c. the availability of and opportunities for public transport
d. local car ownership levels, and
e. the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles

The NPPF also notes (para 106) that "*maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport*".

Given the existing and predicted levels of congestion on the local highway network set out in Section 2, and the need to manage its use, it is considered that the development of maximum parking standards should be a key tool to support delivery of the proposed trip budget.

However, the local authorities also have aspirations that go beyond simple maintenance of the status quo for the area. The trip budget is a ceiling but, with travel on foot, by cycle and public transport being the modes of choice for trips to and from the area, motorised vehicle trip-making should ideally be less than this, thereby not only providing decongestion benefits but supporting the creation of a neighbourhood where the car is far less dominant than it is today.

The purpose of this section, therefore, is to set out an approach to managing parking provision across the NEC area. This includes on-site provision, together with proposals for off-site parking management. The work focusses on the residential and employment uses (i.e. B1 / B2) as these are the key contributors to external trip-making given the other uses on the site are assumed to be ancillary and supporting the primary land uses and should not be major external trip generators in their own right. Parking standards for such ancillary uses, and in particular for retail and leisure uses, should therefore be limited to operational uses only, with limited or no on-street parking opportunities, and would need to be accompanied either by prohibitive design or parking restrictions.

Although the analysis focusses on what level of parking supply would be needed so as not to exceed the calculated trip budget, it is recognised that there are aspirations to create a very different sort of place in the NEC area and that parking provision is one of the key tools underpinning this.

Further work will therefore be needed on matters such as urban design, and testing the developer market view, on the extent to which parking supply can reasonably be reduced even further. Given this, the standards calculated in this section should be viewed as maxima for the NEC site as a whole but, through design and further development, there is an expectation that implemented provision should be even lower and that there will be variable provision across the site depending on localised on-site circumstances.

6.3 Workplace parking issues

6.3.1 Adopted parking standards

Business-use parking standards for the area are set out in the adopted Local Plans. The following two tables show the standards for Cambridge City and South Cambridgeshire respectively. As noted below, whilst maximum standards are provided, both authorities highlight that lower provision will be appropriate in some areas.

Table 22: Cambridge City Council business use parking standards (Use Class B)

Type of Development	Inside controlled parking zone	Outside controlled parking zone
Offices, General industry	1 space per 100 sqm Gross Floor Area plus disabled car parking	1 space per 40 sqm Gross Floor Area, including disabled car parking

Source: Cambridge City Council Local Plan (2018)

Table 23: South Cambridgeshire business use parking standards (Use Class B)

Type of Development	Indicative Car Parking Provision
Business (B1)	1 space per 25m2 (under 2,500m2) 1 space per 30m2 (over 2,500m2)
General Industrial (B2)	1 space per 50m2

Source: South Cambridgeshire Local Plan (2018)

The Cambridge City Local Plan notes that these levels should not be exceeded but may be reduced where lower car use can reasonably be expected. Similarly, the South Cambridgeshire Local Plan promotes a design-led approach to parking with provision required to take into consideration the site location, type and mix of uses, car ownership levels, availability of local services, facilities and public transport, and highway and user safety issues, as well as ensuring appropriate parking for people with impaired mobility.

6.3.2 Parking provision elsewhere

In seeking to derive appropriate levels of provision for the NEC area, it is useful to consider parking provision elsewhere to provide some high-level benchmarking.

The following table sets out estimated levels of parking provision across a range of other sites. These benchmark values are returned to later in this report to provide comparator values against which the proposed standards can be set.

Table 24: Parking provision benchmarks

Site	Source	Parking Ratio
Existing Cambridge Science Park	MM estimate[32]	1:27sqm
Existing CNFE + CBP	MM estimate	1:28sqm
Existing CBC	MM estimate	1:61sqm
Various sites (Bristol, Manchester, Peterborough)	TRICS[33]	1:108 to 1:205sqm
CB1 – Cambridge Station area	Planning Applications / as built[34]	1:156 to 1:280

Source: Mott MacDonald

6.3.3 Development scenarios and implications for parking standards

Total employment floorspace levels and assumed job levels across the NEC site for each of the scenarios are set out in the following table. This is based on data set out in Table 8 and in Figure 23 above and represents primary B uses only given that other uses, such as retail and education, are assumed to be ancillary and therefore provide a support function for other on-site uses.

[32] See Section 2.3.4.1 of this report for derivation of estimated standards

[33] TRICS sites BR-02-A-2 St Thomas Street Bristol (600m from Bristol Temple Meads) 1:205sqm, CA-02-A005 New Road Peterborough (1,000m from Peterborough Station) 1:122sqm, GM-02-A-07 Moseley Street Manchester (1,000m from Manchester Victoria) 1:108sqm

[34] Based on planning applications for blocks A1/A2 (1:156sqm), E1 (1:280sqm), J2 (1:182sqm) and I2 (1:221sqm)

Table 25: Total approximate employment floorspace and job levels (primary employment only)

Scenario	Employment GFA sqm	Employees
HIF	364,370	18,900
Option 1	353,460	18,200
Option 2	455,460	23,200
Option 3	538,460	27,000
Option 4	439,460	23,200

Source: Mott MacDonald / CCC, SCDC, and CCiC

To assess the parking standard implications of these alternative levels of ‘primary’ employment development, given the vehicle trip budgets established in Section 5, the following 4-step methodology has been adopted. It is important to note that these are estimates of *on-site* maxima and that these will need to be accompanied by *off-site* and on-street parking control measures to manage supply more widely and to prevent undesirable parking in neighbouring areas.

i. AM peak vehicles arrivals to the employment uses have been extracted from the trip budget analysis.

Figure 38 in Section 5.4 above shows that the average vehicular trip budget for AM peak hour is comprised of 2,797 arrivals and 1,045 departures. Of the arrivals, the analysis predicts that 2,616 vehicles are generated by the employment uses.

ii. This latter total has been applied to the TRICS-based employment arrival and departure profile used in the trip budget analysis to derive a parking accumulation profile to show what and when the peak parking demand would be assuming the trip budget is not breached.

The following table shows the TRICS-derived arrival and departure profile and, following application of this to that element of the trip budget set out in (i) above, the resultant parking accumulation profile. This analysis shows that, in order for the employment-based element of the AM peak trip budget not to be breached (emboldened), no more than 4,185 business-based parking spaces should be provided (also emboldened) across the NEC site as a whole. This is less than both the current level of provision (8,545 spaces) and the current demand for employment-based parking (4,407 vehicles) across the site as shown previously in Table 4.

The implications of this on a site-by-site basis will need to be worked through as part of subsequent, more detailed, development of a NEC parking strategy but this clearly implies a need for parking provision to be reduced through time at the Science Park, and for development applications on CNFE to be accompanied by levels of parking which do not exceed, and ideally improve upon, the implied standards estimated below.

Table 26: Implied parking accumulation assuming AM peak employment trip budget not breached

Time	Arrival %	Departure %	Trip arrivals	Trip departures	Accumulation
07:00-08:00	18%	2%	1258	167	1091
08:00-09:00	37%	4%	**2616**	266	3440
09:00-10:00	13%	4%	912	268	4084
10:00-11:00	4%	3%	294	195	4183
11:00-12:00	4%	4%	266	264	**4185**
12:00-13:00	5%	8%	359	554	3990
13:00-14:00	6%	5%	435	364	4062
14:00-15:00	4%	5%	307	325	4045
15:00-16:00	3%	8%	195	565	3674
16:00-17:00	3%	13%	197	912	2960
17:00-18:00	2%	27%	149	1843	1267
18:00-19:00	1%	18%	67	1215	119
Total	100%	100%	7056	6937	-

Source: Mott MacDonald and TRICS
Note: Assumed no overnight parking. Early departures are assumed to represent drop-offs.

The next step in the methodology is as follows.

iii. The peak parking demand has then been compared to the proposed level of floorspace for each development scenario to derive an implied parking standard.

The following table shows the employment parking standards that would need to be applied, by scenario, in order for the trip budget not to be breached. This gives rise to a range of between 1 space per 84 sqm and 1 space per 128 sqm depending on the scenario.

Table 27: Maximum employment parking standards by scenario

Scenario	Business floorspace (sqm)	Maximum parking provision (spaces)	Implied parking standard
HIF	364,370	4,185	1:87
Option 1	353,460	4,185	1:84
Option 2	455,460	4,185	1:108
Option 3	538,460	4,185	1:128
Option 4	439,460	4,185	1:105

Source: Mott MacDonald analysis

Finally, the 4th step in the methodology followed is shown below.

iv. The parking standard derived in the table above has then been compared to the range observed elsewhere, as set out in Section 6.3.2, to provide some benchmarking context.

The range of required standards set out in Table 27 all sit within the range implemented elsewhere and shown in Table 24. All options would require less parking than would be provided through application of CBC-implied standards (at around 1:60sqm), but more could potentially be provided than that observed at CB1 (between 1:156 and 1:208sqm) and in other central urban locations (between 1:108 and 1:205sqm) without the trip budget being breached. There may, of course, be scope for multi-use of spaces due to turnover during the course of the day and this will need to be reflected in any parking management regime implemented on the site.

6.3.4 Wider employment-related parking issues

The analysis set out above quantifies the overall level of parking provision, and hence parking standards, for the various development options.

Within this, however, there are a range of wider issues for which more detailed policy position will need to be established as the AAP develops further. These include:

- the split of provision east and west of Milton Road which, as noted above, will require reductions in car parking provision through time at Cambridge Science Park if the trip budget threshold is not to be breached
- working with the urban design team on further developing the approach to type and location of parking on-site including potentially minimal to no parking provision close to key transport interchanges such as Cambridge North Station and around busway stops
- the proportion of disabled parking spaces required and more specific guidance on the location of those spaces which, as a rule, should be conveniently located for ease of access to destination buildings
- provision of spaces to further encourage higher car occupancy and discourage single occupancy vehicle trips, with these spaces also to be more conveniently located than standard spaces, and the management of these spaces to be reflected in travel plans for the site
- provision of electric vehicle charge points, and identification of a potential proportion of spaces set aside for those based on forecast changes in the vehicle fleet.
- the role of employment-based car clubs for potential use for employers' business trips which would ideally be implemented on a site-wide basis to provide a critical mass of demand, and
- the interaction with, and implications if any, of any wider policy changes including any initiatives that might come forward from the Greater Cambridge Partnership's City Access project.

6.4 Residential parking issues

6.4.1 Adopted parking standards

Residential parking standards for the area are set out in the adopted Local Plans. The following two tables show the standards for Cambridge City and South Cambridgeshire respectively.

Table 28: Cambridge City Council Residential Parking Standards (Use Class C3)

Dwelling Size	Inside Controlled Parking zone[35]	Outside controlled Parking zone
Up to 2 bedrooms	No more than 1 space per dwelling	No more than a mean of 1.5 spaces per dwelling
3 or more bedrooms	No more than 1 space per dwelling	No less than a mean of 0.5 spaces per dwelling, up to a maximum of 2 spaces per dwelling

Source: Cambridge City Council Local Plan (2018)

Table 29: South Cambridgeshire Residential Parking Standards (Use Class C3)

Dwelling Size	Indicative Car Parking Provision
Any size	2 spaces per dwelling – 1 space to be allocated within the curtilage. Additional provision may be needed for visitors, service vehicles, salesmen.

Source: South Cambridgeshire Local Plan (2018)

6.4.2 Local car ownership

In seeking to derive appropriate levels of residential parking provision for the NEC area, it is useful to consider car ownership levels elsewhere to provide some high level benchmarking. The following table shows average levels of car ownership per household by Lower Super Output Area (LSOA) within Cambridge and Medium Super Output Area (MSOA) in nearby South Cambridgeshire parishes to understand the variation currently observed in central City, suburban and the immediate 'necklace villages'.

[35] If there are already parking restrictions in the area or in the city centre.

Table 30: Car/van ownership by household

Location	No cars/vans	1 car/van	2 cars/ vans	3 cars/vans	4+ cars/vans	Total cars/vans	Total House-holds	Average cars/vans per household
Kings Hedges	1,341	1,817	619	102	39	3,535	3,918	0.90
Arbury	1,382	1,801	587	93	23	3,360	3,886	0.86
East Chesterton	1,272	1,996	661	87	22	3,674	4,038	0.91
West Chesterton	1,197	1,770	644	95	23	3,447	3,729	0.92
Castle	635	1,001	363	63	20	1,997	2,082	0.96
Abbey	1,405	1,902	644	112	43	3,720	4,106	0.91
Newnham/Market	1,309	1,535	423	84	21	2,726	3,372	0.81
Petersfield	1,501	1,428	371	54	12	2,391	3,366	0.71
Romsey	1,427	1,786	523	91	30	3,230	3,857	0.84
Coleridge	1,302	1,747	597	118	24	3,397	3,788	0.90
Cherry Hinton	985	1,793	746	124	28	3,777	3,676	1.03
Trumpington	1,077	1,641	603	113	38	3,347	3,472	0.96
Queen Ediths	869	1,547	787	175	46	3,844	3,424	1.12
Histon/Impington	655	1,961	1,238	267	90	5,635	4,211	1.34
Milton	365	1,176	851	178	56	3,661	2,626	1.39
Girton	374	1,293	840	189	76	3,869	2,772	1.40

Source: ONS (Census, 2011)

Observed car ownership levels vary from around 0.70 cars per household in central areas such as Petersfield through to around 1.40 in out-of-City locations such as Girton and Milton. By contrast, average car ownership levels in metropolitan areas can be even lower. For example, the average in Inner London based on the same data source is 0.55.

6.4.3 Implications for policy

Reducing parking provision within residential development is a challenging policy lever to implement. Low parking standards can potentially lead to reduced car ownership levels and hence reduced car use, thereby bringing decongestion and place-making benefits. In other words, having access to more cars may encourage more ‘unnecessary’ car use.

On the other hand, there is anecdotal evidence from other residential developments elsewhere in Cambridgeshire (for example at the Loves Farm development in St Neots, and Orchard Park in Kings Hedges, Cambridge) that not providing parking to accompany development can simply lead to increased on-street, and sometimes inappropriate, parking.

The recommended approach to residential parking standards at NEC is therefore to seek to strike a balance between these two but with demand for car travel being managed, in particular, through implementation of parking restraint measures at the ‘destination end’ whilst also not overproviding at the residential, or origin, end.

As there are wider aspirations from the Local Planning Authorities for the site to become a new urban quarter for Cambridge, it is therefore recommended that residential parking standards are established based on car ownership data from potential comparator locations. This would be aligned with the proposed future travel mode shares for the area, which aim at achieving similar splits as those observed in central Cambridge.

Petersfield Ward in Cambridge City has average car ownership levels of 0.7 cars per household, demonstrating that the City already has vibrant urban neighbourhoods with low levels of car ownership.

However, there is an aspiration by both the planning authorities and the development partners to make NEC a very different place by putting people, rather than cars first in the design of the area. Early engagement with the development industry suggests that there is an appetite for even more ambitious residential parking standards for the area than is seen at some comparator locations locally.

Given this, it is proposed that a *maximum* site-wide parking standard based on the assumption that NEC car ownership levels should not exceed 0.5 cars per household is adopted as an initial start point. Early engagement with the development industry suggests that more ambitious standards could be achieved and so lower levels should be provided wherever possible. Similar levels have already been achieved on other highly accessible sites within Cambridge. Within this, a more detailed residential parking strategy should be developed which should seek to drive this down further and incorporate neighbourhoods of car-free housing around highly accessible transport nodes but with some recognition that in more peripheral locations within the site there may be some need for provision of dwellings with allocated parking.

This residential parking strategy should be produced when thinking on place-making and urban design concepts for NEC are more firmly defined and can build upon good-practice elsewhere. As such, the role of urban design in designing out opportunities for inappropriate parking will be highly relevant for this site.

This could also be treated as a marketing policy for the area where, by providing viable alternatives to the car for residents of the new housing development and by not offering ample parking and ease of car movement, dependence upon the car may be reduced.

6.5 Mitigating parking displacement

6.5.1 On-Street Parking Restrictions

On-site parking restrictions could lead to some displaced parking onto neighbouring roads. This could include residents or employees based in the area who travel by car as the main travel mode and who park in nearby areas where parking is available and is unrestricted. The first/last leg of the journey is then covered on foot.

An 800m distance (approximately 10-minute walking) is generally accepted as the maximum that an average person would be willing to walk to/from their cars as part of their daily commute and this should be taken as the minimum buffer surrounding the site. Taking this into consideration, several residential areas can be identified to the south of the NEC where uncontrolled parking could currently take place.

Opportunities for on-street parking would be limited due to existing residential parking needs and driveways. However, displaced parking from the NEC would add to existing parking demand and have the potential to not only take away any spare capacity, but also deteriorate the quality of the street scene significantly. Importantly, off-site parking with onward access by foot would also result in further car trip-making which could result in the overall trip budget being breached. Resident Parking Schemes (RPS) could tackle this issue by prioritising parking on those nearby areas for local residents and restricting commuter, visitor, and off-site residential parking.

Over the coming five years, CCC is considering several areas across the city where an RPS could potentially be introduced. Chesterton East, West and South are among these, covering the area extending between Milton Road and the railway tracks, from Cowley Road in the north to the A1134 in the south. Notwithstanding this, as RPSs require the support of the residents in the area to be able to be implemented (over 50% of all responses), it is unclear at this point in time whether they will ultimately do so. Parking demand and capacity in these areas to the south of the NEC (including the King's Hedges area) should therefore be monitored as the development of the AAP Area comes forward, with measures to control off-site parking consulted on if considered necessary.

Proposed improvements across the A14 to the north of the site could make this route more attractive for walking and cycling journeys. This could also lead to commuter traffic being displaced to Milton. Therefore, monitoring of parking demands in this area should also be investigated as the development comes forward.

It is also noted that other factors, such as any security concerns in leaving unattended cars for the entirety of the day or night, can also play a role in deciding whether to park cars outside of the vicinity of your home or workplace. Such factors could further discourage parking outside the area.

6.5.2 Alternative Off-Site Parking Provision

There is the opportunity to increase the role of park and ride (P&R) accessibility to the area to assist in offsetting any potential impact due to displaced commuter parking in neighbouring areas. A strong location for this due to its relationship to the NEC would be the Milton Road P&R, to the north of the A14.

In order to make this offer more attractive and ensure its viability, frequent and reliable connections would need to be provided between the P&R and the Site; particularly with the CSP, given that the majority of the proposed employment offer is located there.

Several routing options have been investigated that look at providing a segregated direct link off the A10 which would avoid congestion and delay issues at the Milton interchange and, therefore, offer a genuine benefit compared to travelling by private car. Furthermore, with the aim to maximise the speed and reliability of the service, this could be linked to the guided busway, thus providing a quicker passage all the way to the Cambridge North Station (CNS).

It is anticipated that, in the short term, this shuttle system could be in form of a bus. However, in mid-long term, other alternative mass transit solutions could fulfil this role, which would have to be compatible with future travel systems introduced in Cambridge and nearby environs.

Any potential routing would have to be developed as part of forthcoming work in the area, including the New Town North of Waterbeach to North East Cambridge Public Transport Study.

In addition to regular car parking spaces, secure cycle parking spaces could also be provided at Milton Road P&R. This, combined with an appealing pricing strategy and an attractive route, could provide an enticing alternative to some commuters. Moreover, e-bikes and e-scooters could make use of this route and secure parking facilities, which would make such an alternative travel mode more likely. Travel Plan measures across the NEC development could look at raising awareness of these travel opportunities, with potential for incentives being provided to those travelling to the site via such alternative travel modes.

To further assist with this, Variable Message Signage (VMS) could be installed along the A14 approaches to the Milton Interchange, as well as on the A10 to the north of the P&R. These could relay real-time messaging in regard to congestion further to the south and parking availability at the P&R (and even within the NEC), thus ensuring a greater level of communication and raising awareness of this facility. This VMS scheme could also provide journey time/pricing comparisons where obvious benefits can be achieved to make this more appealing.

Although the proximity of the Milton Park and Ride facility means this clearly has an important potential role in serving the site, other Park and Ride sites around the city can also have role to play if appropriate services are in place, and their use is promoted through NEC-based travel planning.

6.6 Managing parking supply summary

This section has considered how the management of parking supply and use in and around the study area can contribute to the achievement of future travel change objectives. It sets out an approach to parking provision and management across the NEC area, including on-site provision, together with proposals for off-site parking management.

The approach focusses on the residential and primary employment uses (i.e. B1 / B2) as these are the key contributors to external trip-making. Other uses are assumed to be ancillary and supporting. Parking standards for retail and leisure uses, should be limited to operational uses only, with limited or no on-street parking opportunities which would need to be accompanied either by prohibitive design or parking restrictions.

To assess the parking standard implications of the levels of employment development proposed with the different mixes, given the vehicle trip budgets established in Section 5, the following 4-step methodology has been adopted:

i. AM peak vehicles arrivals to the employment uses have been extracted from the trip budget analysis.
ii. This has been applied to the TRICS-based arrival and departure profile used in the trip budget analysis to derive a parking accumulation profile which shows what, and at what time of day it occurs, the peak parking demand would be assuming the trip budget is not breached.
iii. The peak parking demand has then been compared to the propose level of floorspace for each development scenario to derive an implied parking standard.
iv. The parking standard derived has then been compared to the range observed elsewhere to provide some benchmarking context.

This process gives rise to a range of between 1 space per 84 sqm and 1 space per 128 sqm depending on the scenario, which sit within the range of standards implemented elsewhere, and thus considered an acceptable ceiling. Importantly, however, these implied standards should be considered as maxima, and not targets in their own right, with lower levels of provision adopted wherever possible so that NEC can move towards becoming a less car dominated new urban quarter for Cambridge. Overall this analysis suggests that site-wide employment parking should not exceed 4,185 spaces but that through good design, non-car accessibility, promotion of non-car transport, and active management a lower level should be sought. A site-wide approach to managing and allocating employment-based car parking within this ceiling should be implemented to, where possible, reduce building-specific allocations and allow this to be balanced across the site.

Reducing parking provision within residential development can potentially lead to reduced car ownership levels and hence reduced car use, thereby bringing decongestion and other benefits. On the other hand, this could have the potential to also lead to displaced parking on surrounding areas.

The recommended approach to residential parking standards at NEC is therefore to seek to strike a balance between these two but with demand for car travel being managed, in particular, through implementation of parking restraint measures at the 'destination end' whilst also not overproviding at the residential, or origin end.

As there are wider aspirations from the Local Planning Authorities for the site to become a new urban quarter for Cambridge, it is recommended that residential parking standards are informed by, but pushed down even further than, car ownership data from some potential comparator locations. Given this, it is proposed that, as a start point, provision across the NEC should not exceed 0.5 cars per household on average, as observed at certain sites in central wards in Cambridge City. Early engagement with the development industry suggests that more ambitious standards could be achieved and so lower levels should be provided wherever possible. Further reductions should be readily achievable in a high accessibility location such as NEC as this has already been achieved on other highly accessible sites within Cambridge. These standards should be viewed as maxima with there being an expectation that lower levels should be achieved as broader design concepts for the site emerge.

Within this, a more detailed residential parking strategy should be developed to incorporate neighbourhoods of car-free housing, particularly around highly accessible transport nodes. Although non-car accessibility across the site needs to be of a high standard throughout, the detailed residential parking strategy may need to consider whether locations within the site that are less well-placed with respect to non-car modes could be accompanied by levels of parking that are closer to the identified maximum.

To mitigate potential parking displacement, parking demand and capacity in the areas within approximately 800m distance (approximately 10-minute walking) of the NEC should be monitored as the development comes forward, with mitigation considered as necessary. This would include the Chesterton East, West and

South, and the King’s Hedges areas to the south and Milton to the north, but also potentially further afield should ongoing monitoring suggest wider displacement impacts.

To assist in offsetting any potential impact due to displaced commuter parking, the following additional measures are considered to have high viability.

- Increasing Park and ride (P&R) provision accessible to the site, with a strong location for this being the Milton Road P&R, to the north of the A14 and others around the City if appropriate connectivity can be achieved.
- To make this offer more attractive, frequent and reliable public transport connections could be provided by means of a segregated link off the A10 (via Mere Way), which could be linked to the guided busway to provide a quicker passage all the way to the Cambridge North Station (CNS).
- Secure cycle parking spaces could also be provided at Milton Road P&R. This, combined with an appealing pricing strategy and an attractive segregated route, could provide an enticing alternative to some commuters.
- Variable Message Signage (VMS) could be installed along the A14 approaches to the Milton Interchange, as well as on the A10 to the north of the P&R, to relay real-time information regarding congestion and parking availability at the P&R (and even within the NEC).

The role of parking restraint, alongside other complementary measures, in supporting delivery of the trip budget, is considered further in Section 9.

7 Encouraging internalisation

7.1 Introduction

The purpose of this section is to consider how the internalisation of future development trips within the study area and its immediate surrounds can be maximised so that external trips covered by the trip budget can be minimised, and what measures are required to best encourage these internal person-trips to be undertaken by sustainable modes.

7.2 Encouraging internalisation through development mix

Section 3.2.2 above defines the land use mix of each potential AAP development scenario considered as part of this study, and shows a mix of:

- A1-A5 ancillary retail
- B1/B2/B8 employment
- C1 hotels
- C3 housing
- D1 public services
- D2 education

In the following sub-sections, the potential for this mix of uses to contribute towards site trip internalisation is assessed and determined.

7.2.1 Trip purpose distribution

By looking at what percentage the different trip purposes represent during key travel times, it can be determined how much of the development trip generation in the AM and PM peak hours is likely to be work-related traffic, and how much is traffic for other purposes and directed to other uses.

The industry standard National Trip End Model (NTEM) TEMPro dataset version 7.2 disaggregates travel into eight home-based journey purposes by mode. However, for this assessment, these have been grouped into the following six main categories listed below:

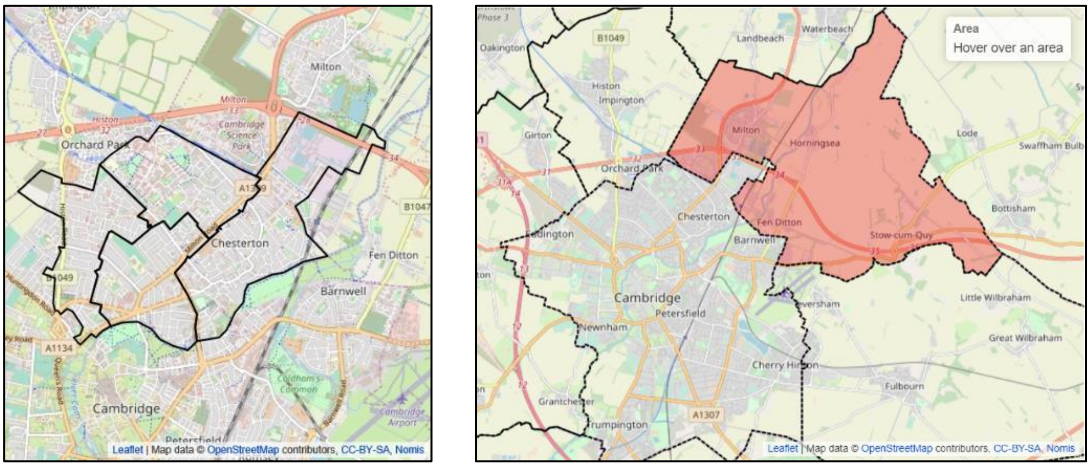
- Work related (grouping ‘Work’ and ‘Employers business’)
- Education
- Shopping
- Personal business
- Recreational/social
- Leisure (grouping ‘Visiting friends/family’ and ‘Holidays’)

The proportion of trips associated with each journey purpose varies for each travel mode and by time of day (e.g. school trips take place in the morning peak but are not present in the evening peak as they largely take place between 15.00 and 16.00).

NTEM TEMPro provides the above data for several time periods. Data for the morning (07.00-10.00) and evening (16.00-19.00) weekday peaks has been utilised to determine the overall journey purposes during each. National Travel Survey (NTS) data can then be applied to separate this peak period data into individual hours (using tables NTS0502 and 0503, combined data for years 2013 to 2017).

Data has been extracted and averaged for the five Middle Layer Super Output areas (MSOAs) in the vicinity of and containing the NEC area to provide a more representative journey purpose breakdown. These are Cambridge MSOAs 001-004 and South Cambridgeshire 007, which are shown in the following figure. Furthermore, data was obtained for future year 2031 to account for future trends as agreed with CCC.

Figure 43: Areas considered for assessment (Cambridge MSOAs 001-004 and South Cambridgeshire 007)



Source: Nomis, web-based database.

The following table sets out the home-based journey purpose split for all travel modes for the considered MSOAs in 2031 during the AM and PM peak hours.

Table 31: TEMPro home-based journey purpose distribution – combined modes

Time	Work Related	Education	Shopping	Personal Business	Leisure (recreational / social)	Leisure (visiting friends/family; holidays)
AM Peak hour	37%	48%	6%	6%	2%	2%
PM Peak hour	47%	6%	15%	8%	10%	14%

Source: TEMPro Home-based Journey Purpose data, all travel modes, origin and destination combined, for Cambridge MSOAs 001-004 and South Cambridgeshire 007 in 2031.

A summary of the raw data and calculations behind these results can be found in Appendix D.1 for reference.

7.2.2 Residential-to-work trips

A review of the 2011 Census 'Distance Travelled to Work' dataset has been undertaken looking at trends within Cambridge as a whole to estimate the potential relationship between people working and living within the NEC area. This analysis identifies the proportion of residents who have the potential to be employees in the area and vice versa, thus avoiding an external trip either to or from the study area. To this end, the number of people living and working within less than 2km of their homes or jobs has been considered to be a reasonable representation of the NEC study area.

This Census data shows that, on average, approximately 30% of all employed Cambridge residents work within 2km of where they live, which equates to 18% of the total Cambridge workforce. A summary of the processed 2011 Census data behind these results can be found in Appendix D.2 for information.

The actual level of internalisation of commute trips, therefore, depends on the ratio of study area housing to jobs, with the internalisation rate being determined by whichever use produces the lower number of internal trips. So, for example, if there are 1,000 work-capable residents within 2km of 2,000 jobs, then the potential number of internalised jobs is the lower of 30% of 1,000 and 18% of 2,000. In this case, it would be the former at 300 compared with the latter at 360.

For the purpose of this study, this internalisation matching exercise has been undertaken at the trip level by job and dwelling, so that the number of internal commute trips generated by the total housing component of the study area is the same as the number of internal commute trips attracted by the total employment component of the study area.

This process for each peak hour is illustrated by the following two tables which show the potential internalised commute-trip volumes which would be produced by NEC housing compared with that produced by NEC jobs. Based on this, the optimum ratio of dwellings to jobs which would produce the same, and therefore maximum, number of internal trips in each peak hour is also shown. In interpreting the table, the following should be noted:

- For comparison purposes, the calculation is for 1,000 dwellings against 1,000 jobs.
- The second column shows the proportion of all residential and employment trips which are commute trips in the peak hour, as per

- Table **31** above (with the value for employment trips being 100%)
- The third column shows the maximum proportion of these which could be internal, as described above.
- The fourth column shows the resulting maximum proportion of all residential and employment trips which could be internal commuting trips in the peak hour.
- The fifth column shows the typical total peak-hour person-trip volume predicted for each land use type, taken from the trip-rate data provided above in Section 4.3.
- The sixth column then shows the resulting maximum number of internalised peak-hour commute trips which could be produced by each land-use.
- The final column shows the ratio of dwellings to jobs that would produce an equal, balanced and therefore maximum number of internal trips from each land use.

Table 32: Commute-trip internalisation rate comparison by trip-end generator – AM peak

Land use	% commute trips (a)	% internal commute trips (b)	Max internal rate (c = a x b)	Person trip rate (d)	No. internal trips (e = c x d)	Ratio for equal internal trips
Per 1,000 dwellings	37%	30%	11%	976	108	0.80
Per 1,000 jobs	100%	18%	18%	485	86	1.00

Source: Mott MacDonald

Table 33: Commute-trip internalisation rate comparison by trip-end generator – PM peak

Land use	% commute trips (a)	% internal commute trips (b)	Max internal rate (c = a x b)	Person trip rate (d)	No. internal trips (e = c x d)	Ratio for equal internal trips
Per 1,000 dwellings	47%	30%	14%	738	103	0.58
Per 1,000 jobs	100%	18%	18%	336	59	1.00

Source: Mott MacDonald

These tables show that the optimum ratio of dwellings to jobs for maximising internalisation is about 0.8 dwellings per job for the AM peak hour and about 0.6 dwellings per job in the PM peak hour.

For comparison purposes, the following table takes the B1/B2/B8 jobs and C3 dwellings data from Figure 23 above and shows, for each AAP development scenario, the proposed ratio of dwellings to jobs. The existing and existing+consented scenarios are also shown for reference.

Table 34: Dwellings to jobs ratio per development scenario

Scenario	Total B1/2/8 jobs	Total dwellings	Dwellings to jobs ratio
Existing	12,000	0	0.00

Scenario	Total B1/2/8 jobs	Total dwellings	Dwellings to jobs ratio
+Consented	17,300	0	0.00
HIF scenario	18,900	9,200	0.49
Option 1	18,200	5,500	0.30
Option 2	23,200	6,650	0.29
Option 3	27,000	7,600	0.28
Option 4	23,200	8,700	0.38

Source: Mott MacDonald

This table shows that, while all scenarios fall below the optimum ratio for maximising commute trip internalisation, they improve considerably on the existing and existing+consented scenarios where there is no scope for internalisation at all. However, these results mean that commute internalisation levels for all scenarios will be determined by the residential end of the trip. Increasing the level of housing and/or decreasing the level of employment in each scenario would move the ratio closer to the optimum for maximised internalisation potential.

7.2.3 Residential-to-education trips

All proposed development scenarios include provision of D1 and D2 land uses on-site, which comprise early years and primary education.

A review of the 2011 Census 'Age by single year' dataset for the Cambridge MSOAs 001-004 and Milton Super Output Area (South Cambridgeshire 007A, 007B and 007C) has been undertaken. This analysis allows the potential future on-site demand for each education level to be estimated by identifying the percentage of children within each applicable age bracket. Table 35 below shows a summary of this exercise, while a summary of the raw data and calculations can be found in Appendix D.3. It should be noted that this is not a substitute for a more detailed analysis which might be undertaken by the authorities for education planning purposes and it is also acknowledged that the actual NEC population age profile may differ from the average shown. This is, however, considered reasonable for the purposes of AAP-level transport analysis.

Table 35: Predicted age structure of future under-18 resident population

Description	Percentage of resident population	Percentage of education trips
Estimated number of children under 4 years old (pre-school)	5.2%	26.1%
Estimated number of children between 4 and 11 years old	7.8%	39.1%
Estimated number of children between 12 and 18 years old	6.9%	34.8%
All children	**19.9%**	**100.0%**

Source: 2011 Census Data, dataset QS103EW - Age by single year.

7.2.3.1 Nursery trips

Provision of early years education on-site is expected to accommodate some of the future children living in the NEC area in the future. However, it is not considered necessary to provide nurseries with capacity for all the children, as not all of those will attend a nursery, and many will only attend on a part-time basis.

It is also noted that some children may attend a nursery located off-site, but it is considered that those would most likely be taken as part of a linked trip (e.g. employment purpose). Therefore, very few external trips would be expected to be undertaken in relation with nursery purpose alone and 100% internalisation of these trips is considered reasonable.

7.2.3.2 Primary education trips

Following discussions with CCC, it is understood that on-site primary schools will only cater for NEC's demand with no expectation to provide places for children from outside of the development. Therefore, it has been assumed that children will travel to the schools from within the site by either active modes or being dropped-off by parents on their way to work.

In the event that any children are taken to an off-site school, these would be expected to be taken as part of a linked trip (e.g. employment purpose). Therefore, 100% internalisation of these trips is considered reasonable.

7.2.3.3 Secondary education trips

It is understood further to discussions with CCC that, at this stage, the development will not generate sufficient demand for a new standalone secondary school. Therefore, all trips related to this use have been assumed to take place external to the site.

It is also understood, however, that provision has been made within the emerging study area spatial framework for a secondary school in the event that this should this be required, which would, in principle, have the potential to assist in reducing the number of external trips. Notwithstanding this, the size and type of school would need to be given careful consideration in line with final housing proposals to limit the number of trips coming from elsewhere and maximise the demand arriving from within the site.

7.2.3.4 Residential-to-education trip summary

Based on the above assessment, the following table summarises:

- The proportion of education trips generated by each school type, taken from Table 35 above

- The assumed internalisation rate per school type
- The resulting proportion of education trips which are internalised

Table 36: Education trip internalisation summary

Education trip type	% of education trips (a)	Internalisation rate (b)	% internal education trips (c = a x b)
Nursery	26.1%	100.0%	26.1%
Primary	39.1%	100.0%	39.1%
Secondary	34.8%	0.0%	0.0%
All	**100.0%**	**-**	**65.2%**

Source: Mott MacDonald

This shows that the proposed development scenario education facility provision would allow for about 65% of all development education trips to be internalised, with the remaining 35% affecting the external network. If a secondary school were to be provided within the study area, this proportion would drop further.

7.2.4 Residential-to-shopping trips

Trips with a shopping journey purpose can be further split into comparison and convenience retail trips, with the latter characterising local trips to purchase everyday items. These can be broadly defined as food, drinks, tobacco, newspapers, magazines, cleaning materials, and toilet articles[36].

Given the proposed potential for ancillary retail provision on-site, a reasonable assumption is that convenience trips would represent approximately 30% of shopping trips, with 100% of these trips during the peak periods being internal. For robustness, it has been assumed that all comparison trips will be external. Therefore, an overall internalisation rate of 30% has been assumed for the shopping journey purpose, as summarised in the following table.

Table 37: Shopping trip internalisation summary

Shopping trip type	% of shopping trips (a)	Internalisation rate (b)	% internal shopping trips (c = a x b)
Convenience	30%	100%	30%
Comparison	70%	0%	0%
All	**100.0%**	**-**	**30%**

Source: Mott MacDonald

7.2.5 Residential-to-personal business trips

The TEMPro definition of 'personal business' includes visits to services including hairdressers, betting shops, dry cleaners, solicitors, banks, estate agents, libraries, churches and medical consultations.

[36] Planning Portal online, Department for Infrastructure. Planning Policy Statement 5: Retailing and Town Centres, Glossary of Terms.

Once again, given that the proposed potential services within the study area would comprise at least some community and health facilities, a conservative estimate of 30% internalisation has been assumed for robustness. Should this offer be increased, then the level of internalisation of trips towards this purpose would also be increased.

7.2.6 Residential-to-recreational/social trip

This trip purpose represents trips to sports facilities, as well as to A3-A5 use (pubs, cafes, bars), and account for only a small proportion of trips as shown in

Table **31**. Given that this assessment is for the peak hours only and that the proposed development will provide these facilities, it is assumed that all trips within this minor category would be 100% internalised.

7.2.7 Residential-to-visiting friends/family/holidays trips

As a worst-case scenario, it has been assumed that friends and family of study area residents will all be based off-site. Therefore, for robustness, an internalisation rate of 0% has been applied to this trip purpose.

7.2.8 Summary of potential trip internalisation levels

By combining the peak-hour trip purpose distribution results shown in

Table **31** above with the trip purpose internalisation rates described in the above subsections, the following tables summarise overall residential-trip internalisation rates potentially achievable for the study area.

Table 38: Estimated overall NEC residential trip internalisation levels – AM pk

Parameter	Commute	Education	Shopping	Personal Business	Leisure (recreational / social)	Leisure (visiting friends/family holidays)	All
Peak-hour purpose distribution (a)	37%	48%	6%	6%	2%	2%	**100%**
Internalisation rate by purpose (b)	30%	65%	30%	30%	100%	0%	-
Resulting internalised trip level (c = a x b)	11%	31%	2%	2%	2%	0%	**47%**

Source: Mott MacDonald

Table 39: Estimated overall NEC residential trip internalisation levels – PM pk

Parameter	Commute	Education	Shopping	Personal Business	Leisure (recreational / social)	Leisure (visiting friends/family holidays)	All
Peak-hour purpose distribution (a)	47%	6%	15%	8%	10%	14%	**100%**
Internalisation rate by purpose (b)	30%	65%	30%	30%	100%	0%	-
Resulting internalised trip level (c = a x b)	14%	4%	4%	2%	10%	0%	**35%**

Source: Mott MacDonald

These tables show an estimated potential internalisation level for NEC residential trips of 47% in the AM peak and 35% in the PM peak, comprised of:

- 11% for commute and 36% for non-commute trips in the AM peak, and
- 14% for commute and 21% for non-commute trips in the PM peak

As noted in Section 7.2.2 above, the actual commute trip internalisation rate depends on the proposed ratio of dwellings to jobs, as the potential employment-generated commute-trip internalisation rate is 18%. For each development scenario, therefore, the following two tables show, for each peak hour, the internalisation rate for each main trip type considered above and how they combine to generate the overall internalisation rate for all development trips. The trip types are:

- Employment-generated commute-trips
- Residential-generated commute-trips
- Residential-generated non-commute trips

Table 40: Overall development trip internalisation levels by scenario – AM peak

Development scenario	% employment generated commute trips internalised (max 18%)	% residential generated commute trips internalised (max 11%)	% residential generated non-commute trips internalised (max 36%)	% of all development generated trips internalised
HIF scenario	11%	11%	36%	24%
Option 1	7%	11%	36%	19%
Option 2	7%	11%	36%	19%
Option 3	7%	11%	36%	19%
Option 4	9%	11%	36%	21%
Avg	**8%**	**11%**	**36%**	**20%**

Source: Mott MacDonald

Table 41: Overall development trip internalisation levels by scenario – PM peak

Development scenario	% employment generated commute trips internalised (max 18%)	% residential generated commute trips internalised (max 14%)	% residential generated non-commute trips internalised (max 21%)	% of all development generated trips internalised
HIF scenario	12%	11%	21%	17%
Option 1	8%	12%	21%	14%
Option 2	8%	12%	21%	14%
Option 3	8%	12%	21%	14%
Option 4	9%	11%	21%	15%
Avg	**9%**	**12%**	**21%**	**15%**

Source: Mott MacDonald

This shows that, on average, with the land use mix proposed for each development scenario, the average internalisation rate by peak hour ranges between 15% and 20% of all trips.

7.3 Encouraging internalisation through connectivity

In order to ensure that the high level of internalised trips predicted for the study area are achieved and also undertaken by sustainable modes only, good internal connectivity between land uses is essential. This is considered in the following subsections.

7.3.1 Overcoming severance

Severance is the separation of people and places due to a physical barrier that presents limited or inconvenient crossing points. As described in Section 2.3.1 above, the primary causes of severance across the NEC area are Milton Road and the segregated guided busway, which are exacerbated by the presence of existing large-scale self-contained developments such as the CBP. Milton Road runs on a north to south direction directly between the CNFE/CBP/Nuffield Road and the CSP sites, providing up to 3 lanes per direction of traffic in the vicinity of the CNFE. The busway runs on an east to west direction, directly to the south of the CSP and between the CBP and Nuffield Road sites, and crossing opportunities are limited to Cambridge North station (CNS) and at the junction with Milton Road.

There is therefore the need to reduce physical severance across the area, relieving pressure on the road network of short journeys across Milton Road by providing viable segregated pedestrian and cycle connections across it; and providing alternative routes for journeys north to south that avoid the need to travel on Milton Road along with traffic.

A plan providing an overview of the proposed interventions for the study area is included in Section 10, where the connectivity improvements discussed below, as well as other interventions introduced in Sections 8 and 9, are shown indicatively.

7.3.1.1 Milton Road

The Milton Road / CSP Road / Cowley Road junction is still regarded as the ideal location for a crossing, as cyclist and pedestrian desire lines in the area converge here. This could be achieved via either an at-grade or a grade separated crossing, with this option being subject to further traffic, placemaking and viability testing. Minor improvements are proposed at this stage to the existing at-grade crossing facilities as part of the highway access strategy for the site, which include closure of the Cowley Road access and removal of the right turn lane on Milton Road south. This allows for a wider refuge island to be provided on Milton Road and a shorter crossing distance across the southbound lane. The proposed potential improvements are shown in Figure 40. These would need to be refined as site proposals are worked up in greater detail.

To support the level of internalisation indicated in Section 7.2, it is recommended that consideration be given to the feasibility and viability of providing a grade-separated facility, as well as, or in addition to a signalised at-grade option. These two crossings would, in principle, provide sufficient alternatives and capacity to cater for those pedestrians and cyclists travelling to, from and across the area depending on their origins and destinations within the two sites. However, it is imperative that the NEC is treated as a whole and that sufficient crossing opportunities are created that keep interaction with traffic on Milton Road to a minimum. Without this, internal trips crossing Milton Road would have to be considered external at least partly as they would affect highway capacity along that important corridor, and disbenefit themselves from the severance effect of the road.

The location of crossing points will be dependent on final study area spatial framework proposals. However, given the current and potential future layout of the sites, as well as the current and future desired lines for pedestrians and cyclists, a further alternative crossing point should be considered between the Milton Interchange and the current pedestrian crossing further south to improve east-west connectivity in the north of the AAP area. Given the cycling and pedestrian mode shares that will likely be needed in any of the tested scenarios to stay within the external vehicular trip budget, further detailed assessment will be needed as subsequent masterplanning for the area progresses to understand the volumes of pedestrians and cyclists who will need to cross the site east to west. The options that have been tested as part of the vehicular trip budget calculations have indicated that grade separated crossings would be preferable. Any solution that is not grade-separated will need to demonstrate that the effect on Milton Road and the A14 is acceptable and, critically, that it meets the needs of non-motorised users.

Grade separated crossings for public transport on Milton Road have not been considered a requirement at this stage. However, consideration should be given via the design process for any grade separated crossings to be potentially used by micro modes such as e-scooters, as well as, in the future, by autonomous vehicles.

7.3.1.2 Busway and existing developments

Additional pedestrian and cycling crossing points on the busway would also be beneficial to allow freer movement of residents and employees within the wider NEC site, avoiding having to bypass these barriers by making lengthy diversions by travelling to Milton Road or CNS.

Once again, the location of any new crossing on the busway, and related access and through routes via the CBP, would depend on the final spatial framework and subsequent masterplan design and would need to pass through relevant safety audit approvals. However, a shared crossing in the form of a Toucan between the Nuffield Road and CBP sites would significantly assist in increasing connectivity and permeability for the site. In addition, a direct connection between the CSP and the bus stops on the busway directly to the south would need to be retained and improved to allow for any increase in demand as a result of the development proposals in the NEC area.

There is also the potential to connect CSP to the existing residential areas in North Cambridge by introducing a connection through Garry Drive. This should be explored further as the spatial framework and subsequent masterplan develops.

7.3.2 Internal shuttle system routes

A shuttle service could be introduced linking the CSP with CNS, as well as with the Milton Road P&R further afield to provide a bypass to congestion issues at Milton Interchange during peak times.

To strike a balance between tried and tested solutions and those more innovative but yet uncertain transport methods it is anticipated that, in the short term, this shuttle system could be in form of a bus. However, in mid-long term, other alternative mass transit solutions could fulfil this role, which would have to be compatible with future travel systems introduced in Cambridge and nearby environs.

Such a shuttle system could also occur as a mix between existing and more innovative transport systems. The latter could include for instance self-driving vehicles such as buses, to fully autonomous driverless vehicles such as pods or trains, or even grade separated cable cars to avoid all interaction with the surrounding highway network. These more innovative measures could be brought forward and supported through planning, subject to the relevant design and technical approvals processes. As noted above, consideration should be given when developing options for crossings on Milton Road for these to be potentially used by micro modes such as e-scooters, as well as, in the future, by autonomous vehicles.

As stated previously, it is imperative that interaction with traffic on Milton Road is reduced as much as possible, impacts as a result of any NEC shuttle system on the performance of the two key external junctions surrounding the NEC (Milton Interchange and Golden Hind junction) being minimised.

Routing of such a shuttle system should therefore seek to make use of the existing guided busway facility near the Site as well as sections within the NEC and other areas of land beyond the Site’s boundary. Consideration of alternative routing during the AM and PM peaks to take advantage of the tidal traffic flows in the area and, in particular, to / from each of the areas (i.e. CSP and CNFE) should also be undertaken.

Bus priority options or similar arrangements for alternative mass transit solutions could be explored going forward to assist with this potential issue. Furthermore, other grade separated solutions could be further explored as development progresses including, as aforementioned, cable cars.

7.4 Encouraging internalisation through a spatial framework

As shown in Figure 3, the site currently benefits from good access to high-quality public transport provision, including train services via the CNS to the south-eastern area of the site, and bus services via the busway and Milton Road. This provides the opportunity to use these services from Day One.

The future spatial framework for the NEC area should aim to ensure that it is a good place to both live and work in, providing all the amenities that the residents and employees need, as well as good accessibility across the site and connectivity with neighbouring communities.

A key factor on the spatial framework and associated access and transport strategy is the provision for residents, employees and visitors of an attractive, comprehensive, and permeable network of sustainable travel opportunities to provide viable alternatives to travel by private car. This will have to be an intrinsic part of the design which, together with the parking strategy, will focus on constraining traffic flows to/from the site to the available trip budget as identified earlier in the report.

Pedestrian and cycle routes currently exist in and around the site, and future improvements and links are also planned for the area as indicated in Section 3. These must be respected and integrated within the spatial framework to ensure continuity and consistency for NMUs both from inside and outside the area.

The principles set out below will need to be at the heart of the spatial framework and subsequent masterplan development, noting that this list is not exhaustive, and thus further opportunities should be investigated as the process progresses:

- Public transport accessible to all within 400m of local bus services and 800m of the CGB.
- Clear wayfinding, with all land uses connected by a network of footpaths and cycleways, so that it easy to move across the study area by these modes. This network needs to provide a simple and legible set of routes around the study area to key destinations, in many cases parallel to roads and streets but with clear lines of sight / wayfinding via landmarks to the places that people need to walk to. Furthermore, any needed infrastructure should be provided prior to occupation so that desired behaviours and patterns are set from the start.
- Where possible, the priority hierarchy on streets and roads within the study area should place active travel modes first, then public transport, and ultimately private cars, creating cohesive streetscapes that maximise the area’s appeal. The objective would be to maximise pedestrian focused streets and spaces as much as possible increasing placemaking while limiting access by private car where achievable to reduce its attractiveness. In other words,

create an enticing place that positively encourages walking and cycling for short trips, instead of car usage.

- A parking strategy including parking standards will need to be present, based on the principles established above in Section 6, that is aligned with the defined trip budget. This should limit ancillary uses' provision to operational use only and aim to provide limited/no on-street parking opportunities through either prohibitive design or CPZ's.
- Residential parking could be provided at secure locations within NEC which are further from residential areas, thereby reducing car dominance on the street network and the impact of car parking on the public realm but allowing a level of ownership of private vehicles but making their use less attractive.
- Education provision needs to be accessible to all residents, so their location should be centralised. Furthermore, support of secondary schools within the catchment area should be monitored with the potential to be increased or introduced within the NEC area to allow for a reduction / removal of trips related to this journey purpose.
- Retail/commercial floor space should look inward to the site and not be visible from Milton Road to limit pass-by trips. It should also be spread out throughout the site to maximise accessibility whilst avoiding higher trip attraction. In terms of food retail unit size, only small-medium supermarket should be provided (approximately 200-600sqm), with no customer parking. However, this should be reviewed on a case-by-case basis through planning to ensure appropriate reach/catchments within the Site.
- Similar assumptions for fitness and leisure provision in terms of both parking, size and location. As with retail/commercial space, any provision should be considered in detail through the planning application to ensure low car trip making and higher reach within the study area.
- Ancillary / supporting facilities proposed within the site (e.g. retail, commercial, community, etc) should be provided early in the development process to assist in the early establishment of sustainable travel patterns and reduce external trip generation.
- Explore opportunities for alternative housing ownership models to increase internalisation (e.g. residential provision linked to employment). This could also include:
  - potential changes to the AAP development mixes and quantum in order to help reducing trip budget impact and increase internalisation levels; as well as
  - introduction of an incentive scheme to maximise resident-to-employee ratio (e.g. housing developments associated with employers in the area or tax reductions for people who work and live in the area should these be possible through current fiscal regimes).

- Promotion of a marketing campaign developed to create a sense of modern living to aid in attracting residents to the area that are more likely to use alternative travel modes other than car. This could be assisted by:
  - offering innovation through wider architectural styles and themes across the site
  - spreading housing types throughout the site to create a vibrant and mixed community
  - apply eco-features that add value to the development (e.g. extensive drainage systems or high-quality insulation)
  - good investment on community facilities to develop tighter communities better prepared to live together
- Appropriate development of servicing and delivery strategies that limit servicing trips to off peak times and include drop off areas to facilitate online shopping and deliveries with a view to minimising shopping trips.

7.5 Encouraging internalisation summary

Local TEMPro data combined with National Travel Survey and 2011 Census data show evidence of trips during peaks being clearly split by journey purpose during the peak travel hours. The same data also supports analysis of the level of trip internalisation that could be achieved for across different trip purposes by contrasting said end trip purposes with land uses with the potential to be provided within the NEC area.

Based on this analysis, it is estimated that the mix of land uses proposed for each AAP development scenario considered by this study could result in between about 21% and 25% of all development trips being internal to the study area. External trips, and more importantly, external car trips, can therefore be reduced significantly by ensuring that the appropriate mix of land uses are delivered as part of the spatial framework for the site.

To achieve this, it is critical that the physical severance across the area is successfully reduced by providing viable pedestrian and cycle connections in order to connect different parts of the NEC area and land uses coming forward on each. This could include a combination of at grade and grade separated crossings on Milton Road and the busway.

A shuttle system service could be introduced to aid with travel between the most distant parts of the NEC area and connect these with key destinations further afield such as the Milton Road P&R. This service should be aimed at maximising efficiency and reliability whilst minimising delays by providing a route that is mostly segregated from traffic.

An attractive and comprehensive network of sustainable travel opportunities to provide viable alternatives to travel by private car will have to be an intrinsic part of the spatial framework and associated access and transport strategy which, together with the parking strategy, will focus on constraining traffic flows to/from the study area to the identified trip budget.

Measures to increase the external accessibility of the study area by non-car modes and to increase the use of these modes for external trips is considered in the next Section.

8 Increasing non-car accessibility and use

8.1 Introduction

With study area parking supply managed and trip internalisation maximised, the purpose of this section is to consider how the remaining external development trips can be catered for as much as possible by non-car modes through existing, planned and potential investment in transport measures and the promotion of behavioural change.

8.2 Increasing non-car accessibility

8.2.1 Increasing NMU accessibility

The accessibility of the study area for Non-Motorised Users (NMUs) will be significantly improved by the above described proposals or recommendations, as follows:

- the Greenway network and related improvements described in Section 3.3.1 will increase the accessibility of the study area for NMUs travelling from nearby settlements outside of Cambridge
- the proposed Chisholm Trail and Milton Road improvements also described in Section 3.3.1 will increase NMU accessibility to the study area from, and across, the City, and
- the recommendations in Section 7.3.1 on resolving study area severance issues will increase accessibility within and between the NEC sites

Section 3.4 above also considers the potential of the emerging micro-mobility (e-bike and e-scooter) modes to further extend the future popularity and catchment of non-motorised travel to the study area.

Lastly, Section 2.3.5 details the already substantial travel plan measures in place in the study area which promote the use of cycling and walking, while further potential measures are discussed below.

The combination of these proposals and recommendations will all be essential for helping to deliver the future mode-shift travel targets required to allow future NEC development to operate within the trip budget.

8.2.2 Increasing public transport accessibility

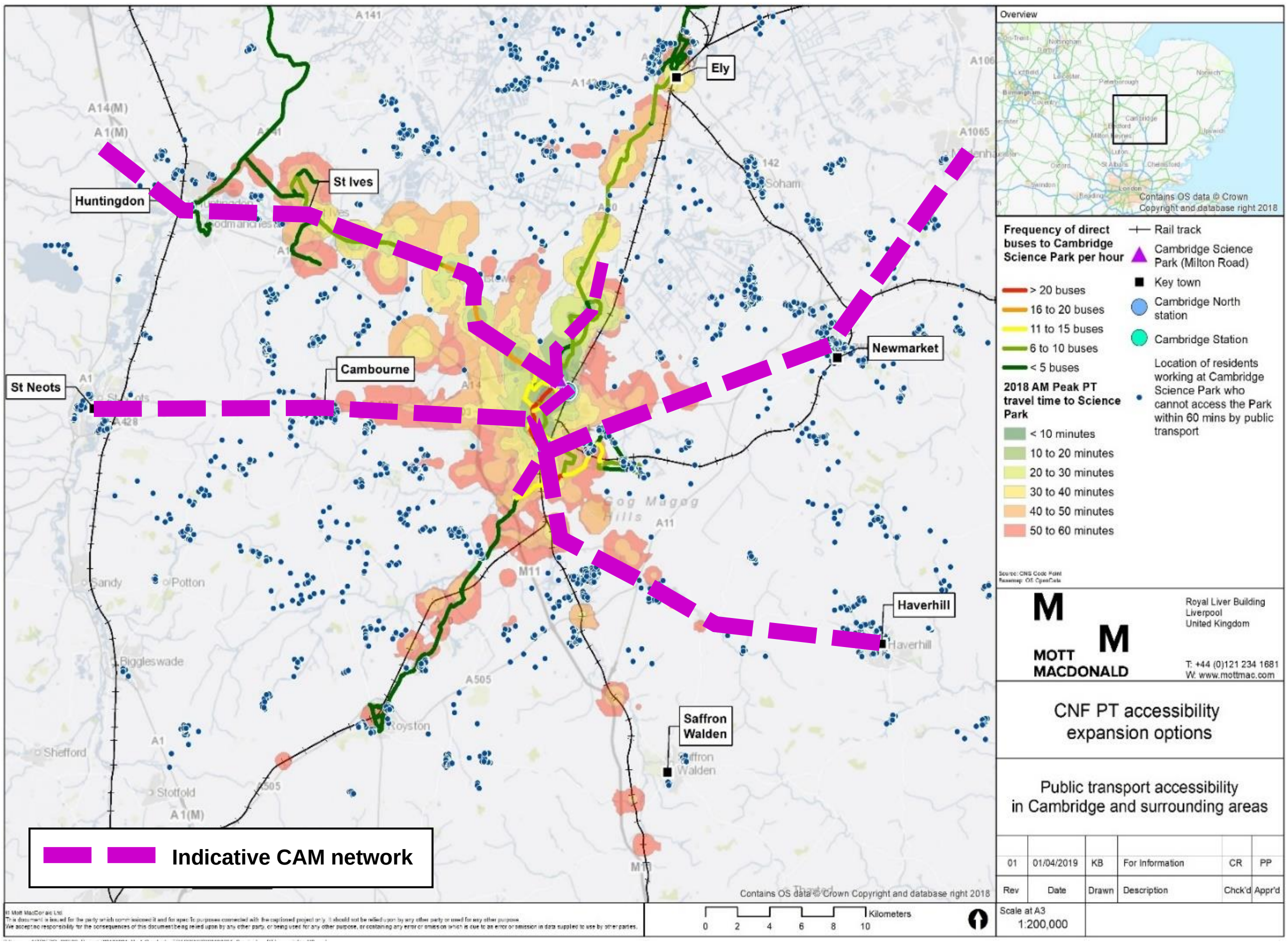
In Section 2.3.2.2 above, it is shown how about 48% of existing NEC commuter origins lie outside of a 60-minute public-transport travel-time to the study area, which contributes to the current low levels of public transport (PT) usage for NEC trips to work.

Section 3.3.2 also describes the following committed or potential future PT schemes which will increase the PT accessibility of the study area:

- Milton Road bus improvements due for completion in 2020, which will improve bus peak-hour journey times and reliability between the study area and the city centre
- Rail network and service improvements due for implementation over next 5-6 years, which will increase the capacity, frequency and reach of services calling at Cambridge North station, and
- CAM network proposals due for implementation in 2024, which would provide frequent, reliable and faster PT connections between the site and surrounding major centres of employment and/or population

The following figure shows the PT accessibility map shown in Figure 4 above overlaid with the indicative full CAM network links derived from the network shown in Figure 26 above.

Figure 44: NEC existing employee and PT catchment with indicative full CAM network overlaid



Source: Mott MacDonald

This figure shows that CAM would potentially provide:

- new PT coverage for commuters travelling to the study area from Alconbury, Huntingdon, St Neots, Haverhill, Newmarket and Mildenhall, and
- faster PT journeys to the study area for many locations already served by conventional bus or train, including the planned new town north of Waterbeach

Detailed route or stop location information is not available at this stage, therefore, it is not possible to calculate what extra proportion of study area commute origins would be covered by CAM compared to the existing situation, but it might be reasonable to expect the current 48% of no coverage to drop closer to 40%, if not beyond. Depending on parking provision at stops, the reliability and speed of the network could also provide some new attractive park and metro options to the study area from more remote outlying areas currently only served by car. In the fullness of time, and in line with Combined Authority aspirations, these could potentially be replaced by innovative demand responsive services to further reduce car use as a potential feeder mode to the CAM network. Local bus service improvements should also be pursued to fill in any catchment gaps not filled by CAM.

It can also be expected over time that, as parking provision in the study area becomes more restricted and as more new NEC jobs become available, in-commuters will increasingly choose to live in locations where trips to and from the study area do not need to be conducted by car. Trip origins can therefore be expected to move towards non-car networks over time, as well as non-car networks growing to reach more trip origin locations. The potential impact of these complementary outcomes is explored further in Section 9 below.

8.2.3 Increasing P&R accessibility

It is likely that, even as the overlap between NEC employee and PT catchments increases in the future, there will always be a proportion of commuter journeys which begin without a viable alternative to the car at point-of-origin. Given that commuter car parking will also become less available within the study area, allowing these trips to be completed by some form of P&R final mode will become increasingly important. The following proposed or potential P&R measures will therefore be essential for serving this increased demand:

- Section 6.5.2 above describes a potential option to provide a direct and segregated shuttle system and cycle link between the nearby Milton P&R site and the study area. Particularly if combined with a cycle-hire scheme at the site, this would increase use of this site as a final-mile option for the study area. Park and ride services to and from the other sites surrounding Cambridge also have a potential role in capturing trips from those more disparate origins.

- Section 3.3.4.2 above describes how a potential new P&R site could be developed as part of the new town north of Waterbeach proposals. This would serve southbound trips to the study area on the A10 and would link to NEC either via rail or by a new segregated public transport mode such as CAM.
- The previous section also describes how CAM proposals would provide a number of other final mile options for accessing the study area from other directions, particularly from existing P&R sites at Trumpington, Madingley, St Ives, Longstanton and Newmarket Road.

Overall, therefore, there are a number of future potential P&R options which will increase the accessibility of the study area by this final mode. In the fullness of time, however, and in line with the Combined Authority's aspirations for widespread P&R to be replaced with innovative demand-responsive services (as per the Mayor's Interim Transport Statement, 2018, and draft Local Transport Plan), this same level of overall accessibility may be achieved with less reliance on the car as a feeder mode.

8.3 Increasing non-car use

Increasing the accessibility of the study area by non-car modes is essential for providing new travel opportunities, but this will need to be accompanied by an extensive programme of behavioural change measures to also encourage greater use of these modes.

There is already a strong travel planning programme in place within the study area, as described in Section 2.3.5 above, and this provides the basis on which to expand the programme and its impacts in order to help deliver the future mode shift required to achieve the study area trip budget.

The following table summarises some examples of current and potential travel planning good practice relevant to the challenges facing NEC.

Table 42: Travel behaviour change measures – relevant good practice examples

Action	Justification	Responsibility	How Monitored / Measured?	Cost	Case study / Evidence
Incentive programmes – workplace policies to influence the travel choices made by colleagues. Can bring elements of gamification, leaderboards and rewards to staff to incentive good travel behaviour.	Incentivise good travel behaviours and reward active and public transport modes.	Travel Plan Co-ordinator (TPC), provider such as BetterPoints	Smartphone app will measure staff utilisation on each mode thus providing real time travel monitoring data.	High	**Case Study: BetterPoints, UK** High levels of behaviour change in London Borough of Sutton. The London Borough of Sutton worked with BetterPoints to reward local people for making sustainable transport choices and inform them about local air quality issues. 82% of respondents said they had changed their leisure travel behaviour. 55% said their newly changed behaviour is likely to be permanent. 61% more aware of issues around air quality. 48% increased levels of physical activity.
Needs based parking system. Allow access only to those who need a parking space or have no other alternative modes of transport available and/or who conduct high-occupancy car trips. Can be managed through pass access and/or a booking system.	Reduced car journeys to and from site, with particular focus on reducing single occupancy car travel.	TPC	Measure car park barrier entries. Count number of car trip entering and exiting site. Count car park occupancy.	Medium.	**Case Study: EE, Bristol, UK** EE in Bristol restrict the number of colleagues who have an onsite parking permit through a 'needs based' parking permit system which considers factors such as accessibility of home location by public transport, car sharing and mobility needs. This ensures that those colleague who really need to be able to park on site and/or who are making more sustainable multi-occupant car trips have priority. In five years a reduction in staff driving to EE in Bristol, was experienced - from 92% to 80%, and corresponding increases in car passengers from 3% to 7% and use of buses, from 1% to 6%.
Carsharing scheme. Partner with a carsharing scheme to enable and encourage staff members to share car journeys to and from work.	Reduce single occupancy car trips.	TPC and car sharing scheme provider. Liftshare for example.	Measures number of matches and car share bay utilisation.	Medium – High	**Case Study: Stansted Airport, UK** Ride-sharers are eligible for designated share spaces in close proximity to their place of work, and a guaranteed ride home when needed. There is a privately operated site called Liftshare enabling staff to find fellow ride sharers. Case Study: British Gas, UK At British Gas on Blyth Valley Business Park in Solihull, parking is only provided for ride sharers. Other than disabled, visitors and limited exceptions, single occupancy vehicles are not permitted on-site, and there is no local off-site parking availability.
Subsidised public transport tickets for staff and residents	Increase public transport utilisation.	TPC, working with operators	Measure public transport utilisation.	High	**Case study: Heathrow Commuter, UK** The existing Heathrow Commuter travel offering is one of subsidised public transport travel for colleagues commuting to and from the airport. Discounts are approximately 75% compared to day to day

Action	Justification	Responsibility	How Monitored / Measured?	Cost	Case study / Evidence
					prices and have been agreed through partnerships with local transport operators. As a result of the Heathrow Commuter offering and subsidised travel options, colleague public transport travel has increased from approximately 25% in 2008 to 37% in 2013.
Provide residents with credit/a set number of rides per month with on-demand services such as Uber.	Reduce car ownership, reliance on the private car.	TPC, working with mobility providers	Measure trips taken by on-demand modes. Measure reduction in private vehicles.	Medium - High	**Case study: Parkmerced, San Francisco, USA** Car free living provided at Parkmerced residential development in California. The Car-Free Living Program is a first-of-its-kind partnership that encourages residents to use public transportation and ride share. New residents who participate in the Car-Free Living Program get a $100 monthly transportation credit per apartment to use with Getaround, Clipper and Uber. Any resident can also catch a ride in an UberPool from Parkmerced to nearby public transit stations for a flat rate of $5. https://www.parkmerced.com/carfree-living

Source: Mott MacDonald

8.4 Increasing non-car accessibility summary

Maximising development trip internalisation will minimise development trips on external networks, while careful management of study area parking supply and usage will discourage those journeys being undertaken by car. This will therefore call for a significant increase in the demand for non-car modes for external travel to and from NEC, so it is essential that the study area become highly accessible by these modes and that measures are put in place to increase usage in order that future NEC development can effectively operate within the trip budget.

This section notes how implementation of the proposed Greenway network, the Chisholm Trail, and the resolution of the severance barriers within and around the study area is key to increasing NMU mode accessibility to and from the site. It is also expected that the growth in availability and use of micromobility modes, such as e-bikes and e-scooters, will contribute to increasing the range and appeal of these modes for travel to, from, between and within the NEC sites.

Similarly, it is noted that there are a number of proposed or recommended public transport measures which could significantly contribute to increasing the accessibility of the study area by these modes, including the Milton Road improvements, rail network and service improvements, and CAM network proposals. The CAM proposals, in particular, would help to connect the study area to commuter origin locations which are not currently served by public transport. It is also anticipated that, as NEC parking availability reduces, new employees will increasingly choose to live in locations where trips to and from the study area do not need to be conducted by car. Over time, therefore, it can be expected that the overlap between NEC employee and public transport catchments will increase, both through greater network coverage and through employee redistribution.

However, it is acknowledged that there will be a proportion of commuter journeys which, at present, begin without a viable alternative to the car at point-of-origin although, should innovative demand-responsive services be developed in line with Combined Authority aspirations, the use of car as a feeder mode could potentially be significantly reduced. Allowing these feeder trips, by whatever mode they are made, to be completed by some form of P&R final mode will therefore also become increasingly important. This need can be met by the recommendation to introduce a new segregated public transport and cycle link between the Milton site and the study area, while CAM has the potential to improve links between NEC and existing P&R sites at Trumpington, along the busway and at Newmarket Road, and also from a potential new site at the new town north of Waterbeach.

Lastly, in addition to the need to increase non-car travel options to and from NEC, an extensive programme of behavioural change measures will also be needed to encourage greater use of these modes. There is already a strong travel planning programme in place within the study area and this provides the basis on which to expand the programme and its impacts in order to help deliver the future mode shift required to achieve the study area trip budget.

9 Estimating mode shift impact

9.1 Introduction

The purpose of this section is to estimate the potential contribution of the measures considered in the three previous sections to the car-driver mode-shift targets necessary for the AAP development scenarios to operate within the trip budget. The potential non-car mode capacity implications involved in delivering the trip budget are also considered for each development scenario to establish the potential scale of demand shift required.

9.2 Impact assessment approach

9.2.1 Comparing MSOAs

The main measures considered in previous sections for delivering a substantial car-driver mode shift for the NEC area are broadly categorised as:

- Encouraging internalisation
- Managing parking supply, and
- Increasing non-car accessibility and use

In order to estimate the potential impact of each of these intervention categories on the existing NEC car driver mode share, comparison of key 2011 Census transport results has been made with other areas of Cambridge where these types of measures are already in place[37]. The areas selected are:

- The city centre MSOA, for an aspirational example of internalisation, and
- The Cambridge Biomedical Campus (CBC) MSOA, for an edge-of-city example of effective parking restraint and increased non-car accessibility

9.2.2 Comparing MSOAs as workplace destinations

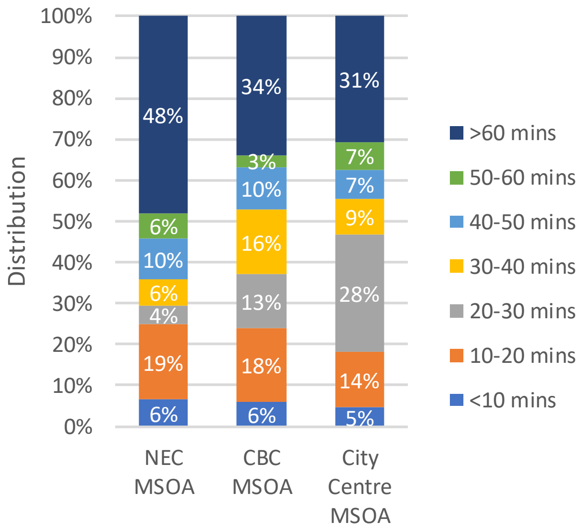
In order to allow comparison between the key travel characteristics of these MSOAs, the following side-by-side figures show census results for these MSOAs as workplace destinations as follows:

- On the left, the study-area-worker origin-distribution by public-transport isochrone repeated from Figure 5 above, but together with the same results for the CBC and city centre MSOAs, and
- On the right, the study-area-worker commute-mode-share repeated from Figure 13 above, but again with the same results for the CBC and city centre MSOAs

[37] See Section 2.6.1.1 above for strengths and weaknesses of using 2011 Census data in this context

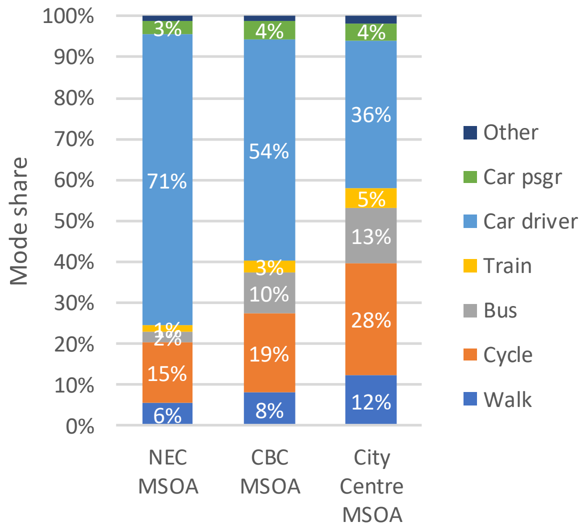
As for the baseline travel behaviour review in Section 2.6 above, the NEC area is represented here by the Chesterton and Milton MSOAs, collectively referred to as the 'NEC MSOA'.

Figure 45: Commute origin distribution by PT isochrone per workplace MSOA



Source: 2011 Census

Figure 46: Worker commute mode share per workplace MSOA



Source: 2011 Census

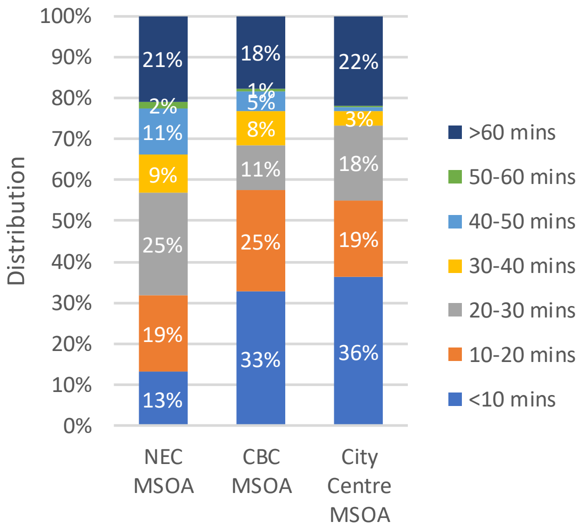
These figures reveal key differences in the non-car accessibility and associated commuter mode share of these workplace areas as follows:

- Greater overlap between worker origin and public transport catchments for the CBC and city centre MSOAs compared to the NEC MSOA, with approximately two-thirds within a 60 minute catchment for the former but only about half within this for the latter.
- A further distinction between the CBC and city centre catchments is seen in the proportion of worker origins lying within 30 minutes by public transport, with the stepped increase in this parameter between all three MSOAs corresponding with the similar stepped increase in the use of walk, cycle, bus and rail modes.

9.2.3 Comparing MSOAs as residence origins

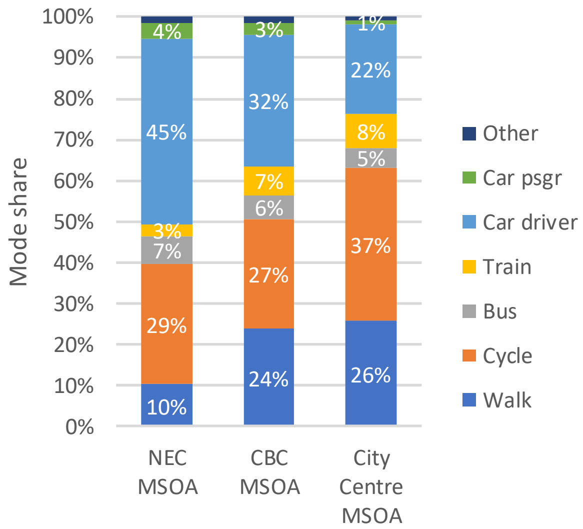
The following side-by-side figures show the same results but for commuting trips generated by MSOA residents.

Figure 47: Commute destination distribution by PT isochrone per residence MSOA



Source: 2011 Census

Figure 48: Resident commute mode share per residence MSOA



Source: 2011 Census

By contrast to the above results for the MSOAs as workplace, the distribution chart for commute destinations from the MSOAs as residence shows a similar result for all three MSOAs, with only around 20% of commute destinations lying outside of a 60-minute travel time. However, the same step-change is seen between MSOAs for the 30-minute PT commute results which, again, seems to correspond with the similar step-change between MSOAs in the use of non-car modes.

9.2.4 Simulating transfer of MSOA characteristics

These charts therefore confirm how the CBC and city centre MSOAs show the potential scale of travel change impact available through the transfer of similar measures and locational characteristics to the NEC area.

The estimated impact of introducing the above categories of measure is therefore considered by comparing and transferring key 2011 Census data results between areas in order to simulate the following steps:

- Increased internalisation of trips
  - This step considers the potential impact of increasing the proportion of development trips which are retained internally to the NEC area (see Section 7.2), but without changing existing mode shares
- Maximising non-car mode use
  - This step considers the potential impact of changing existing mode shares by significantly limiting study area parking (see Section 6), improving study

area internal connectivity (see Section 7.3), increasing external accessibility of the NEC area by NMU and PT modes (see Sections 8.2.1 and 8.2.2), and increasing the use of these modes through travel planning measures (see Section 8.3)

- Increased non-car mode overlap
  - This step considers the potential impact of an overlap increase between the NEC non-car mode catchments and the external origins/destinations of NEC-generated trips through a future redistribution of these trips towards non-car-dependant corridors (see Section 8.2.2)
- Increased P&R usage
  - This step considers the potential impact of an increase in P&R availability and usage for travelling to the NEC area
- Future travel trends
  - Lastly, this step considers the potential impacts of future travel trends and emerging technology (see Section 3.4)

The potential impacts on employment-generated and residential-generated trips are considered separately.

It should be noted that the assessment is based on 2011 Census data which considers commute-trip data only. This covers all employment-generated peak-hour trips but, as described in Section 2.6.2.2 above, less than half of residential-generated peak-hour trips. However, in the absence of alternative data for residential trips, it is assumed for the purpose of this exercise that the mode-shift proportion achievable for commute trips through the above measures is also achievable, on average, for all other residential trip purposes. This approach is considered reasonable for this stage in the AAP transport planning process.

It is also noted that average commute mode shares for these MSOAs may have changed to some degree since the 2011 Census. However, the following analysis is to estimate the car driver mode shift which may be generated by the implementation of various measures, so the absolute value of the car driver mode share is not critical. By contrast, the relative difference in car driver mode share between MSOAs is important, but it is noted that transport improvements have taken place since the Census in all three MSOAs, so it is reasonably assumed that the relative difference between car driver mode shares has been maintained enough for the purposes of this analysis.

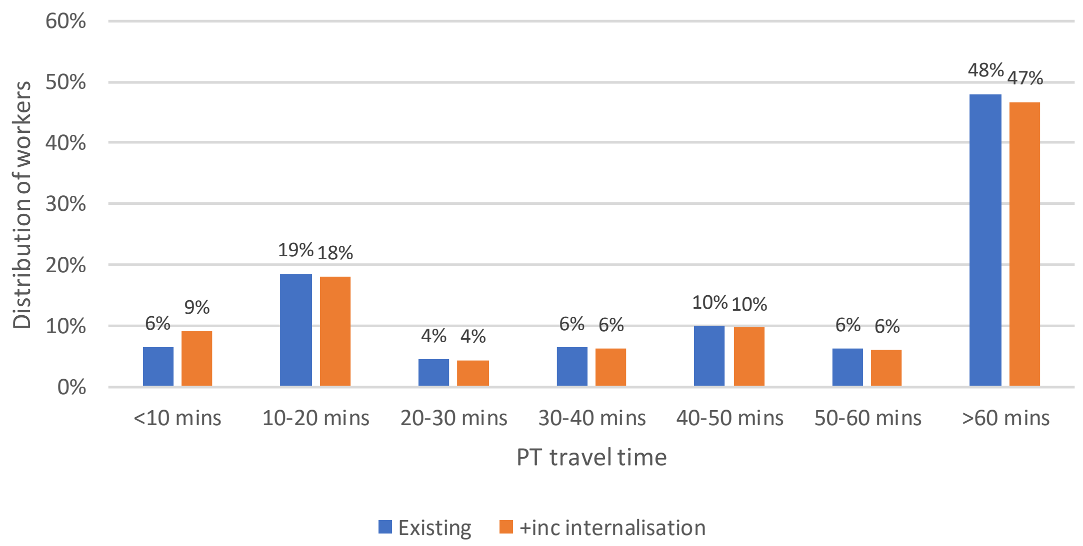
9.3 Impact of encouraging internalisation of trips

9.3.1 Impact on employment-generated commute trips

In Section 7.2.2 above, it is described how up to 18% of Cambridge workers typically live within 2km of their place of work. However, Table 34 above shows that the ratio of dwellings to jobs proposed by the potential AAP development scenarios means that there will not be the level of housing required to achieve this maximum level of internalisation within the study area. Instead, it is estimated that these scenarios will result in between about 8% and 11% of employment commute trips originating from within the NEC area, averaging at 8.5%.

Figure 45 above shows that, for all three MSOAs, only about 6% of employment-generated commute trips are currently generated from within the 10-minute PT isochrone, which corresponds adequately enough for the purposes of this assessment to a 2km ‘internalisation’ catchment around the study area[38]. In order to simulate an increased future study area internalisation of 8.5%, therefore, the proportion of trips assigned to this isochrone was increased accordingly, with the remaining distribution per isochrone reduced on a pro-rata basis to compensate. The resulting change in distribution is shown in the following figure.

Figure 49: Change to NEC worker origin distribution to simulate increased internalisation of trips



Source: Mott MacDonald calculation based on 2011 Census data

[38] As the public transport isochrone includes a walking distance buffer zone around the routes, the 10 minute isochrone covers the study area, plus a section southwards along Milton Road. This provides a reasonable proxy for an internalised trip area.

As this change results in a higher proportion of journeys taking place within an isochrone with a lower car mode share (see Figure 14 in Section 2.6.1.2), the overall 2011 Census car mode share drops as shown in the following table.

Table 43: Estimated car driver mode share impact of increasing internalisation of employment-generated commute trips

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	71%	-
+ increased internalisation of trips	70%	-1%

Source: Mott MacDonald calculation based on 2011 Census data

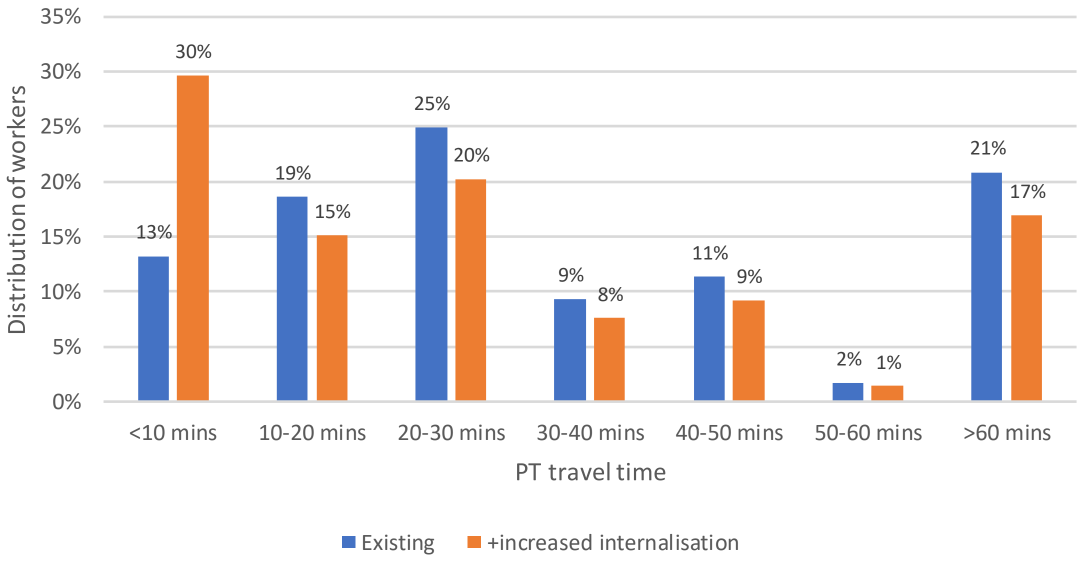
This shows only a small drop in overall car mode share, highlighting how an increase in the proportion of internal trips without a change in existing mode shares results in only limited mode-shift. This confirms the importance of delivering this measure in combination with the complementary measures of limiting parking supply and increasing the accessibility and use of non-car modes.

9.3.2 Impact on residential-generated commute trips

In Section 7.2.2 above, it is described how up to 30% of employed Cambridge residents typically work within 2km of where they live, while Section 7.2.8 above confirms that the development scenario ratios of dwellings to jobs means that there will be sufficient jobs to achieve this maximum level of internalisation for residents.

Figure 47 above shows that this level of 30% is surpassed by the 10-minute PT isochrone for the CBC and city centre MSOAs, but is not reached for the NEC MSOA, which shows an overlap with workplace destinations of just 13%. Therefore, to simulate an increased future study area internalisation for residential-generated commute trips of 30%, the proportion of trips assigned to this isochrone was increased accordingly, with the remaining distribution per isochrone reduced on a pro-rata basis to compensate. The resulting change in distribution is shown in the following figure.

Figure 50: Change to NEC resident workplace distribution to simulate internalisation



Source: Mott MacDonald calculation based on 2011 Census data

As this change results in a higher proportion of journeys taking place within an isochrone with a lower car mode share (see Figure 18 in Section 2.6.2.1), the overall 2011 Census car mode share drops as shown in the following table.

Table 44: Estimated car driver mode share impact of increasing residential-generated commute trip internalisation

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	45%*	-
+ increased internalisation of trips	44%	-1%

Source: Mott MacDonald calculation based on 2011 Census data
(*) As noted above, this assessment is based on commute trips as a proxy for all purposes

This shows a similar result to that for employment-generated commute-trips, where even a significant increase in internalised trip-making does not translate to an overall shift away from car unless it is accompanied by measures to also encourage less use of the car and more use of alternative modes. The impact of these measures is considered in the next section.

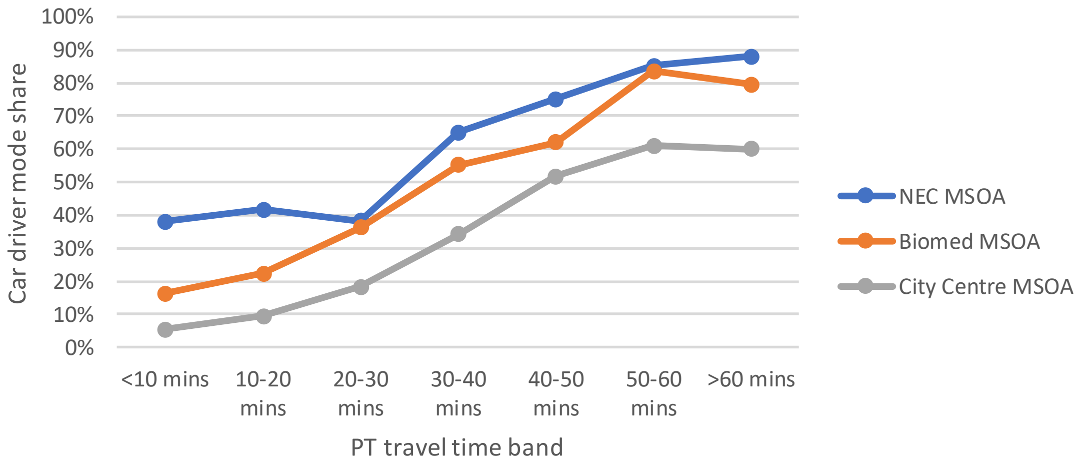
9.4 Impact of maximising non-car mode use

9.4.1 Impact on employment-generated commute trips

In Section 2.3.4.1 above, it is noted how overall parking supply in the study area does not currently place a constraint on commuter car trips to the sites and how future parking standards will need to be more stringent in order to help deliver development within the trip budget. The CBC and city centre are both examples of areas where parking is significantly more limited than it is in the NEC area, either through rationing by volume and/or by price. In combination with greater non-car mode accessibility and travel planning to encourage use, it is likely that this is one of the main reasons behind the increased take-up of non-car modes for travel to and from these areas shown in Figure 46 and Figure 48 above.

The following figure compares, for employment-generated commute trips, the car driver mode share per public transport isochrone band for each MSOA. This effectively shows how the car mode share varies with public transport availability.

Figure 51: Car driver mode share per PT isochrone and per MSOA for employment-generated commute trips



Source: 2011 Census

This figure shows how the NEC car driver mode share per PT isochrone band is higher in all cases than for the CBC MSOA, and higher again than for the city centre MSOA, especially for trips starting closer to the sites. This indicates how increased destination parking control, combined with travel planning measures, encourages greater use of available non-car modes such that the resulting car mode share is reduced.

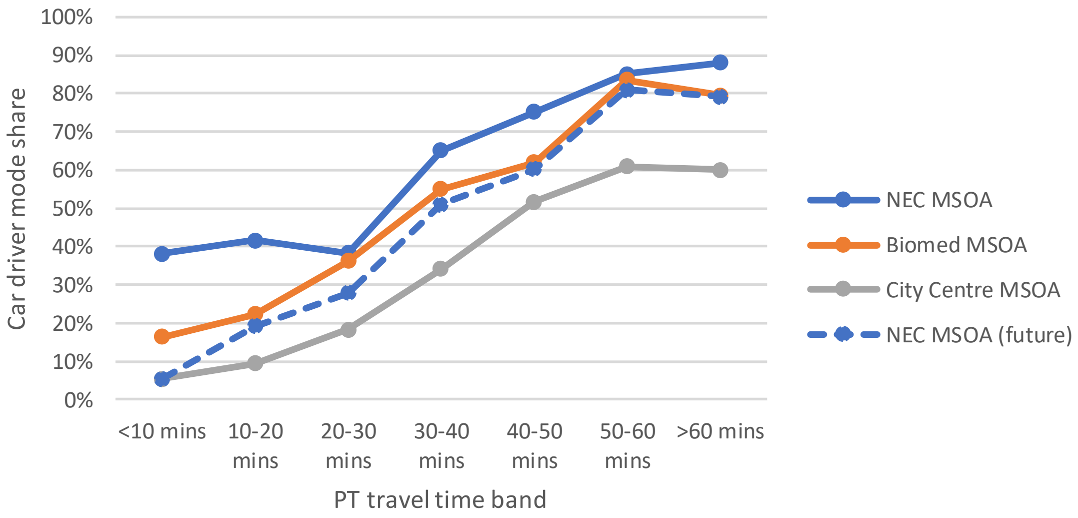
To simulate the introduction of these measures to the NEC area, the following adjustments have been made to the existing mode shares per PT isochrone:

- For the <10 minute PT isochrone, which is being taken to represent the scope of internalised trips, the city centre mode share for all modes has been adopted. This represents a stretch target, but reflects how the combination of parking restrictions, improved spatial framework connectivity and behavioural change measures will aim to reduce NEC car use for short trips to very low levels

- For the remaining isochrone bands, the CBC MSOA non-car mode shares have been adopted wherever these are higher than the equivalent NEC result (which they are in most cases) with the car mode share making up the remainder

These adjustments result in the following simulated future car driver mode share per PT isochrone for the NEC MSOA.

Figure 52: Simulated future car driver mode share per PT isochrone for NEC MSOA employment-generated commute trips



Source: 2011 Census

The following table summarises the resulting estimated impact of this further measure on the NEC area 2011 Census mode share.

Table 45: Estimated car driver mode share impact of maximising non-car mode use

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	71%	-
+ increased internalisation of trips	70%	-1%
+ maximised non-car mode use	53%	-17%

Source: Mott MacDonald calculation based on 2011 Census data

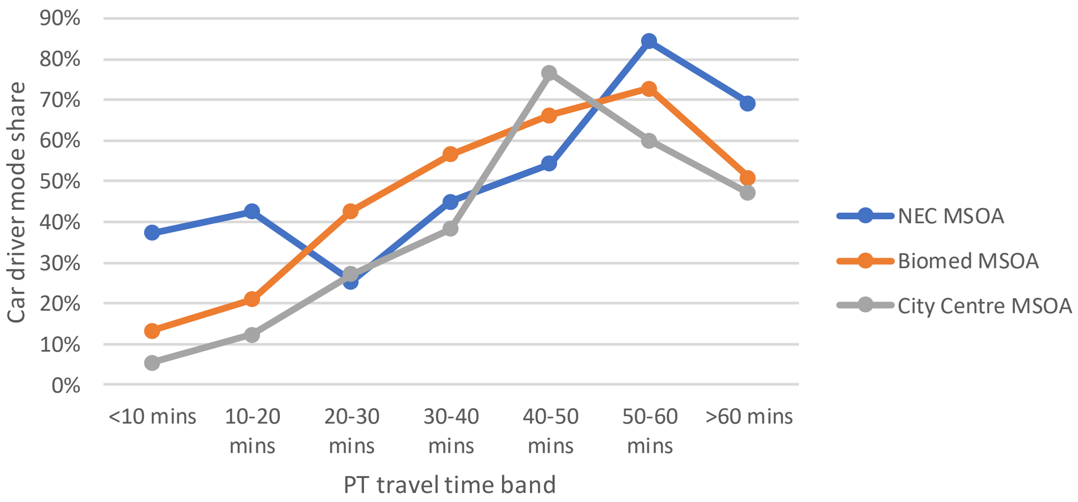
It can be seen from this table that the combination of increased internalisation of trips within the study area and the maximisation of non-car mode use for external trips has the potential to result in a significant reduction in car driver mode share in NEC.

9.4.2 Impact on residential-generated commute trips

The following figure compares, for residential-generated commute trips, the car driver mode share per public transport isochrone band for each MSOA.

This shows less difference between MSOAs than the employment-generated trip equivalent shown above, which partly reflects that residential parking standards can be harder to apply and make effective than workplace parking standards. However, it again shows a clear difference for trips to destinations within just 20 minutes by PT, while the city centre car driver mode share is similar to or lower than the NEC equivalent in nearly all cases.

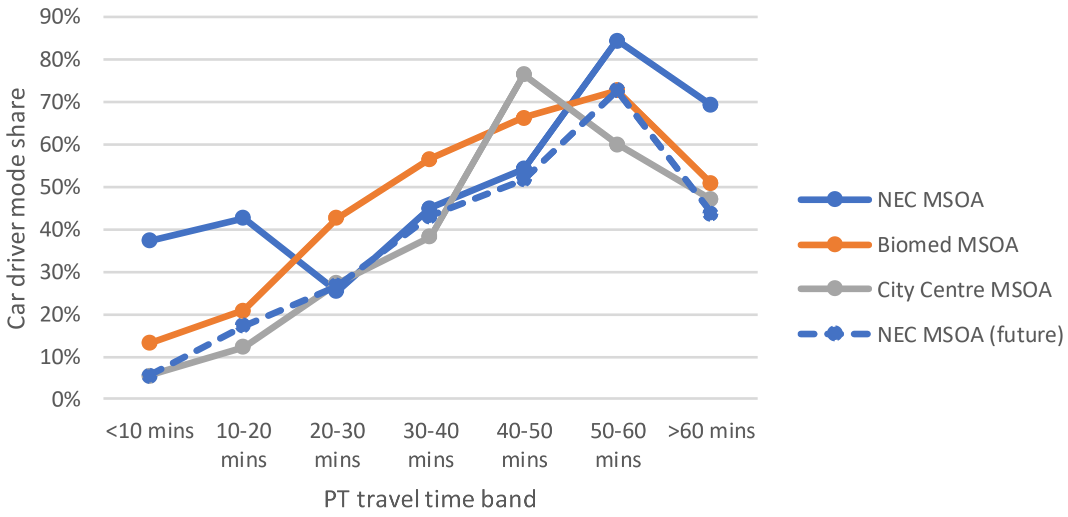
Figure 53: Car driver mode share per PT isochrone and per MSOA for residential-generated commute trips



Source: 2011 Census

The same mode share adjustment method has therefore been applied to NEC residential-generated commute trips and produces the adjusted car driver mode share shown in the following figure.

Figure 54: Simulated future car driver mode share per PT isochrone for NEC MSOA residential-generated commute trips



Source: 2011 Census

The resulting predicted overall impact on the NEC area 2011 Census mode share is shown in the following table.

Table 46: Estimated car driver mode share impact of increasing residential-generated commute trip internalisation

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	45%	-
+ increased internalisation of trips	44%	-1%
+ maximised non-car mode use	26%	-18%

Source: Mott MacDonald calculation based on 2011 Census data

This also shows how the combination of increased internalisation and methods to reduce home-based car trips has the potential to result in a significant reduction in car driver mode share in NEC.

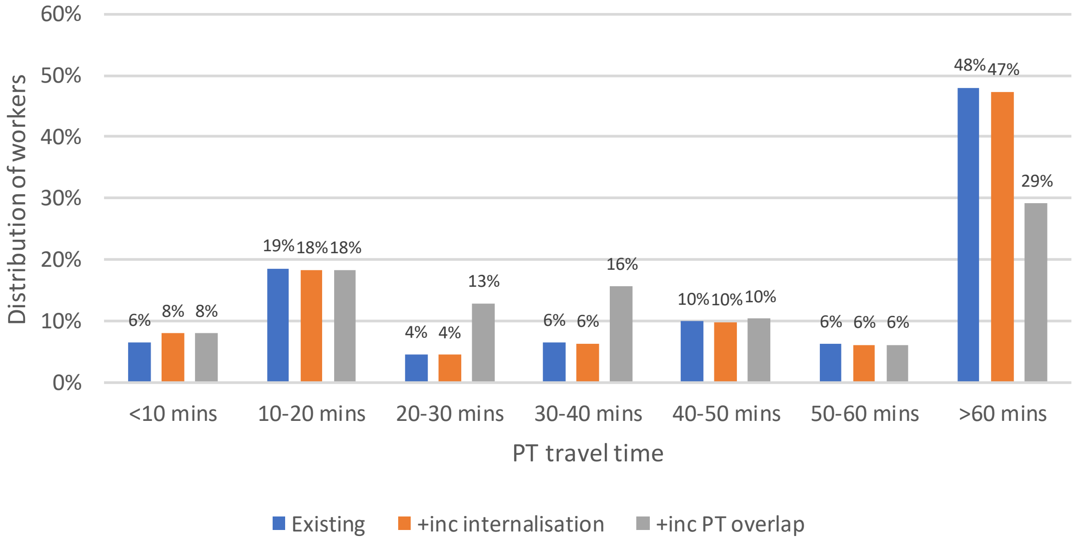
9.5 Impact of increasing non-car mode overlap

9.5.1 Impact on employment-generated commute trips

Section 8.2.2 above describes how future public transport improvements will increase the proportion of study area worker origins which are covered by these modes. It also describes how one response that can be expected from increasing workplace parking restrictions is a gradual shifting of the distribution of worker home locations towards corridors where there are non-car options for travelling to the study area. The result is that an increased overlap between worker and non-car mode catchments can be expected over time, as suggested by the difference in overlaps between MSOAs shown in Figure 45 above.

This effect has been simulated by applying the CBC PT catchment overlap distribution to the NEC MSOA distribution for all PT travel time bands over 10 minutes (so that the above internalisation simulation is not affected). The following chart shows how this would further change the distribution of worker origins.

Figure 55: Change to NEC worker origin distribution to simulate increased non-car mode catchment overlap for external trips



Source: Mott MacDonald calculation based on 2011 Census data

This shows a simulated decrease in origins beyond a 60 minute travel time and a corresponding increase in origins within the 20 to 40 minute band in order to reflect the CBC distribution. This increases the proportion of trips within lower car driver mode share isochrones and reduces the proportion within the highest car mode share isochrone and so reduces the overall 2011 Census car driver mode share as shown in the following table.

Table 47: Estimated car driver mode share impact of increasing non-car mode accessibility

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	71%	-
+ increased internalisation of trips	70%	-1%
+ maximised non-car mode use	53%	-17%
+ increased non-car mode overlap	50%	-3%

Source: Mott MacDonald calculation based on 2011 Census data

This table shows that increased overlap between worker origin and PT catchments through future redistribution has the potential to deliver a further drop in the car driver mode share.

9.5.2 Impact on residential-generated commute trips

In the case of the workplace destination distribution of NEC residents, Figure 47 above shows how this is already similar to that of the CBC MSOA in terms of the distribution of workplaces lying beyond 60 minutes by PT, while the internalisation adjustment shown above in Figure 50 shows how this also brings the NEC distribution within 60 minutes to a similar level as for the CBC MSOA. Similarly, the potential impact of greater use of non-car modes is captured in the previous step.

There are therefore no further mode shift gains for residential-generated commute trips that can be derived for this category by comparison to other areas, as summarised in the following table. However, should an increase in the NEC non-car mode overlap be achieved which exceeds that shown for the comparison areas, then some further mode-shift benefit would be expected.

Table 48: Estimated car driver mode share impact of increasing non-car mode accessibility

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	45%	-
+ increased internalisation of trips	44%	-1%
+ maximised non-car mode use	26%	-18%
+ increased non-car mode overlap	26%	N/A

Source: Mott MacDonald calculation based on 2011 Census data

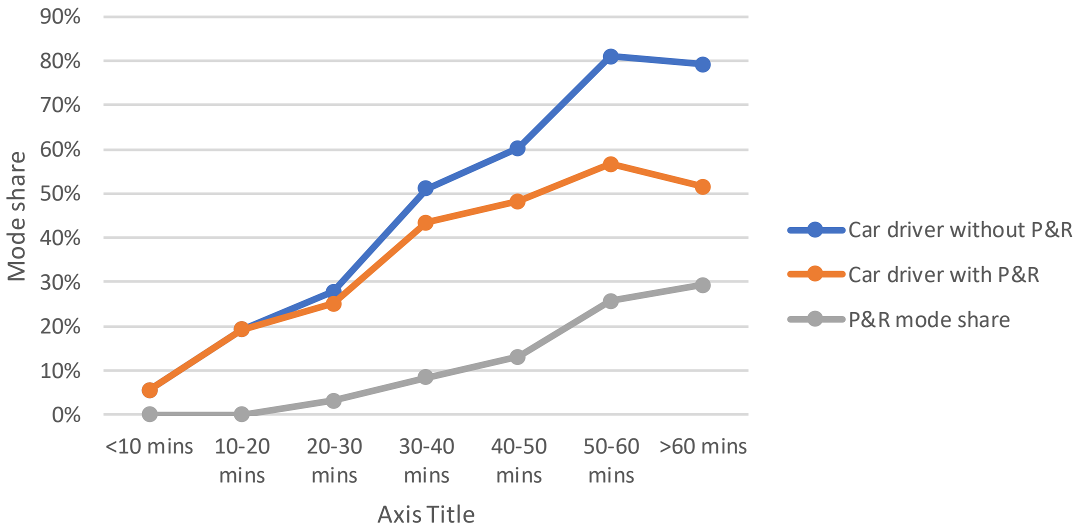
9.6 Impact of increasing Park & Ride usage

9.6.1 Impact on employment-generated commute trips

As noted in Section 8.2.3 above, it is likely that, even as the overlap between NEC employee and PT catchments increases in the future, there will remain a proportion of commuter journeys which begin without a viable alternative to the car at point-of-origin. Given that, at the same time, commuter car parking will also become less available within the study area, allowing these trips to be completed by some form of P&R final mode will become increasingly important. In the longer term, and in line with Combined Authority (CA) aspirations, it is recognised that the level of P&R use might decline should the CA's proposals for increased take-up of demand responsive public transport (DRT) come forward and replace car-use as a feeder mode for NEC-bound public transport.

To simulate this, a proportion of car driver trips were transferred to P&R (which can also be viewed as a proxy for longer term DRT take-up), with the proportion increasing with PT travel time distance, as shown in the following figure. The proportions were selected according to what is considered achievable from a behavioural response perspective and what is considered deliverable in terms of capacity implications (see Section 9.8 below).

Figure 56: Simulated P&R (or DRT) transfer and impact on car driver mode share



Source: Mott MacDonald calculation based on 2011 Census data

The resulting estimated overall car driver mode share impact is summarised in the following table.

Table 49: Estimated car driver mode share impact of increasing P&R (or DRT) usage

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	71%	-
+ increased internalisation of trips	70%	-1%
+ maximised non-car mode use	53%	-17%
+ increased non-car mode overlap	50%	-3%
+ increased P&R usage	37%	-13%

Source: Mott MacDonald

This shows that increased availability and use of P&R has the potential to deliver further drops in the proportion of car trips arriving into the study area.

9.6.2 Impact on residential-generated commute trips

Park and ride can serve trips attracted by the NEC area, but not residential trips generated by the NEC area. This measure therefore produces no applicable mode shift benefit for NEC residential trips, as summarised in the following table.

Table 50: Estimated car driver mode share impact of increasing P&R (or DRT) usage

Measure simulated	Predicted car driver mode share	Measure mode shift
Existing situation	45%	-

Measure simulated	Predicted car driver mode share	Measure mode shift
+ increased internalisation of trips	44%	-1%
+ maximised non-car mode use	26%	-18%
+ increased non-car mode overlap	26%	N/A
+ increased P&R usage	26%	N/A

Source: Mott MacDonald calculation based on 2011 Census data

9.7 Impact of future travel trends and technologies

Figure 37 above shows that, for the AAP development scenarios to operate within the prescribed trip budget, the car driver mode share would need to be between 0.36 and 0.53 of current values depending on scenario, with the average across all scenarios being 0.41. The following table summarises the target commute-trip car-driver mode-share resulting from this factor and the difference between this value and the car driver mode shares estimated by the above intervention impact assessment process.

Table 51: Comparison between target and estimated future commute-trip car-driver mode-shares (MS)

Type	Existing MS	Target MS		Estimated MS	Difference
		Average Factor	MS		
Employment	71%	0.41	29%	37%	-8%
Residential	45%	0.41	19%	26%	-7%

Source: Mott MacDonald calculation based on 2011 Census data

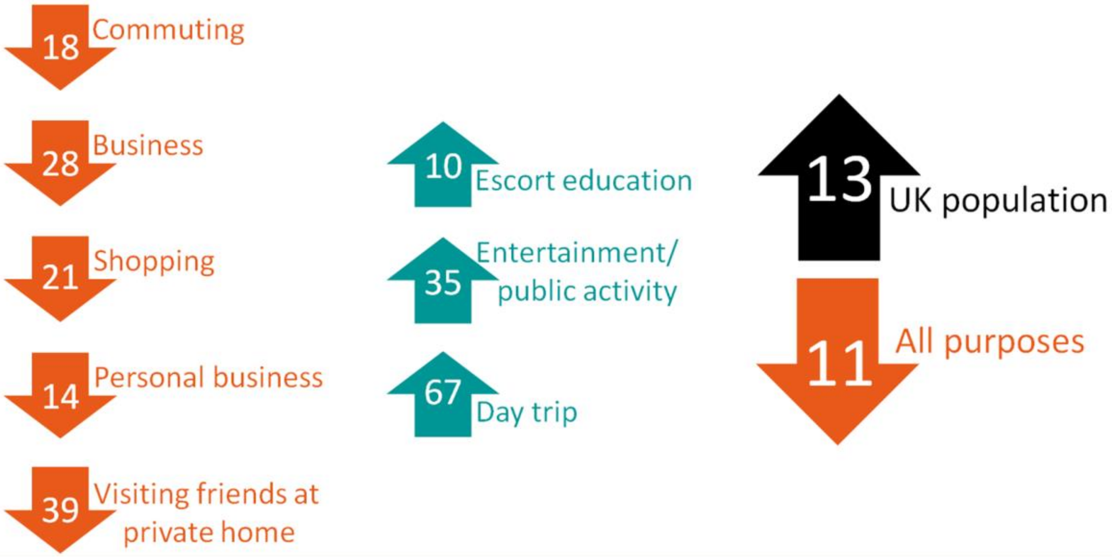
This table shows that the above measures are predicted to be able to deliver most of the mode-shift required for future development scenarios to operate within the required trip budget, but that a gap remains.

However, it is noted that the above impact assessment is based on evidence of existing responses to existing measure and hence a, ‘business as usual’ scenario. This means that there is a clear scope in the future for some of the travel trends and technological developments discussed in Section 3.4 above to close this gap, with the potential to even bring about some further reduction in trips.

As indicated in Figure 28 in Section 3.4, the ‘Future of Mobility: Urban Strategy’ (DfT, March 2019) highlights that, during the 19 year period between 1995 and 2014, commuting journeys in England fell by 16%, an average of c0.84% per annum. This occurred while England’s population grew by 11% and employment also grew by 18%. The main reason for this includes increases in flexible working, working from home and part-time and self-employment. Applying this same average to the 14 year study period between 2017 and 2031 used for this assessment results in a c.12% likely reduction in overall commuting trips. Taking into account the predicted baseline car driver mode shares for employment and residential (71% and 45% respectively), this would represent a likely drop in car driver trips of 8.4% and 5.3% respectively.

Furthermore, Figure 58 below reflects the percentage change in average number of trips per person per purpose (including short walks) between 1995/97 to 2017, which is based on NTS Table 0403. It can be seen here that there has been an overall 11% decrease in trips within the 20 year period, with commuting and business/personal business showing some of the greatest decline when considering the actual reduction in total trips per purpose.

Figure 57: 20-year percent change in average trips/person/purpose



Source: NTS Table NTS0403.

In addition to an increase in flexible-working practices, other notable developments highlighted in section 3.4 which will further contribute to closing this gap are the:

- spread of commuter journeys away from peak-hours and the growth in online shopping
- rise of electrified micromobility modes, which have the potential to significantly increase NMU travel catchments, and
- ongoing decline in car ownership levels among younger generations and the growth of shared mobility solutions such as ride-sharing and MaaS

Future economic changes could also have a significant effect on mode share, such as increasing energy prices or policy measures such as greater highway usage regulation through vehicle automation and/or roadspace pricing.

Further to these factors, potential changes to the AAP development mixes and quantum could help to reduce trip budget impact and increase internalisation levels. A marketing campaign could also be developed to aid in attracting residents to the area that are more likely to use alternative travel modes other than car. Finally, an incentive scheme could be put in place to maximise resident-to-employee ratio (e.g. housing developments associated with employers in the area, and/or potential fiscal incentives depending on the prevalent tax regime, for people who work and live in the area).

The following table summarises the resulting estimated impact of the influence of future travel trends and technologies, which will contribute towards reaching the target car driver mode share required for the development scenarios to operate within the trip budget.

Table 52: Estimated car driver mode-shift impact

Measure simulated	Predicted commute-trip car driver mode share	
	Employment-generated trips	Residential-generated trips
Existing situation	71%	45%
+ increased internalisation of trips	70%	44%
+ maximised non-car mode use	53%	26%
+ increased non-car mode overlap	50%	26%
+ increased P&R usage	37%	26%
+ future trends and technology	29%	19%
Target mode share	**29%**	**19%**

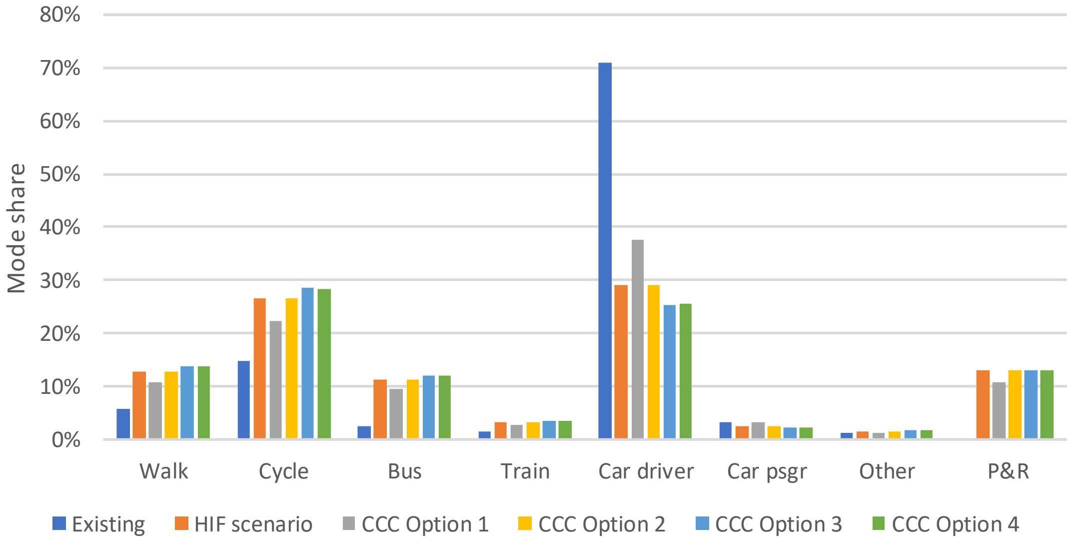
Source: Mott MacDonald.

Overall, although the mode share targets required for the development scenarios to operate within the trip budget are considered challenging, over a sufficient timeframe and with the right supporting interventions via the AAP these are considered to be deliverable. This is discussed further in the next chapter below.

9.8 Modal implications of mode-shift aspirations

Based on the above mode-shift impact assessment, this has been extended to predict a potential mode share distribution for each development scenario that would support the car driver mode share target. The above car driver mode-shift gap has been closed for this purpose by increasing the share of all non-car modes on a pro-rata basis. The resulting mode share distribution per scenario is shown in the following figure, together with the existing mode share for reference.

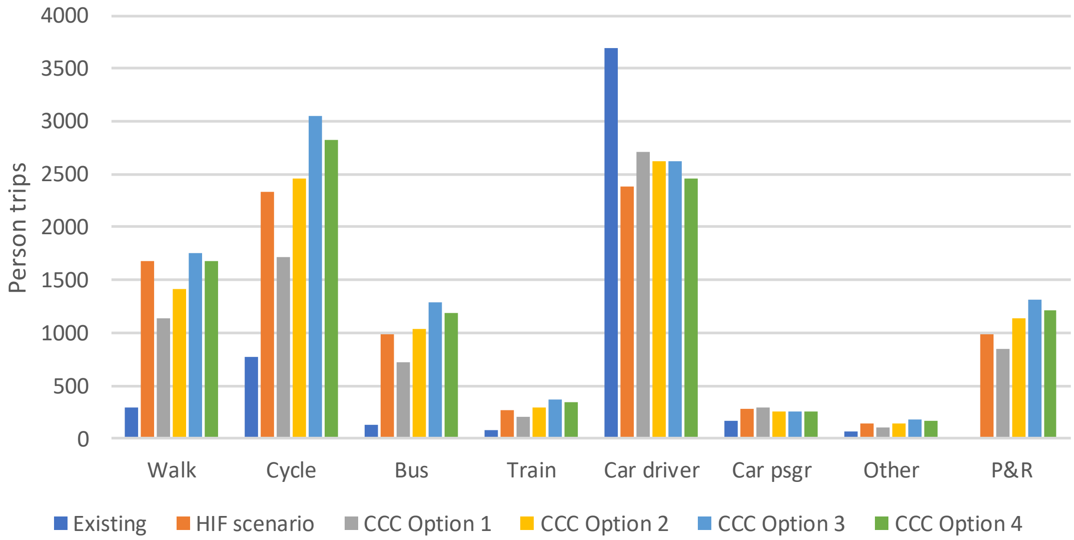
Figure 58: Predicted mode share distribution to support target car driver mode share



Source: Mott MacDonald

This shows how the car driver mode shift is achieved through significant mode share increases for all non-car modes. In terms of actual trip levels, however, the increases are even more substantial, as the development scenarios will generate more trips overall. This is shown in the following figure.

Figure 59: Predicted person trip volumes by development scenario



Source: Mott MacDonald

This shows substantial increases in the actual number of trips by all modes except car driver. To provide an indication of potential extra capacity requirements in the weekday AM peak hour, the following table shows for each development scenario:

- the number of extra bus vehicles required, with a capacity of 80 persons per bus assumed
- the number of extra rail carriages required, with a capacity of 50 persons per carriage assumed, and
- the number of extra P&R parking spaces required, noting that in the longer term the CA's proposals for DRT take-up might reduce this

It should be noted that some of this extra demand could be accommodated by existing peak-hour spare capacity, though it is noted that Section 2.3.2.3 above suggests that this is limited for bus and rail modes.

Table 53: Estimate of extra non-car mode capacity required

Extra capacity	HIF scenario	Option 1	Option 2	Option 3	Option 4
Buses (vehicles)	11	7	11	15	13
Rail (carriages)	3.9	2.5	4.4	5.8	5.2
P&R (spaces)	1,545	1,332	1,794	2,080	1,883

Source: Mott MacDonald

This indicates that for weekday AM peak hour, the development scenarios would generate extra demand for between 7 and 15 bus vehicles, 3 and 6 rail carriages and between 1,300 and 2,100 extra P&R parking spaces assuming no DRT substitution. It should therefore be noted that, should any of these modes be superseded or part-replaced in future by alternative mass transit solutions, these would need to provide similar levels of extra capacity.

9.9 Estimating mode shift impact summary

The main measures considered by this study for delivering a substantial car-driver mode shift for the NEC area are categorised as:

- encouraging internalisation
- managing parking supply, and
- increasing non-car accessibility and use

In order to estimate the potential impact of each of these intervention categories on the existing NEC car driver mode share, comparison has been made with the CBC and city centre areas of Cambridge where these types of measures are already in place to some degree. Using 2011 Census travel-to-work data for these areas as both workplace and worker residence, the potential impact of each intervention category was simulated for NEC by assigning to it some of the travel characteristics of the comparison areas. The results of this incremental impact assessment are summarised in the following table and show how each set of measures, together with the influence of future travel trends and technologies, contributes towards reaching the target car driver mode shares required for the development scenarios, as an average, to successfully operate within the trip budget.

Table 54: Estimated car driver mode-shift impact

Measure simulated	Predicted commute-trip car driver mode share	
	Employment-generated trips	Residential-generated trips
Existing situation	71%	45%*
+ increased internalisation of trips	70%	44%
+ maximised non-car mode use	53%	26%
+ increased non-car mode overlap	50%	26%
+ increased P&R usage	37%	26%
+ future trends and technology	29%	19%
Target mode share	**29%**	**19%**

Source: Mott MacDonald.
(*) Assumed that residential commute mode-shift is applicable to all residential trip purposes

In order to support this level of car driver mode share, trips by other modes will need to increase substantially, and so will the capacity of those modes. To support the above car mode share, it is estimated that the following extra public transport capacity will be required in the weekday AM peak hour, depending on development scenario:

- between 7 and 15 extra bus vehicles (or other more innovative solutions replacing these in the longer term)
- between 3 and 6 extra rail carriages, and
- between 1,300 and 2,100 extra P&R spaces, or DRT equivalent capacity based on CA aspirations

Some of this extra demand could be accommodated by existing peak-hour spare capacity, but it is noted that this is currently limited for bus and rail modes.

Considerations for the delivery of the measures and capacity required to support NEC future development levels within the trip budget are made in the next section.

10 Trip budget delivery plan

10.1 Introduction

Based on the evidence and analysis presented in preceding sections, the purpose of this section is to review what supporting measures are required to maintain car trip generation to/from the NEC area within or below the identified car trip budget, while also maximising the level of development that can be delivered at NEC in line with the emerging AAP proposals for the area.

To achieve this, planning for the future by simply ‘looking in the rear-view mirror’ and using past performance, is no longer adequate in the face of the opportunities, threats and uncertainties ahead. Strong planning that is vision-led and which negotiates uncertainty to achieve more resilient decision making is necessary. Therefore, mitigation measures must diverge from the traditional approach of ‘predict and provide’ to more of a ‘debate and decide’ approach, where interventions focus on affecting travel behaviour in order to facilitate a shift away from private car rather than simply addressing highway capacity constraints.

This methodology broadly follows the FUTURES (Future Uncertainty Toolkit for Understanding and Responding to an Evolving Society) approach recently developed by Mott MacDonald, in parallel with the production of this transport evidence base.

FUTURES is a new approach to transport planning which helps public authorities to decide on a direction of travel and provide measures to set the course; whereas conventional methods attempt to predict the future and provide measures to match it. Following this approach allows authorities to plan for the desired future and embrace and respond to uncertainty to help ensure policymaking and investment to realise such vision.

Although in the early stages of its development during the preparation of this evidence base, the FUTURES-based concept of societal trends leading to changing travel behaviour is integral to closing the (relatively small) gap between what can demonstrably be achieved via conventional interventions and the required trip budget.

The potential phasing and funding of these measures is considered further in this section.

10.2 Recommended measures

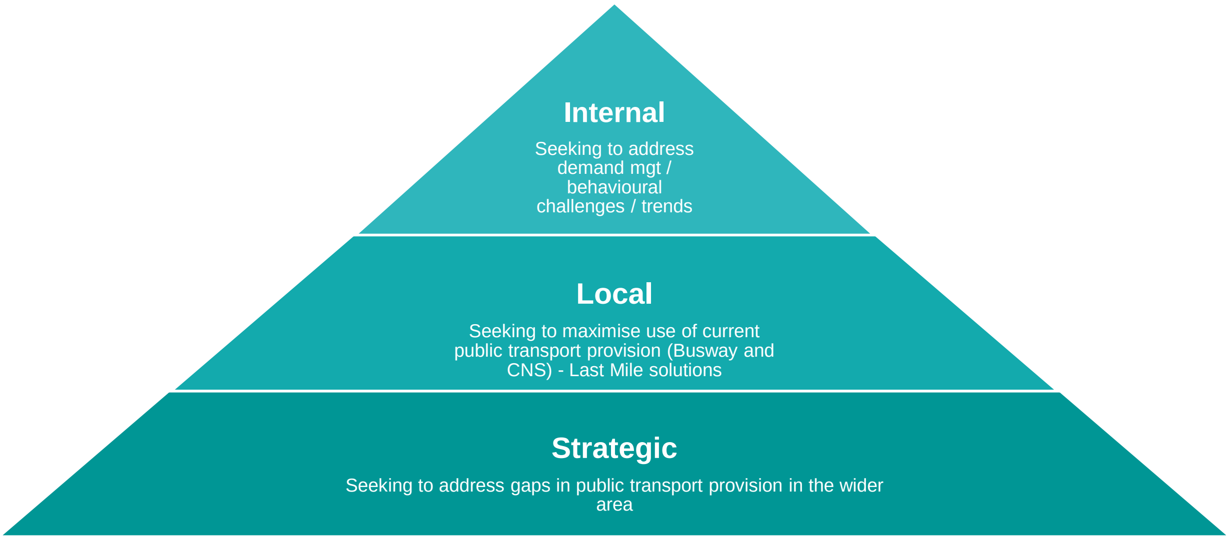
A comprehensive list of transport interventions, presented below in

Table **55**, has been identified which would help to support the delivery of the ambitious mixes of development under consideration for the area. They have been compiled through specialist knowledge, analysis and evidence, together with stakeholder liaison.

As part of this process, a workshop was held on Tuesday 26th February 2019 with a range of public sector transport and planning professionals. The challenges that the area faces were presented, together with the results of technical work undertaken. The client team, as well as representatives from several teams within the local authorities, including urban design, cycling, buses, rail, and smart travel, as well as Highways England, attended the workshop. The main objective of this session was to highlight the challenges the area faces to ensure a collaborative approach to delivering the future for the NEC and to identify a wide range of opportunities for interventions that would assist in delivering the needed car mode shift towards more sustainable travel modes to allow future developments in the area.

These interventions are aimed at three separate impact levels:

Figure 60: Trip budget delivery measure impact levels



Source: Mott MacDonald

Table **55** below summarises the measures derived through the process highlighted above, noting their level of priority – either essential for achieving the trip budget or desirable; as well as when in the delivery phasing they would begin to be required. These are taken from Sections 6 to 8 in terms of their description and potential area of impact, and are shown indicatively in Figure 61 and Figure 62. For ease of reference, measures have been grouped in the three separate categories highlighted above.

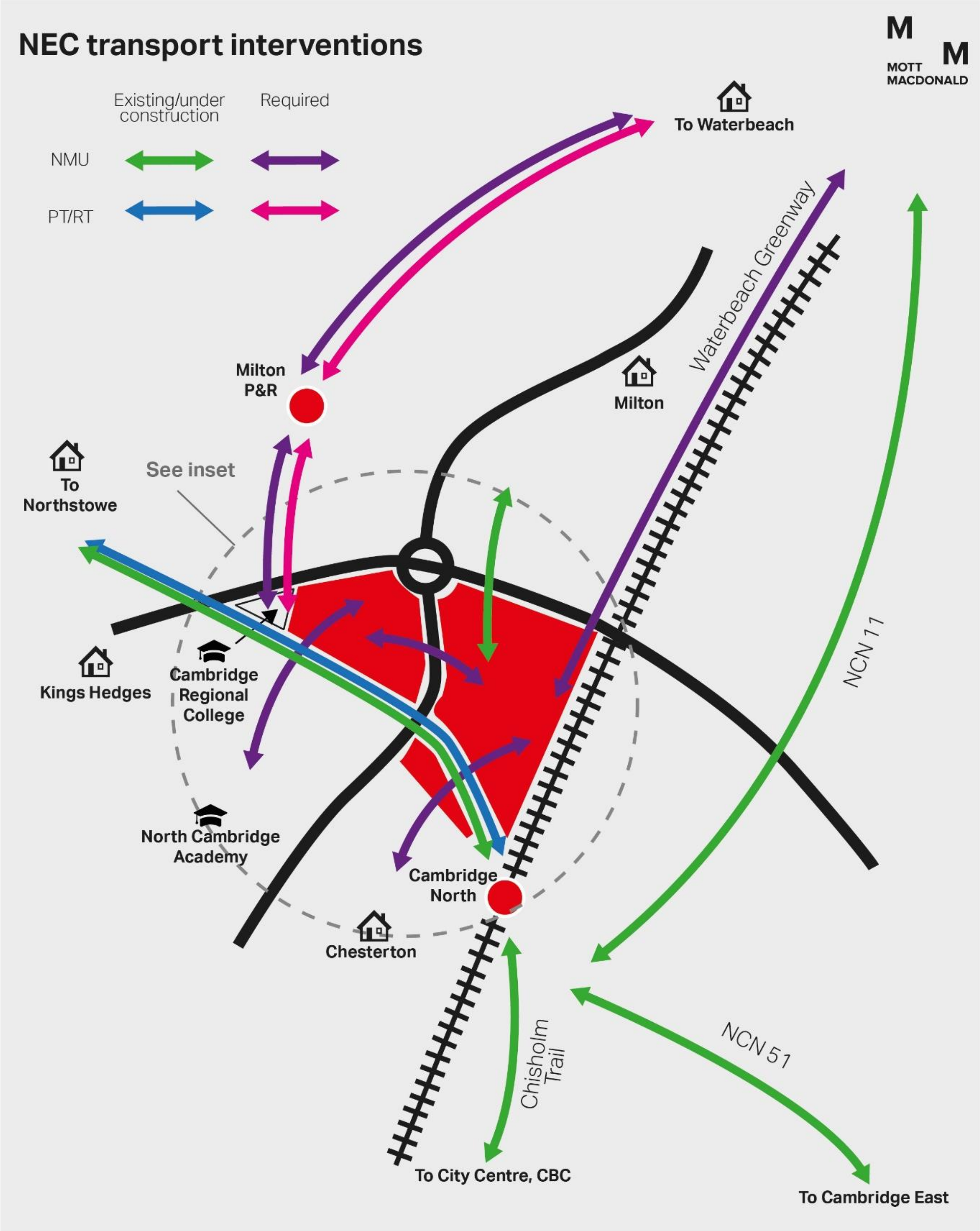
Although the proposed interventions listed below are, to an extent, based on tried-and-tested measures to provide reassurance in a planning context that these are deliverable, in practice and given the rate of technological change in the transport market these will likely be substituted by new and emerging forms of transport including those listed elsewhere in this report. It is important to recognise, therefore, that whilst the site and its occupants should be encouraged to embrace innovation in transport, in evidence-base terms is also important to demonstrate deliverability through conventional measures.

Table 55: Proposed transport interventions

Intervention Description	Ref.	Priority	Phasing Period[1]
Internal Measures			
Spatial framework development promoting connectivity and permeability (improving pedestrian/cycle connectivity to enhance linkages to existing key residential areas, wayfinding and urban realm)	IM1	Essential	ST
Segregated crossing point(s) on Milton Road	IM2	Essential	ST
Crossing points on the busway to reduce barrier effect	IM3	Essential	ST
Highway site access improvements	IM4	Essential	ST
Intra-site shuttle system[2]	IM5	Essential	ST / LT
NEC parking strategy (including low levels of onsite parking provision in line with trip budget and parking monitoring and promotion of Controlled Parking Zones / Residential Parking Schemes where required locally)	IM6	Essential	ED / ST / LT
Travel Plan Measures and Travel Monitoring (inc. e-bikes / e-scooters, incentive programmes, transport subsidies, smartphone apps / information messaging, carsharing, home working / hot-desking culture)	IM7	Essential	ED / ST / LT
Potential changes to development mix / quantum to reduce trip budget impact and increase internalisation levels (e.g. monitor secondary school demand and add provision if needed)	IM8	Desirable	ST / LT
Marketing support to attract residents to the area that are more likely to use alternative travel modes other than car	IM9	Desirable	ST / LT
Incentive scheme to maximise resident-to-employee ratio (Potential for a particular housing development associated with employers in the area or for tax reductions for people who work and live in the area)	IM10	Desirable	ST / LT
Local Measures			
New segregated link from Milton Road P&R to site avoiding interaction with Milton Road	LM1	Essential	ED
Additional P&R spaces at key locations	LM2	Essential	ED / ST / LT
Park and cycle opportunities at P&R locations	LM3	Essential	ED / ST / LT
P&R shuttle system[2]	LM4	Essential	ED / ST / LT
Variable Message Signage (VMS) at key locations to inform drivers of P&R spaces and congestion issues at Milton Rd / Milton Interchange	LM5	Desirable	ED / ST / LT
Strategic Measures			
Additional bus services – extra service buses to enhance links to key areas	SM1	Essential	ST / LT
Additional rail services to be delivered by rail operating companies	SM2	Essential	ST / LT
Delivery of already planned cycle improvements	SM3	Desirable	ST / LT
Plugging gaps in the wider cycle network to enhance routes to key residential areas	SM4	Desirable	ST / LT
Delivery of the wider PT network (e.g. CAM)	SM5	Desirable	ST / LT

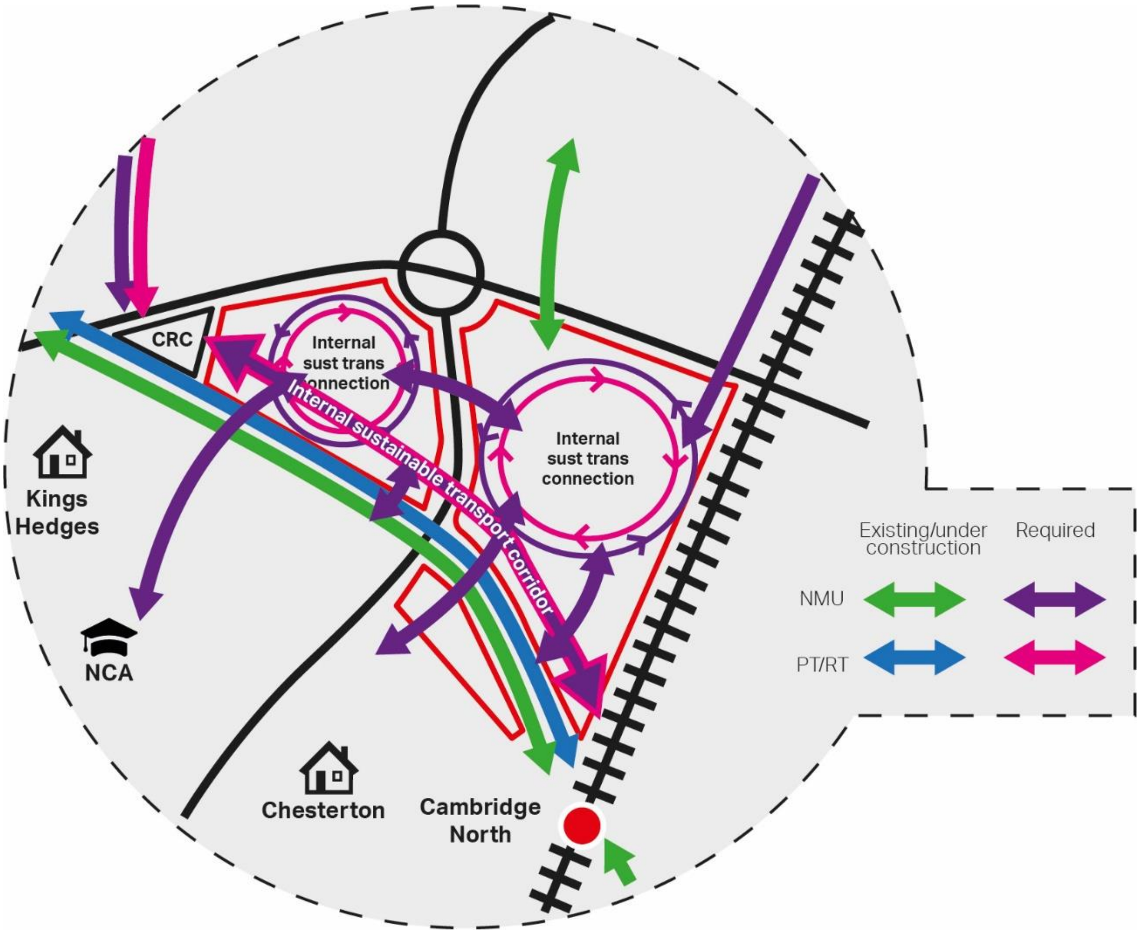
Source: Mott MacDonald and input received from key stakeholders during workshop on 26/02/2019
[1] ED – Early Delivery; SL – Short Term; LT – Long Term. See Section 10.3 below.
[2] This could be delivered as a combination of mass transit options. Potentially taking the form of a bus service in the short term, with other alternative solutions fulfilling this role or assisting in the mid-long term (see Section 7.3.2 for more information). Such alternatives would have to be compatible with future travel systems introduced in Cambridge and nearby environs,

Figure 61: Proposed interventions – Indicative concept plan



Source: CCC & Mott MacDonald.
Note: Arrows shown are for indicative purposes only and do not indicate a preferred route for any of the connections.

Figure 62: Proposed interventions summary plan - Inset



Source: CCC & Mott MacDonald.
Note: Arrows shown are for indicative purposes only and do not indicate a preferred route for any of the connections.

10.3 Phasing and implementation

The key objective of identified interventions for the area is to address travel demand behaviours and trends. This will be achieved in large proportion by introducing and maintaining internal measures from the outset.

However, as highlighted in Section 5, the identified trip budget for the area relies on existing car mode shares being significantly reduced to allow for further trips related to new developments in the area to be made without the budget being breached. Therefore, current travel patterns will have to be addressed prior to significant occupation of any new development, with some of the internal and local measures, including a plan for the co-ordinated management of parking provision, requiring implementation ahead of future development stages. This would also include, at least partially, the implementation of some of the proposed strategic measures in order to provide for gaps in public transport and cater for the needs of existing employees in the area.

Additional local and strategic measures would be required in full at latter stages of development as development progresses and patronage grows.

These different stages in the intervention implementation process will have to be aligned with the spatial framework phasing for the NEC area in order to specify delivery periods in particular. For the purpose of this study, three stages have been identified:

- Early Delivery – ED, referring to the period prior to any significant development occupation
- Short Term – ST, covering the first half of the spatial framework delivery period, and
- Long Term – LT, denoting the period following the ST and until the spatial framework is delivered in full

10.4 Funding considerations

The delivery of the interventions identified as part of this study will be reliant on organisations and stakeholders working together, requiring collaboration between parties for them to come to fruition.

10.4.1 Outline costs

Estimates of the total high-level costs for measures are provided in the table below, highlighting first the overall cost, followed by an approximate proportion of delivery expected per phasing period. The table shows that these could be in the region of £60m including a preliminary estimate of a level of towards the delivery of strategic transport measures contribution (clearly this will need further review and refinement as proposals evolve) but excluding ongoing travel plan measures and monitoring.

At this stage in the process it is clearly difficult to provide definitive cost levels. Those provided below represent high-level estimates and, while they are considered to be reasonable at this stage in the plan-making process, are subject to change given that other measures may emerge as the process progresses and the spatial framework develops. As the plan proceeds, a more detailed costing study will be required to estimate in more detail the costs of interventions, and this will be key to define the actual costs of interventions. Further analysis on how potential funding packages are assembled will also be needed.

Clearly, developer delivery, and developer contributions, will be key to some elements. However, where some of the measures provide also wider benefit there may be a case for further support from public sector funding sources including via the Greater Cambridge Partnership and the Combined Authority. Similarly, where provision is market-led, such as for public transport services, it is considered reasonable to assume that rail and bus operators (and in the longer term providers of more innovative modal solutions) will react to demand by enhancing service provision.

Table 56: Outline intervention costs and programme of investment (£ 2019 values)

Intervention Description	Overall cost	Early Delivery	Short Term	Long Term
Internal Measures				
spatial framework development	N/A			
Segregated crossing point(s) on Milton Road[1] – 2 potential costing alternatives have been considered at this stage for high-level costing purposes				
- Northern location (potential 2-arm shared pedestrian/cycle bridge)	£3.4m	-	£3.4m	-
- Southern location (potential 3-arm shared pedestrian/cycle bridge connecting CSP with Cowley Road east and north)	£5.3m	-	£5.3m	-
Crossing points on the Busway (assumed 2 needed at this point)[1]	£580k	-	£580k	-
Highway site access improvements[1]	£485k	-	£485k	-
Intra-site shuttle system[2]	£9m	-	£4.5m	£4.5m
NEC parking strategy[3]	£300k			
Travel Plan Measures and Travel Monitoring[4]	£150k per annum ongoing costs plus £500 per household/employee			
Potential changes to development mix / quantum to reduce trip budget impact and increase internalisation levels	N/A			
Marketing support to attract residents to the area that are more likely to use alternative travel modes other than car	N/A			
Incentive scheme to maximise resident to employee ratio	N/A			
Local Measures				
New segregated link from Milton Road P&R to site[1, 5]	£13m	£13m	-	-
Additional P&R spaces at key locations (approx. 1,700 spaces, cost to vary depending on provision)[1]	£16.8m	£5.6m	£5.6m	£5.6m
Park and Cycle opportunities at P&R locations (assumed approx. 800 spaces, cost to vary depending on provision)[1]	£280k	£150k	£130k	-
P&R shuttle system (e.g. additional bus services)[6]	£14.4m	£900k	£6.75m	£6.75m
Variable Message Signage (VMS) at key locations to inform drivers of P&R spaces and congestion issues at Milton Rd / Milton interchange (assumed 6 locations)[1]	£950k	(when considered required to maximise use of P&R spaces)		
Strategic Measures				
Additional bus services - Extra service buses to enhance links to key areas[7]. In practice services may be operated by more innovative public transport solutions.	Short term pump-priming funding may be required as demand develops, but in longer term services should be self-funding			
Additional rail services	N/A - Expectation that they will be provided by operators through the refranchising process			
Delivery of already planned cycle improvements	£0.5m[8]			
Plugging gaps in the wider cycle network to enhance routes to key residential areas	£0.5m[9]			
Delivery of the wider PT network (e.g. CAM)	£0.5m[8]			

Source: Mott MacDonald. Notes: All costs are approximate and exclude VAT and utilities related costs.
[1] Due to high-level nature of estimates for infrastructure costs at this point, a contingency of 25% risk cost increase has been applied generally (12.5% for VMS option). Similarly, these costs include 44% optimism bias increase applied

to account for uncertainty (22% only for P&R and P&C options, none for VMS measure as these are relatively tried-and-tested interventions). It is noted that this figure might change as process develops and specific needs are identified.
[2] For costing purposes assumed 4 conventional buses at an approximate cost of £150k bus/year over a period of 15 years equally split over ST and LT. In practice these services may be operated by more innovative public transport solutions.
[3] The parking strategy will be primarily policy based, applying to the subsequent masterplans at design stage. Approximate costs included refer to those involved in monitoring parking and promoting RPSs (assumed 4 schemes at £75k each, CCC to advise whether these are in line with current costs).
[4] Assumed fixed costs to account for ongoing costs (e.g. TPC salary + On-costs, carsharing scheme, website, notice boards, annual events/leaflets, surveys); plus costs per household/employee to account for incentives and individual marketing (e.g. welcome package, PT/MaaS monthly incentives, car club subscription and credit)
[5] Initial cost estimate only. Assumed that existing facilities/infrastructure would be used as much as possible. Details to be confirmed through forthcoming work in the area, including the New Town North of Waterbeach to North East Cambridge Public Transport Study.
[6] Assumed 6 buses at an approximate cost of £150k bus/year over a period of 16 years, 1 year ED, 15 years equally split over ST and LT. In practice these services may be operated by more innovative public transport solutions.
[7] Approximate cost of £150k bus/year can be expected, however, routing, frequency and destinations vary widely. Further information would be required to identify these more firmly. However, in practice services may be operated by more innovative public transport solutions.
[8] Assumed contribution towards wider schemes. It is noted that this figure might change as process develops and specific needs are identified.
[9] Assumed value for developer implementation. It is noted that this figure might change as process develops and specific needs are identified.

In terms of public transport provision, a number of bus and rail services, the emerging CAM public transport system, and /or other alternative rapid transit services will be required at internal, local and strategic level. Service subsidies would be expected to be required over the early years (5 initial running years) to ‘pump-prime’ services to and from strategic destinations until sufficient patronage is built up to make the service self-sustainable. For the purposes of costing, it has been assumed that these will, in the short-term be bus-based, but it is expected that other more innovative solutions would replace these in the longer term.

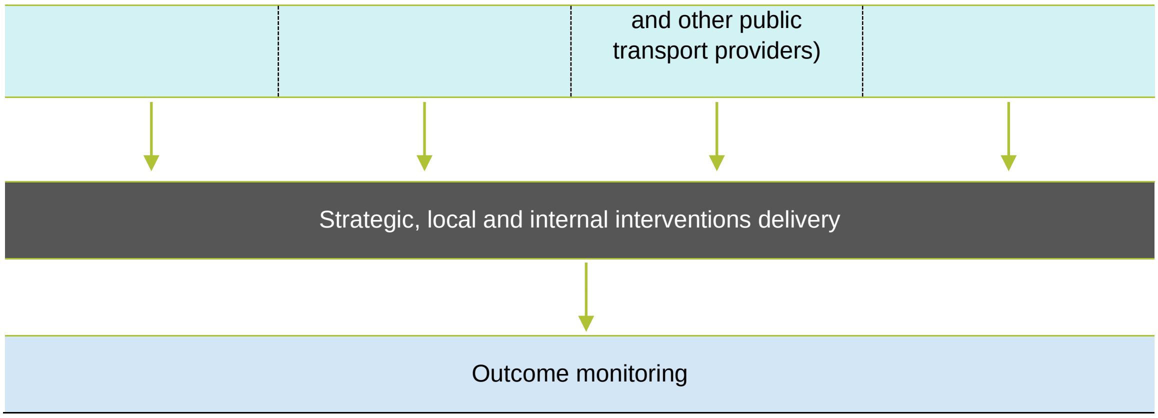
10.4.2 Funding of interventions

There are a number of sources of funding that are expected will support the delivery of the interventions identified within this study and shown in Figure 61. These are highlighted in the following table.

Table 57: Transport strategy funding and delivery process

Central Government	Third parties and private sector including direct developer delivery and developer contributions	Local Delivery Partners: The Greater Cambridge Partnership / Combined Authority / Cambridgeshire County Council

Housing Infrastructure Fund, Major Road Network and Large Local Majors Funding, Growth Deal, Highways England and Network Rail	CIL / S106 / S278	Land Value Capture and other sources (to be identified through further studies), as well as transport operator investments (e.g.: rail	City Deal, Devolved Transport Funding, Local Government Allocations



10.4.3 Delivery of interventions

Some of the schemes reported in this study are part of wider programmes and will be progressed in parallel and continue to inform the NEC AAP, with developments on the AAP area benefitting from these investments. This is particularly the case in relation to strategic transport interventions such as CAM / strategic public transport systems, the GCP's proposals for Milton Road, and the Greenways Network.

Delivery of the more local and internal measures will require a more active and joined-up approach to ensure delivery of the required interventions. Importantly, this should also include co-ordination of funding including through developer contributions, local operator investments, and 'opportunistic' Government fund bidding rounds which could be managed through establishment of a partnership potentially composed of the local public sector bodies, key developer and landowner stakeholders, and transport providers including from the rail and public transport industry and Highways England. This partnership could also have an important role in overseeing performance against the overall trip budget and taking decisions on investment priorities and actions as the AAP area is built out (see 'monitoring and evaluation' below).

10.5 Monitoring and evaluation

A monitoring strategy for any future development which takes place will be critical, which could be subject to legal agreement by developers as part of the planning process. Continuous monitoring will be required as development comes forward to ensure that the identified trip budget is not breached, or otherwise alternative measures are put in place to ensure that the trip budget can be managed, which could include a reduction in development quantum. The monitoring regime should also be extended to include off-site parking.

In the first instance, this will be through the planning process, where detailed information of planning applications will be scrutinised both as standalone applications and overall for the whole NEC area.

Once the above is satisfied and planning applications are granted consent, ongoing monitoring will be required at agreed intervals for as long as the development is active. Such intervals would need to be agreed as part of the planning process negotiations. However, it would be considered that they should be no more than 2 years or less than 6 months between surveys.

In terms of survey data requirements, these would need be sufficient to allow a comparison with the trip budget as identified in this study and extent to cover all traffic access points to the NEC area. Moreover, surveys should gather data so that results also permit an assessment of travel behavioural trends to not only monitor ongoing performance of applied interventions, but also identify which measures are most successful. The objective of this is to not only ensure the trip budget is not breached, but also to seek to reduce traffic flows further where possible whilst also being able to introduce those better performing measures elsewhere to gain holistic traffic reductions that benefit the wider area.

Consideration will need to be given to which bodies have oversight and scrutiny responsibilities for performance against the trip budget. Further work on governance arrangements will clearly be needed but the proposed partnership discussed above could have an important role in monitoring and evaluation of transport in the area.

10.6 Delivery Plan summary

This section highlights what measures are considered required to maintain car trip generation to/from the NEC area within or below the identified car trip budget whilst maximising the level of development that can be delivered at NEC and align with the current proposal ambitions for the area.

A comprehensive list of transport interventions has been identified which have been compiled through specialist knowledge, analysis and evidence, together with stakeholder liaison, including a workshop where the client team, as well as representatives from several teams within the council attended.

Although the proposed interventions identified are, to an extent, based on tried-and-tested measures to provide reassurance in a planning context that these are deliverable, in practice and given the rate of technological change in the transport market these will likely be substituted by new and emerging forms of transport including those listed elsewhere in this report. It is important to recognise, therefore, that whilst the site and its occupants should be encouraged to embrace innovation in transport, in evidence-base terms is also important to demonstrate deliverability through conventional measures.

The identified interventions have been categorised under internal, local or strategic impact levels. Internal measures seek to address demand management and behavioural challenges. Local measures aim at maximising current public transport provision and last mile solutions. Lastly, strategic measures seek to address public transport provision gaps in the wider area.

Internal measures are considered key to address travel demand behaviours and trends and these would need to be introduced and maintained from the outset. Parking provision is a key factor in influencing these behaviours. Moreover, the identified trip budget for the area relies on existing car mode shares being reduced to allow for further trips related to new developments in the area to be made without the budget being breached. Therefore, current travel patterns will have to be modified prior to the significant occupation of any new development with some of the internal and local measures requiring implementation ahead of future development stages. This would also include, at least partially, the implementation of some of the proposed strategic measures in order to provide for gaps in public transport and cater for the needs of existing employees in the area. Additional local and strategic measures would be required in full at latter stages of development as development progresses and patronage grows.

The delivery of the interventions will be reliant on organisations and stakeholders working together, requiring collaboration between parties for them to come to fruition. This requires CCC, South Cambridgeshire DC, Cambridge City Council, the GCP and the CA, developers, statutory undertakers and other stakeholders including highway and public transport operators, to work together to harness available mainstream funding sources to ensure the required infrastructure is delivered; with further sources of funding being required, including third party, S106, S278 and CIL, as well as other sources, to help deliver the internal and local measures.

Continuous monitoring will be required as development comes forward to ensure that the identified trip budget is not breached. In the first instance, this will be through the planning process, to then take the form of traffic/travel surveys at agreed intervals for as long as the development is active, with such intervals being agreed as part of the planning process negotiations.

11 Summary and conclusions

This AAP Transport Evidence Base has identified a number of existing issues associated with the transport network surrounding the NEC and challenges faced in the context of future development and trip generation related to the study area.

The work has identified a highway ‘trip budget’ within which traffic levels would need to be kept to avoid a severe transport impact. Delivering the growth represented by the different AAP development scenarios tested for this study in a way that does not result in peak-period highway trip levels increasing above the identified trip budget will require the relatively unconstrained car mode-share level of today to be significantly reduced in future.

Potential interventions have been investigated to achieve this that fall mainly within the following categories:

- encouraging internalisation of trips
- maximising non-car mode use (including parking restrictions, increased accessibility and implementation of travel planning measures)
- increasing non-car mode overlap
- increasing Park & Ride usage and, in the longer term, potential increased take-up of new demand responsive feeder modes, and
- accounting for future travel trends and emerging technology

This study proposes a comprehensive list of transport interventions that has been compiled through specialist knowledge, analysis and evidence, together with stakeholder liaison. These identified interventions have been categorised under internal, local or strategic impact levels. Internal measures seek to address demand management and behavioural challenges; local measures aim at maximising current public transport provision and last mile solutions; and strategic measures seek to address public transport provision gaps in the wider area. A summary of these is provided below:

- Internal measures:
  - NEC parking strategy (including parking monitoring and promotion of Residential Parking Schemes where required locally) in order to achieve low levels of parking provision commensurate with the required highway trip budget and a pro-active approach to car parking management
  - Spatial framework development promoting connectivity and permeability (improving pedestrian/cycle connectivity to enhance linkages to existing key residential areas, wayfinding and urban realm)

  - Segregated crossing point(s) on Milton Road to maximise inter-site permeability (which, subject to further design and viability assessment, could take the form of a green bridge connecting the NEC on both sides of the road, or other grade separated solutions)
  - Crossing points on the busway to reduce the barrier effect
  - Highway site access improvements and rationalisation
  - Intra-site shuttle system
  - Travel Plan Measures and Travel Monitoring (including potential micro-modes such as e-bikes / e-scooters, incentive programmes, transport subsidies, smartphone apps / information messaging, carsharing, home working / hot-desking culture)
  - Potential changes to development mix / quantum to reduce trip budget impact and increase internalisation levels
  - Marketing support to attract residents to the area that are more likely to use alternative travel modes other than car, and
  - Incentive scheme to maximise resident-to-employee ratio
- Local measures:
  - New segregated public transport link from Milton Road P&R to site avoiding interaction with Milton Road and including shared pedestrian / cycling facilities
  - Additional P&R spaces at key locations
  - Park and cycle opportunities at P&R locations
  - P&R shuttle system, and
  - Variable Message Signage (VMS) at key locations to inform drivers of P&R spaces and congestion issues at Milton Rd / Milton Interchange
- Strategic measures:
  - Additional public transport services (including buses and rail but, in the medium term, taking advantage of the benefits that future forms of mobility and rapid transport will bring)
  - Delivery of already planned cycle improvements including the Greenway network and the Chisholm Trail
  - Plugging gaps in the wider cycle network to enhance routes to key residential areas
  - Delivery of the wider PT network (e.g. CAM)
  - Delivery of potential demand responsive feeder services to park and ride sites to potentially reduce the role of car as an access mode to these travel hubs.

Internal measures are considered crucial to address travel demand behaviours and trends and these would need to be introduced and maintained from the outset. Parking restraint is a key factor in influencing these behaviours by implementing trip budget compliant restrictions at the destination end and with appropriate provision at the trip origin end too.

Strengthening current travel trends leading to lower car usage via softer measures and travel planning and making use of future mobility technologies to further encourage this, will also have a vital place in accomplishing a travel mode shift away from car on development mixes that come forward at the site.

The identified trip budget for the area relies on existing car mode shares being reduced to allow for further trips related to new developments in the area to be made without the budget being breached. Therefore, current travel patterns will have to be modified prior to the significant occupation of any new development with some of the internal and local measures requiring implementation ahead of future development stages. This would also include, at least partially, the implementation of some of the proposed strategic measures in order to provide for gaps in public transport and cater for the needs of existing employees in the area.

Additional local and strategic measures would be required in full at latter stages of development as development progresses and patronage grows. The delivery of strategic public transport interventions is also key, and without these the potential for this area to meet its targets of achieving a high public transport mode share will be severely curtailed.

A monitoring strategy for any future development which takes place will be critical, which would need to be subject to planning conditions or legal agreements with developers as part of the planning process. Continuous monitoring will be required as development comes forward to ensure that the identified trip budget is not breached. Such monitoring can be used to ensure compliance with the proposed trip budget, to minimise inappropriate off-site parking, and to contribute to this quarter of Cambridge being less-car dominated than it is today. If this cannot be achieved, then other measures will need to be considered to ensure the trip budget can be managed and accommodated on the network.

Overall, the conclusion of this study is that delivery of the proposed development scenarios is feasible from a transport perspective, but this will require significant reductions in car mode share.

Whilst challenging and representing a significant change from ‘business as usual’ behaviours, this is considered achievable with appropriate, and significantly reduced, levels of parking provision and a co-ordinated approach to its management and delivery; transport investment in both conventional and more innovative solutions to provide wider non-car accessibility; place-making measures that enhance permeability for walking and cycling; and wider societal trends in transport take-up.

Appendices

A. 2017 base turning counts

Figure 63: AM peak counts (08:00-09:00)

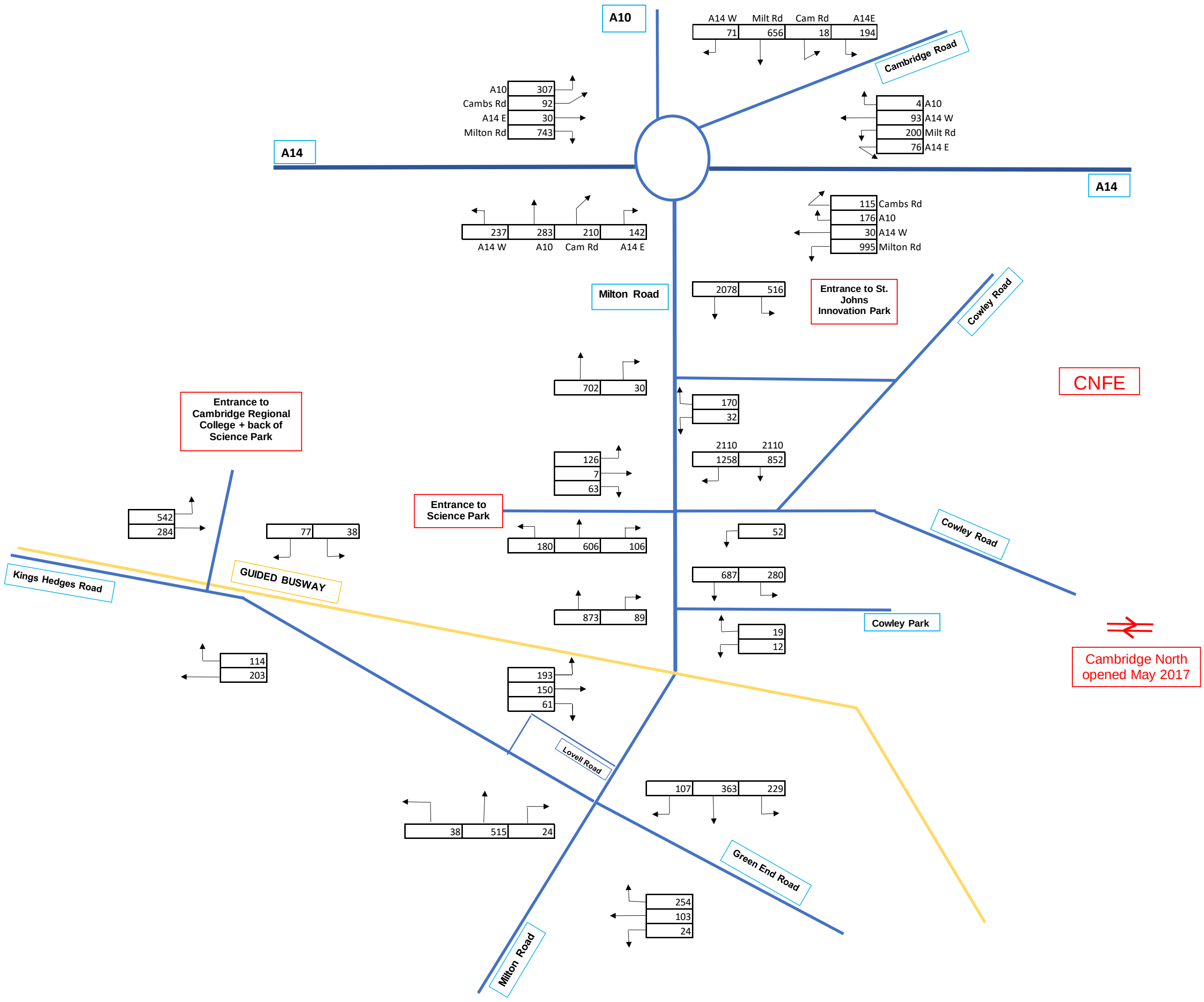
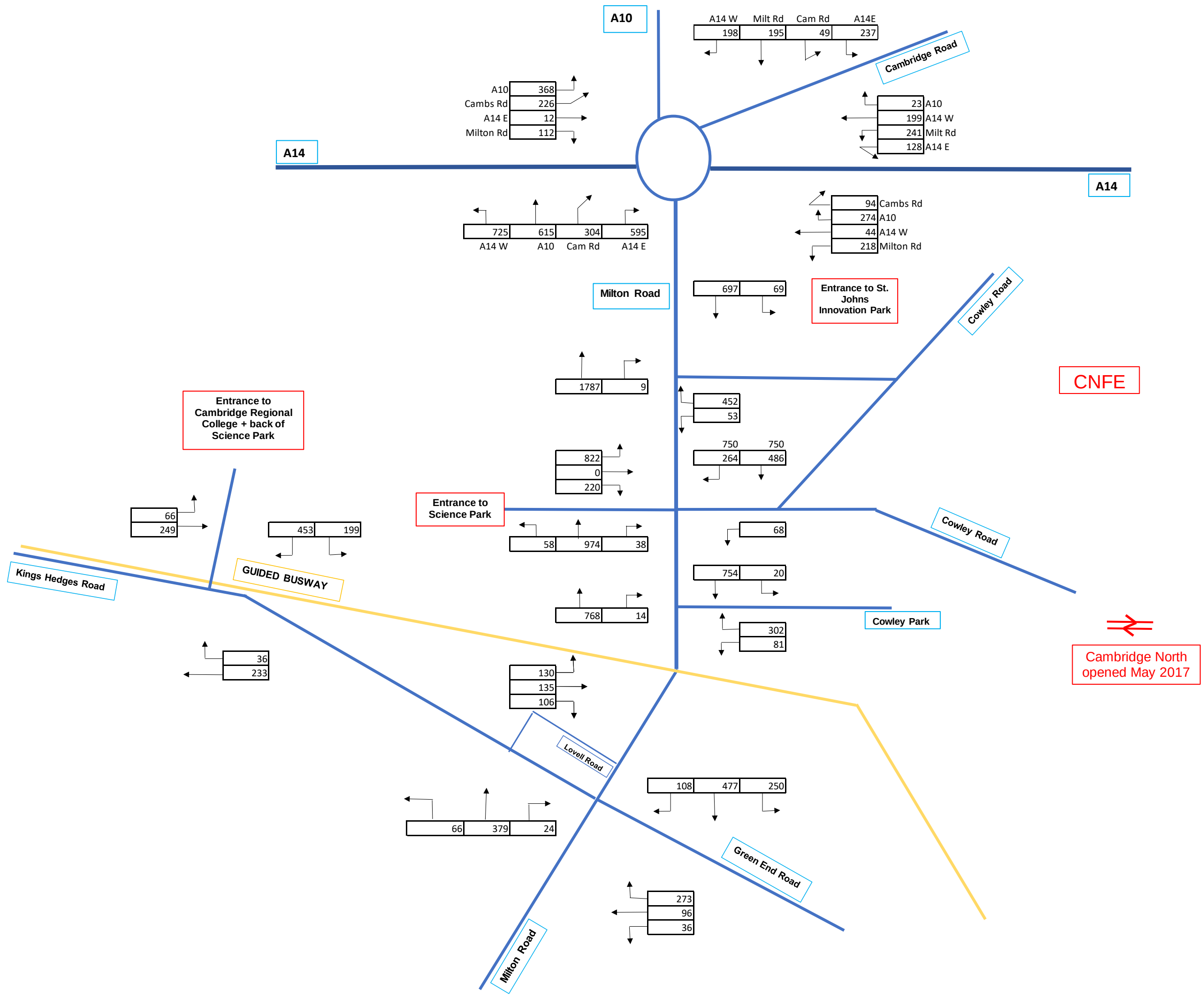


Figure 64: PM peak counts (17:00-18:00)



B. TRICS data outputs

B.1 B1 Business Park trip rate per job

Calculation Reference: AUDIT-704103-181031-1045

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of Employees
Actual Range: 320 to 5000 (units:)
Range Selected by User: 200 to 6069 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 22/11/17

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Wednesday	1 days
Thursday	1 days
Friday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	1
Edge of Town	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Commercial Zone	2
No Sub Category	3

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B1	6 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	3 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	2 days
No	4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	6 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 CA-02-B-03 SCIENCE PARK CAMBRIDGESHIRE
MILTON ROAD
CAMBRIDGE

Edge of Town
No Sub Category
Total Number of Employees: 5000
Survey date: FRIDAY 06/10/17 Survey Type: MANUAL

2 FA-02-B-02 BUSINESS PARK FALKIRK
CALLENDAR BOULEVARD
FALKIRK
CALLENDAR PARK
Edge of Town
Commercial Zone
Total Number of Employees: 500
Survey date: FRIDAY 31/05/13 Survey Type: MANUAL

3 HC-02-B-02 BUSINESS PARK HAMPSHIRE
WESTERN ROAD
PORTSMOUTH

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of Employees: 2800
Survey date: FRIDAY 18/10/13 Survey Type: MANUAL

4 SC-02-B-03 BUSINESS PARK SURREY
A331
FRIMLEY

Edge of Town Centre
No Sub Category
Total Number of Employees: 500
Survey date: TUESDAY 27/11/12 Survey Type: MANUAL

5 SH-02-B-04 BUSINESS PARK SHROPSHIRE
STAFFORD COURT
TELFORD

Edge of Town Centre
Commercial Zone
Total Number of Employees: 320
Survey date: THURSDAY 24/10/13 Survey Type: MANUAL

6 ST-02-B-04 BUSINESS PARK STAFFORDSHIRE
STONE ROAD
STAFFORD

Edge of Town
Industrial Zone
Total Number of Employees: 1082
Survey date: WEDNESDAY 22/11/17 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL VEHICLES
Calculation factor: 1 EMPLOY
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	6	1700	0.151	6	1700	0.020	6	1700	0.171
08:00 - 09:00	6	**1700**	**0.313**	6	1700	0.032	6	**1700**	**0.345**
09:00 - 10:00	6	1700	0.109	6	1700	0.032	6	1700	0.141
10:00 - 11:00	6	1700	0.035	6	1700	0.023	6	1700	0.058
11:00 - 12:00	6	1700	0.032	6	1700	0.032	6	1700	0.064
12:00 - 13:00	6	1700	0.043	6	1700	0.066	6	1700	0.109
13:00 - 14:00	6	1700	0.052	6	1700	0.044	6	1700	0.096
14:00 - 15:00	6	1700	0.037	6	1700	0.039	6	1700	0.076
15:00 - 16:00	6	1700	0.023	6	1700	0.068	6	1700	0.091
16:00 - 17:00	6	1700	0.024	6	1700	0.109	6	1700	0.133
17:00 - 18:00	6	1700	0.018	6	**1700**	**0.221**	6	1700	0.239
18:00 - 19:00	6	1700	0.008	6	1700	0.146	6	1700	0.154
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.845			0.832			1.677

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	320 - 5000 (units:)
Survey date date range:	01/01/10 - 22/11/17
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 EMPLOY
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	6	1700	0.204	6	1700	0.025	6	1700	0.229
08:00 - 09:00	6	**1700**	**0.439**	6	1700	0.052	6	**1700**	**0.491**
09:00 - 10:00	6	1700	0.170	6	1700	0.045	6	1700	0.215
10:00 - 11:00	6	1700	0.059	6	1700	0.039	6	1700	0.098
11:00 - 12:00	6	1700	0.051	6	1700	0.050	6	1700	0.101
12:00 - 13:00	6	1700	0.075	6	1700	0.104	6	1700	0.179
13:00 - 14:00	6	1700	0.092	6	1700	0.074	6	1700	0.166
14:00 - 15:00	6	1700	0.056	6	1700	0.057	6	1700	0.113
15:00 - 16:00	6	1700	0.039	6	1700	0.103	6	1700	0.142
16:00 - 17:00	6	1700	0.042	6	1700	0.176	6	1700	0.218
17:00 - 18:00	6	1700	0.032	6	**1700**	**0.323**	6	1700	0.355
18:00 - 19:00	6	1700	0.017	6	1700	0.200	6	1700	0.217
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.276			1.248			2.524

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

B.2 B2 Industrial Estate trip rate per job

Calculation Reference: AUDIT-704103-181031-1024

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : D - INDUSTRIAL ESTATE
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
	KC	KENT	1 days
03	SOUTH WEST		
	BR	BRISTOL CITY	2 days
	CW	CORNWALL	1 days
	DV	DEVON	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	WY	WEST YORKSHIRE	1 days
09	NORTH		
	TW	TYNE & WEAR	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of Employees
Actual Range: 23 to 550 (units:)
Range Selected by User: 23 to 550 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 03/07/17

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	2 days
Wednesday	2 days
Thursday	1 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	10 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4
Edge of Town	5
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	4
Development Zone	1
Residential Zone	4
Village	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B2	10 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	1 days
5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	2 days
25,001 to 50,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	2 days
75,001 to 100,000	1 days
125,001 to 250,000	5 days
250,001 to 500,000	1 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	7 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	10 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	10 days

This data displays the number of selected surveys with PTAL Ratings.

<u>*LIST OF SITES relevant to selection parameters*</u>

1	BR-02-D-04	INDUSTRIAL ESTATE		BRISTOL CITY
	CROFTS END ROAD BRISTOL SPEEDWELL Suburban Area (PPS6 Out of Centre) Industrial Zone			
	Total Number of Employees:		59	
	Survey date: FRIDAY		*29/11/13*	*Survey Type: MANUAL*
2	BR-02-D-05	INDUSTRIAL ESTATE		BRISTOL CITY
	NOVERS HILL BRISTOL BEDMINSTER Suburban Area (PPS6 Out of Centre) Industrial Zone			
	Total Number of Employees:		97	
	Survey date: FRIDAY		*29/11/13*	*Survey Type: MANUAL*
3	CW-02-D-03	IND. ESTATE		CORNWALL
	LONG ROCK ROAD NEAR PENZANCE LONG ROCK Neighbourhood Centre (PPS6 Local Centre) Village			
	Total Number of Employees:		550	
	Survey date: MONDAY		*03/10/11*	*Survey Type: MANUAL*
4	DV-02-D-07	INDUSTRIAL ESTATE		DEVON
	BITTERN ROAD EXETER SOWTON IND. ESTATE Edge of Town Industrial Zone			
	Total Number of Employees:		77	
	Survey date: MONDAY		*03/07/17*	*Survey Type: MANUAL*
5	ES-02-D-06	INDUSTRIAL ESTATE		EAST SUSSEX
	COURTLANDS ROAD EASTBOURNE Edge of Town Residential Zone			
	Total Number of Employees:		330	
	Survey date: MONDAY		*21/10/13*	*Survey Type: MANUAL*
6	FA-02-D-02	INDUSTRIAL ESTATE		FALKIRK
	MAIN STREET FALKIRK GRAHAMSTON Suburban Area (PPS6 Out of Centre) Residential Zone			
	Total Number of Employees:		115	
	Survey date: THURSDAY		*30/05/13*	*Survey Type: MANUAL*
7	KC-02-D-02	INDUSTRIAL ESTATE		KENT
	SOUTHWELL ROAD DEAL Edge of Town Residential Zone			
	Total Number of Employees:		150	
	Survey date: WEDNESDAY		*28/11/12*	*Survey Type: MANUAL*
8	TW-02-D-08	INDUSTRIAL ESTATE		TYNE & WEAR
	NORTH HYLTON ROAD SUNDERLAND SOUTHWICK Suburban Area (PPS6 Out of Centre) Development Zone			
	Total Number of Employees:		180	
	Survey date: TUESDAY		*04/04/17*	*Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	WM-02-D-02	INDUSTRIAL ESTATE		WEST MIDLANDS
	DUNLOP WAY			
	BIRMINGHAM			
	Edge of Town			
	Residential Zone			
	Total Number of Employees:		347	
	Survey date: WEDNESDAY		*07/11/12*	*Survey Type: MANUAL*
10	WY-02-D-06	INDUSTRIAL ESTATE (PART)		WEST YORKSHIRE
	PIONEER WAY			
	CASTLEFORD			
	Edge of Town			
	Industrial Zone			
	Total Number of Employees:		23	
	Survey date: TUESDAY		*23/05/17*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
MULTI-MODAL VEHICLES
Calculation factor: 1 EMPLOY
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	10	193	0.084	10	193	0.021	10	193	0.105
07:30 - 08:00	**10**	**193**	**0.172**	10	193	0.048	10	193	0.220
08:00 - 08:30	10	193	0.151	10	193	0.082	**10**	**193**	**0.233**
08:30 - 09:00	10	193	0.149	10	193	0.079	10	193	0.228
09:00 - 09:30	10	193	0.113	10	193	0.084	10	193	0.197
09:30 - 10:00	10	193	0.101	10	193	0.075	10	193	0.176
10:00 - 10:30	10	193	0.103	10	193	0.084	10	193	0.187
10:30 - 11:00	10	193	0.082	10	193	0.081	10	193	0.163
11:00 - 11:30	10	193	0.090	10	193	0.088	10	193	0.178
11:30 - 12:00	10	193	0.107	10	193	0.109	10	193	0.216
12:00 - 12:30	10	193	0.112	10	193	0.103	10	193	0.215
12:30 - 13:00	10	193	0.091	10	193	0.109	10	193	0.200
13:00 - 13:30	10	193	0.099	10	193	0.100	10	193	0.199
13:30 - 14:00	10	193	0.099	10	193	0.084	10	193	0.183
14:00 - 14:30	10	193	0.099	10	193	0.102	10	193	0.201
14:30 - 15:00	10	193	0.088	10	193	0.091	10	193	0.179
15:00 - 15:30	10	193	0.087	10	193	0.098	10	193	0.185
15:30 - 16:00	10	193	0.074	10	193	0.112	10	193	0.186
16:00 - 16:30	10	193	0.078	10	193	0.122	10	193	0.200
16:30 - 17:00	10	193	0.075	10	193	0.132	10	193	0.207
17:00 - 17:30	10	193	0.045	**10**	**193**	**0.158**	10	193	0.203
17:30 - 18:00	10	193	0.031	10	193	0.118	10	193	0.149
18:00 - 18:30	10	193	0.026	10	193	0.054	10	193	0.080
18:30 - 19:00	10	193	0.020	10	193	0.033	10	193	0.053
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			2.176			2.167			4.343

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	23 - 550 (units:)
Survey date date range:	01/01/10 - 03/07/17
Number of weekdays (Monday-Friday):	10
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 EMPLOY
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate	No. Days	Ave. EMPLOY	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	10	193	0.107	10	193	0.021	10	193	0.128
07:30 - 08:00	**10**	**193**	**0.232**	10	193	0.063	10	193	0.295
08:00 - 08:30	10	193	0.193	10	193	0.105	10	193	0.298
08:30 - 09:00	10	193	0.201	10	193	0.104	**10**	**193**	**0.305**
09:00 - 09:30	10	193	0.146	10	193	0.098	10	193	0.244
09:30 - 10:00	10	193	0.124	10	193	0.092	10	193	0.216
10:00 - 10:30	10	193	0.127	10	193	0.106	10	193	0.233
10:30 - 11:00	10	193	0.106	10	193	0.111	10	193	0.217
11:00 - 11:30	10	193	0.124	10	193	0.113	10	193	0.237
11:30 - 12:00	10	193	0.133	10	193	0.137	10	193	0.270
12:00 - 12:30	10	193	0.142	10	193	0.131	10	193	0.273
12:30 - 13:00	10	193	0.111	10	193	0.149	10	193	0.260
13:00 - 13:30	10	193	0.128	10	193	0.134	10	193	0.262
13:30 - 14:00	10	193	0.130	10	193	0.117	10	193	0.247
14:00 - 14:30	10	193	0.129	10	193	0.129	10	193	0.258
14:30 - 15:00	10	193	0.123	10	193	0.118	10	193	0.241
15:00 - 15:30	10	193	0.116	10	193	0.133	10	193	0.249
15:30 - 16:00	10	193	0.100	10	193	0.163	10	193	0.263
16:00 - 16:30	10	193	0.106	10	193	0.166	10	193	0.272
16:30 - 17:00	10	193	0.099	10	193	0.172	10	193	0.271
17:00 - 17:30	10	193	0.063	**10**	**193**	**0.202**	10	193	0.265
17:30 - 18:00	10	193	0.042	10	193	0.154	10	193	0.196
18:00 - 18:30	10	193	0.043	10	193	0.075	10	193	0.118
18:30 - 19:00	10	193	0.025	10	193	0.041	10	193	0.066
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			2.850			2.834			5.684

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

B.3 B1 Business Park trip rate per 100m^2 GFA

Calculation Reference: AUDIT-704103-181030-1021

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 10175 to 142687 (units: sqm)
Range Selected by User: 10000 to 142687 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 22/11/17

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Wednesday	1 days
Thursday	1 days
Friday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	1
Edge of Town	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Commercial Zone	2
No Sub Category	3

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B1	6 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	3 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	2 days
No	4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	6 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 CA-02-B-03 SCIENCE PARK CAMBRIDGESHIRE
MILTON ROAD
CAMBRIDGE

Edge of Town
No Sub Category
Total Gross floor area: 142687 sqm
Survey date: FRIDAY 06/10/17 Survey Type: MANUAL

2 FA-02-B-02 BUSINESS PARK FALKIRK
CALLENDAR BOULEVARD
FALKIRK
CALLENDAR PARK
Edge of Town
Commercial Zone
Total Gross floor area: 16000 sqm
Survey date: FRIDAY 31/05/13 Survey Type: MANUAL

3 HC-02-B-02 BUSINESS PARK HAMPSHIRE
WESTERN ROAD
PORTSMOUTH

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 55000 sqm
Survey date: FRIDAY 18/10/13 Survey Type: MANUAL

4 SC-02-B-03 BUSINESS PARK SURREY
A331
FRIMLEY

Edge of Town Centre
No Sub Category
Total Gross floor area: 20160 sqm
Survey date: TUESDAY 27/11/12 Survey Type: MANUAL

5 SH-02-B-04 BUSINESS PARK SHROPSHIRE
STAFFORD COURT
TELFORD

Edge of Town Centre
Commercial Zone
Total Gross floor area: 10175 sqm
Survey date: THURSDAY 24/10/13 Survey Type: MANUAL

6 ST-02-B-04 BUSINESS PARK STAFFORDSHIRE
STONE ROAD
STAFFORD

Edge of Town
Industrial Zone
Total Gross floor area: 20760 sqm
Survey date: WEDNESDAY 22/11/17 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	6	44130	0.181	6	44130	0.030	6	44130	0.211
07:30 - 08:00	6	44130	0.400	6	44130	0.046	6	44130	0.446
08:00 - 08:30	6	44130	0.589	6	44130	0.064	6	44130	0.653
08:30 - 09:00	6	**44130**	**0.619**	6	44130	0.059	6	**44130**	**0.678**
09:00 - 09:30	6	44130	0.310	6	44130	0.070	6	44130	0.380
09:30 - 10:00	6	44130	0.111	6	44130	0.054	6	44130	0.165
10:00 - 10:30	6	44130	0.079	6	44130	0.047	6	44130	0.126
10:30 - 11:00	6	44130	0.057	6	44130	0.043	6	44130	0.100
11:00 - 11:30	6	44130	0.069	6	44130	0.056	6	44130	0.125
11:30 - 12:00	6	44130	0.053	6	44130	0.067	6	44130	0.120
12:00 - 12:30	6	44130	0.072	6	44130	0.136	6	44130	0.208
12:30 - 13:00	6	44130	0.094	6	44130	0.119	6	44130	0.213
13:00 - 13:30	6	44130	0.107	6	44130	0.094	6	44130	0.201
13:30 - 14:00	6	44130	0.094	6	44130	0.074	6	44130	0.168
14:00 - 14:30	6	44130	0.088	6	44130	0.075	6	44130	0.163
14:30 - 15:00	6	44130	0.054	6	44130	0.075	6	44130	0.129
15:00 - 15:30	6	44130	0.043	6	44130	0.137	6	44130	0.180
15:30 - 16:00	6	44130	0.048	6	44130	0.123	6	44130	0.171
16:00 - 16:30	6	44130	0.048	6	44130	0.172	6	44130	0.220
16:30 - 17:00	6	44130	0.044	6	44130	0.249	6	44130	0.293
17:00 - 17:30	6	44130	0.039	6	**44130**	**0.445**	6	44130	0.484
17:30 - 18:00	6	44130	0.031	6	44130	0.406	6	44130	0.437
18:00 - 18:30	6	44130	0.015	6	44130	0.329	6	44130	0.344
18:30 - 19:00	6	44130	0.015	6	44130	0.232	6	44130	0.247
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			3.260			3.202			6.462

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	10175 - 142687 (units: sqm)
Survey date date range:	01/01/10 - 22/11/17
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	6	44130	0.246	6	44130	0.039	6	44130	0.285
07:30 - 08:00	6	44130	0.540	6	44130	0.058	6	44130	0.598
08:00 - 08:30	6	44130	0.831	6	44130	0.115	6	44130	0.946
08:30 - 09:00	6	**44130**	**0.861**	6	44130	0.087	6	**44130**	**0.948**
09:00 - 09:30	6	44130	0.458	6	44130	0.094	6	44130	0.552
09:30 - 10:00	6	44130	0.196	6	44130	0.081	6	44130	0.277
10:00 - 10:30	6	44130	0.129	6	44130	0.079	6	44130	0.208
10:30 - 11:00	6	44130	0.100	6	44130	0.073	6	44130	0.173
11:00 - 11:30	6	44130	0.110	6	44130	0.076	6	44130	0.186
11:30 - 12:00	6	44130	0.086	6	44130	0.114	6	44130	0.200
12:00 - 12:30	6	44130	0.126	6	44130	0.221	6	44130	0.347
12:30 - 13:00	6	44130	0.163	6	44130	0.181	6	44130	0.344
13:00 - 13:30	6	44130	0.186	6	44130	0.165	6	44130	0.351
13:30 - 14:00	6	44130	0.167	6	44130	0.119	6	44130	0.286
14:00 - 14:30	6	44130	0.128	6	44130	0.110	6	44130	0.238
14:30 - 15:00	6	44130	0.088	6	44130	0.109	6	44130	0.197
15:00 - 15:30	6	44130	0.074	6	44130	0.197	6	44130	0.271
15:30 - 16:00	6	44130	0.075	6	44130	0.199	6	44130	0.274
16:00 - 16:30	6	44130	0.082	6	44130	0.281	6	44130	0.363
16:30 - 17:00	6	44130	0.080	6	44130	0.397	6	44130	0.477
17:00 - 17:30	6	44130	0.069	6	**44130**	**0.647**	6	44130	0.716
17:30 - 18:00	6	44130	0.056	6	44130	0.598	6	44130	0.654
18:00 - 18:30	6	44130	0.037	6	44130	0.452	6	44130	0.489
18:30 - 19:00	6	44130	0.027	6	44130	0.320	6	44130	0.347
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			4.915			4.812			9.727

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

B.4 B2 Industrial Estate trip rate per 100m^2 GFA

Filtering Summary

Land Use	02/C	EMPLOYMENT/INDUSTRIAL UNIT
Selected Trip Rate Calculation Parameter Range	2000-40000 sqm GFA	
Actual Trip Rate Calculation Parameter Range	3513-14125 sqm GFA	
Date Range	Minimum: 01/01/10	Maximum: 06/07/17
Days of the week selected	Tuesday	1
	Thursday	3
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	2
	Edge of Town	1
	Free Standing (PPS6 Out of Town)	1
Population <1 Mile ranges selected	1,000 or Less	1
	10,001 to 15,000	1
	15,001 to 20,000	1
	25,001 to 50,000	1
Population <5 Mile ranges selected	50,001 to 75,000	1
	125,001 to 250,000	2
	250,001 to 500,000	1
Car Ownership <5 Mile ranges selected	0.6 to 1.0	2
	1.1 to 1.5	1
	1.6 to 2.0	1
PTAL Rating	No PTAL Present	4

Calculation Reference: AUDIT-704103-181030-1029

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : C - INDUSTRIAL UNIT
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	WS	WEST SUSSEX	1 days
03	SOUTH WEST		
	DV	DEVON	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
10	WALES		
	CF	CARDIFF	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 3513 to 14125 (units: sqm)
Range Selected by User: 2000 to 40000 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 06/07/17

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Thursday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	1
Free Standing (PPS6 Out of Town)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	3
Out of Town	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B1	3 days
B2	1 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Secondary Filtering selection (Cont.):

Population within 1 mile:

1,000 or Less	1 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	1 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	4 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	CF-02-C-02	Site area:	2.67 hect
Development Name:	BAKERY	Gross floor area:	14125 sqm
Location:	CARDIFF	Parking spaces:	147
Postcode:	CF14 4UZ	Number of Employees:	225
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	06/10/16
Sub-Location Type:	Industrial Zone	Survey Day:	Thursday
PTAL:	n/a		

Site(2):	DV-02-C-02	Site area:	0.95 hect
Development Name:	ENERGY RECOVERY FACILITY	Gross floor area:	3513 sqm
Location:	EXETER	Parking spaces:	42
Postcode:	EX2 8QE	Number of Employees:	17
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	06/07/17
Sub-Location Type:	Industrial Zone	Survey Day:	Thursday
PTAL:	n/a		

Site(3):	WM-02-C-03	Site area:	0.62 hect
Development Name:	INDUSTRIAL GLASS	Gross floor area:	5070 sqm
Location:	SMETHWICK	Parking spaces:	22
Postcode:	B66 2PP	Number of Employees:	35
Main Location Type:	Edge of Town	Survey Date:	06/11/12
Sub-Location Type:	Industrial Zone	Survey Day:	Tuesday
PTAL:	n/a		

Site(4):	WS-02-C-02	Site area:	3.72 hect
Development Name:	AVIATION COMPANY	Gross floor area:	11375 sqm
Location:	NEAR HORSHAM	Parking spaces:	441
Postcode:	RH13 0AS	Number of Employees:	372
Main Location Type:	Free Standing (PPS6 Out of Town)	Survey Date:	23/01/14
Sub-Location Type:	Out of Town	Survey Day:	Thursday
PTAL:	n/a		

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	1	11375	0.149	1	11375	0.044	1	11375	0.193
07:00 - 08:00	4	8521	0.214	4	8521	0.029	4	8521	0.243
08:00 - 09:00	4	**8521**	**0.637**	4	8521	0.065	4	**8521**	**0.702**
09:00 - 10:00	4	8521	0.235	4	8521	0.091	4	8521	0.326
10:00 - 11:00	4	8521	0.164	4	8521	0.123	4	8521	0.287
11:00 - 12:00	4	8521	0.085	4	8521	0.114	4	8521	0.199
12:00 - 13:00	4	8521	0.144	4	8521	0.194	4	8521	0.338
13:00 - 14:00	4	8521	0.103	4	8521	0.088	4	8521	0.191
14:00 - 15:00	4	8521	0.091	4	8521	0.097	4	8521	0.188
15:00 - 16:00	4	8521	0.050	4	8521	0.120	4	8521	0.170
16:00 - 17:00	4	8521	0.062	4	8521	0.220	4	8521	0.282
17:00 - 18:00	4	8521	0.132	4	**8521**	**0.513**	4	8521	0.645
18:00 - 19:00	4	8521	0.070	4	8521	0.244	4	8521	0.314
19:00 - 20:00	1	11375	0.044	1	11375	0.132	1	11375	0.176
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.180			2.074			4.254

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	3513 - 14125 (units: sqm)
Survey date date range:	01/01/10 - 06/07/17
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	1	11375	0.193	1	11375	0.053	1	11375	0.246
07:00 - 08:00	4	8521	0.267	4	8521	0.053	4	8521	0.320
08:00 - 09:00	4	**8521**	**0.763**	4	8521	0.073	4	**8521**	**0.836**
09:00 - 10:00	4	8521	0.293	4	8521	0.117	4	8521	0.410
10:00 - 11:00	4	8521	0.197	4	8521	0.144	4	8521	0.341
11:00 - 12:00	4	8521	0.120	4	8521	0.153	4	8521	0.273
12:00 - 13:00	4	8521	0.205	4	8521	0.255	4	8521	0.460
13:00 - 14:00	4	8521	0.153	4	8521	0.135	4	8521	0.288
14:00 - 15:00	4	8521	0.114	4	8521	0.147	4	8521	0.261
15:00 - 16:00	4	8521	0.085	4	8521	0.200	4	8521	0.285
16:00 - 17:00	4	8521	0.106	4	8521	0.299	4	8521	0.405
17:00 - 18:00	4	8521	0.211	4	**8521**	**0.622**	4	8521	0.833
18:00 - 19:00	4	8521	0.109	4	8521	0.299	4	8521	0.408
19:00 - 20:00	1	11375	0.044	1	11375	0.132	1	11375	0.176
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.860			2.682			5.542

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

B.5 C3 Mixed Private / Affordable Housing trip rates per dwelling

Filtering Summary

Land Use	03/M	RESIDENTIAL/MIXED PRIVATE/AFFORDABLE HOU
Selected Trip Rate Calculation Parameter Range	100-1412 DWELLS	
Actual Trip Rate Calculation Parameter Range	100-500 DWELLS	
Date Range	Minimum: 01/01/10	Maximum: 28/06/18
Days of the week selected	Monday	2
	Tuesday	2
	Wednesday	6
	Thursday	5
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	4
	Edge of Town	9
	Neighbourhood Centre (PPS6 Local Centre)	2
Population <1 Mile ranges selected	1,000 or Less	1
	1,001 to 5,000	1
	5,001 to 10,000	4
	10,001 to 15,000	4
	15,001 to 20,000	1
	20,001 to 25,000	2
	25,001 to 50,000	2
Population <5 Mile ranges selected	25,001 to 50,000	2
	50,001 to 75,000	3
	75,001 to 100,000	3
	125,001 to 250,000	7
Car Ownership <5 Mile ranges selected	0.6 to 1.0	2
	1.1 to 1.5	10
	1.6 to 2.0	3
PTAL Rating	No PTAL Present	15

Calculation Reference: AUDIT-704103-181030-1046

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : M - MIXED PRIVATE/AFFORDABLE HOUSING
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	4 days
	HC	HAMPSHIRE	3 days
	KC	KENT	1 days
	OX	OXFORDSHIRE	1 days
	SC	SURREY	3 days
	WS	WEST SUSSEX	3 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 100 to 500 (units:)
Range Selected by User: 100 to 1412 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 28/06/18

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Tuesday	2 days
Wednesday	6 days
Thursday	5 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4
Edge of Town	9
Neighbourhood Centre (PPS6 Local Centre)	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	10
Village	2
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	15 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	4 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days
25,001 to 50,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	2 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
125,001 to 250,000	7 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	10 days
1.6 to 2.0	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	12 days
No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	15 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	ES-03-M-05	Site area:	4.88 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	138
Location:	NEAR UCKFIELD	Housing density:	61
Postcode:	TN22 3AP	Total Bedrooms:	454
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	30/06/14
Sub-Location Type:	Village	Survey Day:	Monday
PTAL:	n/a	Parking Spaces:	257
Site(2):	ES-03-M-07	Site area:	4.95 hect
Development Name:	MIXED HOUSING	Number of dwellings:	188
Location:	PEACEHAVEN	Housing density:	43
Postcode:	BN10 8SA	Total Bedrooms:	496
Main Location Type:	Edge of Town	Survey Date:	12/11/15
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	307
Site(3):	ES-03-M-10	Site area:	4.60 hect
Development Name:	MIXED HOUSES & FLATS	Number of dwellings:	108
Location:	POLEGATE	Housing density:	47
Postcode:	BN26 6FB	Total Bedrooms:	306
Main Location Type:	Edge of Town	Survey Date:	11/07/16
Sub-Location Type:	Residential Zone	Survey Day:	Monday
PTAL:	n/a	Parking Spaces:	257
Site(4):	ES-03-M-11	Site area:	18.68 hect
Development Name:	MIXED HOUSES & FLATS	Number of dwellings:	354
Location:	HAILSHAM	Housing density:	53
Postcode:	BN27 3UB	Total Bedrooms:	1118
Main Location Type:	Edge of Town	Survey Date:	13/07/16
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	657
Site(5):	HC-03-M-06	Site area:	11.00 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	328
Location:	NEAR FAREHAM	Housing density:	42
Postcode:	PO14 4PB	Total Bedrooms:	773
Main Location Type:	Edge of Town	Survey Date:	04/11/15
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	578
Site(6):	HC-03-M-07	Site area:	9.64 hect
Development Name:	MIXED HOUSES & FLATS	Number of dwellings:	236
Location:	BASINGSTOKE	Housing density:	55
Postcode:	RG24 9FD	Total Bedrooms:	718
Main Location Type:	Edge of Town	Survey Date:	21/03/17
Sub-Location Type:	No Sub Category	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	472
Site(7):	HC-03-M-09	Site area:	6.17 hect
Development Name:	MIXED HOUSES & FLATS	Number of dwellings:	157
Location:	WINCHESTER	Housing density:	61
Postcode:	SO22 5QN	Total Bedrooms:	437
Main Location Type:	Edge of Town	Survey Date:	07/06/18
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	385
Site(8):	KC-03-M-02	Site area:	3.70 hect
Development Name:	MIXED HOUSES AND FLATS	Number of dwellings:	119
Location:	MAIDSTONE	Housing density:	40
Postcode:	ME16 9DZ	Total Bedrooms:	375
Main Location Type:	Edge of Town	Survey Date:	05/06/18
Sub-Location Type:	No Sub Category	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	326
Site(9):	OX-03-M-01	Site area:	5.98 hect
Development Name:	MIXED HOUSES	Number of dwellings:	100
Location:	THAME	Housing density:	24
Postcode:	OX9 3SD	Total Bedrooms:	288
Main Location Type:	Edge of Town	Survey Date:	28/06/18
Sub-Location Type:	Industrial Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	89
Site(10):	SC-03-M-02	Site area:	11.00 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	342
Location:	NEAR FRIMLEY	Housing density:	34
Postcode:	GU16 6GN	Total Bedrooms:	992
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	10/02/10
Sub-Location Type:	Village	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	622

LIST OF SITES relevant to selection parameters (Cont.)

Site(11):	SC-03-M-06	Site area:	9.52 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	500
Location:	REDHILL	Housing density:	67
Postcode:	RH1 1AU	Total Bedrooms:	1260
Main Location Type:	Edge of Town	Survey Date:	11/12/13
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	878
Site(12):	SC-03-M-07	Site area:	4.90 hect
Development Name:	HOUSES/FLATS	Number of dwellings:	199
Location:	GUILDFORD	Housing density:	50
Postcode:	GU1 2LP	Total Bedrooms:	555
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	24/10/13
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	268
Site(13):	WS-03-M-04	Site area:	5.36 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	214
Location:	CHICHESTER	Housing density:	83
Postcode:	PO19 6PQ	Total Bedrooms:	488
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	08/05/14
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	308
Site(14):	WS-03-M-12	Site area:	3.74 hect
Development Name:	HOUSES & FLATS	Number of dwellings:	192
Location:	SHOREHAM BY SEA	Housing density:	89
Postcode:	BN43 6TQ	Total Bedrooms:	466
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	27/04/16
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	282
Site(15):	WS-03-M-16	Site area:	6.50 hect
Development Name:	MIXED FLATS & HOUSES	Number of dwellings:	252
Location:	CHICHESTER	Housing density:	50
Postcode:	PO19 6BU	Total Bedrooms:	694
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	21/03/18
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	355

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	228	0.068	15	228	0.270	15	228	0.338
08:00 - 09:00	15	228	0.125	**15**	**228**	**0.366**	**15**	**228**	**0.491**
09:00 - 10:00	15	228	0.123	15	228	0.167	15	228	0.290
10:00 - 11:00	15	228	0.110	15	228	0.135	15	228	0.245
11:00 - 12:00	15	228	0.118	15	228	0.134	15	228	0.252
12:00 - 13:00	15	228	0.127	15	228	0.129	15	228	0.256
13:00 - 14:00	15	228	0.127	15	228	0.128	15	228	0.255
14:00 - 15:00	15	228	0.122	15	228	0.150	15	228	0.272
15:00 - 16:00	15	228	0.240	15	228	0.163	15	228	0.403
16:00 - 17:00	15	228	0.231	15	228	0.136	15	228	0.367
17:00 - 18:00	**15**	**228**	**0.300**	15	228	0.141	15	228	0.441
18:00 - 19:00	15	228	0.277	15	228	0.136	15	228	0.413
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.968			2.055			4.023

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	100 - 500 (units:)
Survey date date range:	01/01/10 - 28/06/18
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	6
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	228	0.104	15	228	0.458	15	228	0.562
08:00 - 09:00	15	228	0.185	**15**	**228**	**0.791**	**15**	**228**	**0.976**
09:00 - 10:00	15	228	0.200	15	228	0.269	15	228	0.469
10:00 - 11:00	15	228	0.162	15	228	0.205	15	228	0.367
11:00 - 12:00	15	228	0.181	15	228	0.217	15	228	0.398
12:00 - 13:00	15	228	0.210	15	228	0.200	15	228	0.410
13:00 - 14:00	15	228	0.203	15	228	0.198	15	228	0.401
14:00 - 15:00	15	228	0.199	15	228	0.236	15	228	0.435
15:00 - 16:00	**15**	**228**	**0.552**	15	228	0.267	15	228	0.819
16:00 - 17:00	15	228	0.435	15	228	0.232	15	228	0.667
17:00 - 18:00	15	228	0.507	15	228	0.231	15	228	0.738
18:00 - 19:00	15	228	0.414	15	228	0.215	15	228	0.629
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.352			3.519			6.871

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

C. LINSIG modelling results

C.1 2017 Base model results

Basic Results Summary

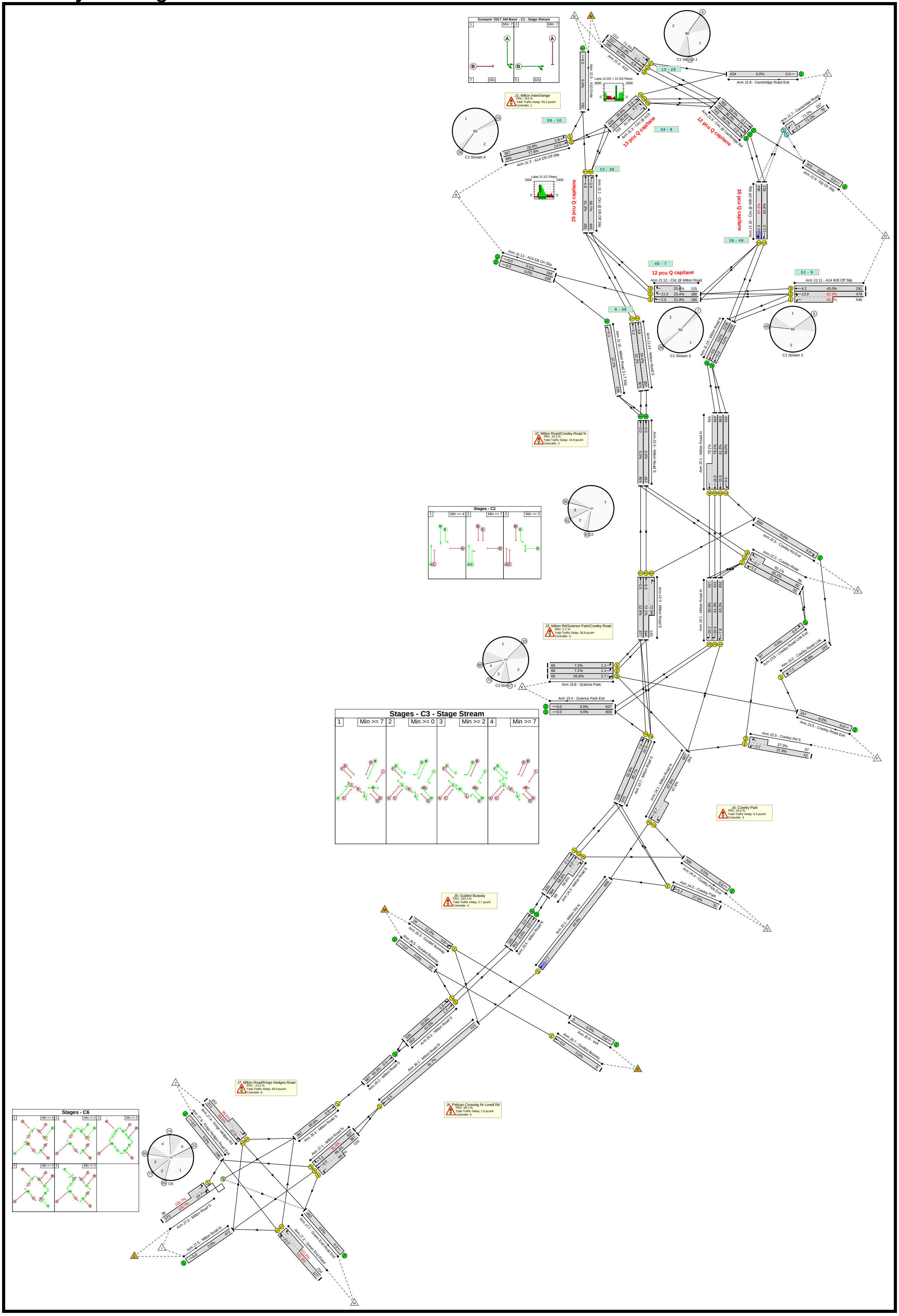
Project and User Details

Project:	**Cambridge Science Park**
Title:	**2017 Base**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	2017 flows with existing network.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2017 AM Base' (FG1: '2017 AM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2017 Base	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.8%**	**769**	**0**	**1**	**170.4**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.2%**	**746**	**0**	**0**	**55.2**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	24	-	487	1900	792	61.3%	-	-	-	1.8	13.0	4.8
1/2	Circ @ EB Off Slip Right	U	C1:H		1	24	-	467	1900	792	58.7%	-	-	-	1.6	12.6	3.9
2/1	A14 EB Off Slip Left	U	C1:G		1	32	-	307	1965	1081	28.4%	-	-	-	0.8	9.5	2.8
2/2	A14 EB Off Slip Ahead	U	C1:G		1	32	-	865	2018	1110	77.9%	-	-	-	4.3	17.9	13.0
3/1	Circ @ A10 Ahead	U	C1:B		1	32	-	417	1900	1045	39.8%	-	-	-	1.4	12.2	5.9
3/2+3/3	Circ @ A10 Right	U	C1:B		1	32	-	915	1900:1900	212+917	80.6 : 81.0%	-	-	-	3.3	12.9	4.3
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	16	-	549	2057:1910	473+297	71.3 : 71.3%	-	-	-	4.0	26.1	6.0
4/3	A10 Ahead	U	C1:A		1	16	-	390	2029	575	67.8%	-	-	-	3.1	28.7	6.8
6/1	Circ @ Cambridge Rd Ahead	U	-		-	-	-	366	1900	1900	19.2%	-	-	-	0.1	1.2	0.1
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	727	1900	1900	38.3%	-	-	-	0.3	1.5	1.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	743	1900	1900	39.1%	-	-	-	0.3	1.6	2.0
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	373	1828:1986	107+417	71.2 : 71.2%	746	0	0	1.4	13.5	2.9
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	30	-	813	1900	982	82.8%	-	-	-	4.3	18.9	11.0

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	30	-	954	1900	982	97.2%	-	-	-	12.9	48.5	22.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	18	-	1025	2029:1871	520+592	92.2 : 92.2%	-	-	-	10.7	37.5	13.9
11/3	A14 WB Off Slip Ahead	U	C1:C		1	18	-	291	2044	647	45.0%	-	-	-	1.7	21.4	4.2
12/1	Circ @ Milton Road Ahead	U	C1:F		1	27	-	194	1900	887	21.9%	-	-	-	0.5	9.4	2.0
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	27	-	295	1900:1900	710+454	25.4 : 25.4%	-	-	-	0.5	6.1	11.0
14/1	Milton Road S Ahead	U	C1:E		1	29	-	307	1894	947	32.2%	-	-	-	1.0	11.8	3.2
14/2	Milton Road S Ahead	U	C1:E		1	29	-	352	2037	1018	34.4%	-	-	-	1.1	11.8	3.8
15/1	Milton Road S LT Slip Left	U	-		-	-	-	237	1946	1946	12.1%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.1%**	**0**	**0**	**0**	**15.8**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	93	-	516	1828	1432	36.0%	-	-	-	0.8	5.9	5.4
1/2	Milton Road N Ahead	U	C2:B		1	83	-	843	1965	1375	61.3%	-	-	-	3.0	12.8	15.5
1/3+1/4	Milton Road N Ahead	U	C2:B		1	83	-	1235	1965:1965	793+789	78.1 : 78.1%	-	-	-	4.6	13.4	16.5
2/1	Cowley Road Left	U	C2:D		1	9	-	32	1764	147	21.8%	-	-	-	0.5	55.2	1.1
2/2+2/3	Cowley Road Right	U	C2:D		1	9	-	170	1764:1764	126+135	65.1 : 65.1%	-	-	-	3.0	62.5	3.7
3/1	Milton Road S Ahead	U	C2:A		1	101	-	380	1965	1670	22.6%	-	-	-	0.2	1.6	0.5
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	101:13	-	487	1965:1665	477+194	72.1 : 72.0%	-	-	-	3.8	28.2	5.9
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**	**0**	**0**	**0**	**28.8**	**-**	**-**

Basic Results Summary

1/1	Milton Road N Ahead	U	C3:B		1	83	-	852	1925	1347	63.2%	-	-	-	2.0	8.5	7.8
1/2	Milton Road N Right	U	C3:D		1	51	-	631	1791	776	81.3%	-	-	-	6.0	34.3	20.6
1/3	Milton Road N Right	U	C3:D		1	51	-	627	1791	776	80.8%	-	-	-	5.9	33.9	20.2
2/1	Cowley Road Link Left	U	C3:I		1	46	-	246	1747	684	35.8%	-	-	-	2.3	33.7	7.2
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	8:45	-	139	1828:1687	137+229	37.9 : 37.9%	-	-	-	1.6	42.7	2.2
7/1	Milton Road S Ahead Left	U	C3:A		1	40	-	336	1819	621	53.6%	-	-	-	2.4	25.5	7.9
7/2	Milton Road S Ahead	U	C3:A		1	40	-	580	1965	671	85.7%	-	-	-	6.4	40.3	20.5
8/1	Science Park Left	U	C3:E		1	63	-	65	1702	908	7.2%	-	-	-	0.3	15.7	1.1
8/2	Science Park Left	U	C3:E		1	63	-	66	1741	929	7.1%	-	-	-	0.3	15.7	1.1
8/3	Science Park Ahead Right	U	C3:F		1	7	-	65	1746	116	55.8%	-	-	-	1.6	88.5	2.7
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**67.6%**	**0**	**0**	**0**	**5.5**	-	-
1/2+1/1	Milton Road N Left Ahead	U	C3:O C3:Q		1	82:78	-	967	2015:1832	1017+414	67.6 : 67.6%	-	-	-	2.3	8.4	5.7
2/1	Cowley Park Right Left	U	C3:R		1	7	-	31	1687	112	27.6%	-	-	-	0.6	75.3	1.2
3/1	Milton Road S Ahead	U	C3:N		1	101	-	328	1965	1670	19.5%	-	-	-	0.3	2.8	2.1
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	101:10	-	658	1965:1709	959+150	58.8 : 58.8%	-	-	-	2.3	12.7	6.0
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**44.5%**	**0**	**0**	**0**	**2.7**	-	-
1/1	Milton Rd N Ahead	U	C4:A		1	95	-	699	1965	1572	44.5%	-	-	-	1.7	8.5	12.7
2/1	Milton Road S Ahead Left	U	C4:B		1	95	-	338	2009	1607	20.8%	-	-	-	0.2	2.0	0.5
2/2	Milton Road S Ahead	U	C4:B		1	95	-	658	1965	1572	41.5%	-	-	-	0.5	2.5	1.2

Basic Results Summary

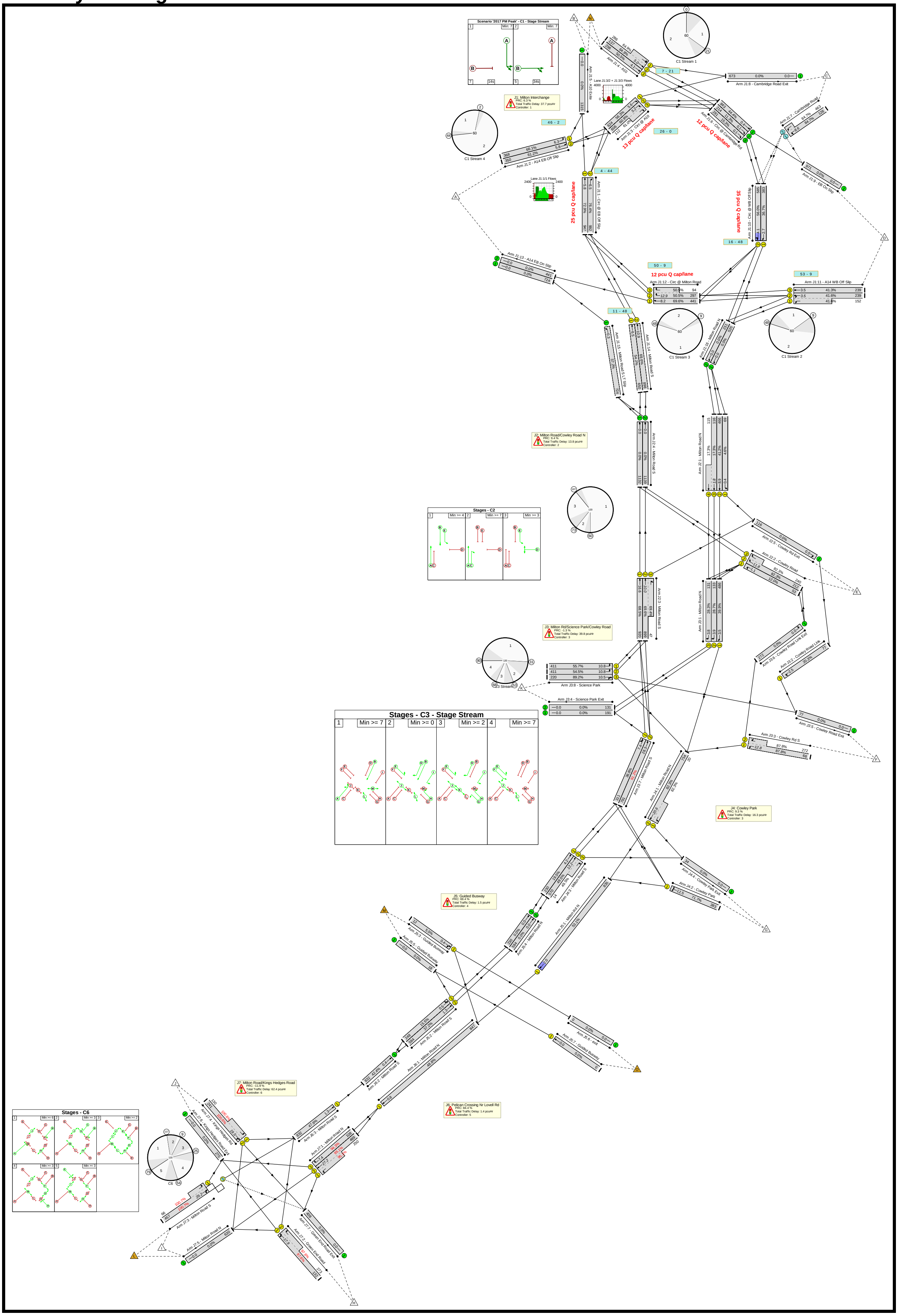
3/1	Guided Busway Right Ahead	U	C4:C		1	12	-	24	2015	218	11.0%	-	-	-	0.4	57.6	0.8
7/1	Guided Busway Ahead	U	C4:D		1	14	-	0	2015	252	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**56.9%**	**0**	**0**	**0**	**1.6**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	723	1965	1736	41.7%	-	-	-	0.4	1.8	0.5
2/1	Milton Road S Ahead	U	-		-	-	-	996	1965	1965	50.3%	-	-	-	0.5	1.8	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	996	1965	1736	56.9%	-	-	-	0.7	2.5	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.8%**	**23**	**0**	**1**	**60.9**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	47	-	616	1915:1717	557+330	69.4 : 69.4%	-	-	-	2.8	16.4	6.6
1/3	Milton Road N Right	U	C6:C		1	7	-	107	1718	115	93.4%	-	-	-	4.7	157.7	7.2
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	18	-	381	1929:1709	125+249	101.8 : 101.8%	-	-	-	16.9	160.0	21.0
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	36	-	611	1928:1724	569+38	100.7 : 100.7%	23	0	1	20.9	122.9	33.7
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	14	-	404	1902:1762	212+194	99.6 : 99.6%	-	-	-	15.6	139.0	17.5

C1	Stream: 1	PRC for Signalled Lanes (%):	11.1	Total Delay for Signalled Lanes (pcuHr):	11.76	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	29.55	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	161.9	Total Delay for Signalled Lanes (pcuHr):	3.15	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	15.5	Total Delay for Signalled Lanes (pcuHr):	8.50	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	15.3	Total Delay for Signalled Lanes (pcuHr):	15.84	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	5.1	Total Delay for Signalled Lanes (pcuHr):	28.83	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	33.2	Total Delay for Signalled Lanes (pcuHr):	5.47	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	102.4	Total Delay for Signalled Lanes (pcuHr):	2.67	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	58.2	Total Delay for Signalled Lanes (pcuHr):	1.05	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-13.1	Total Delay for Signalled Lanes (pcuHr):	60.88	Cycle Time (s):	120
		PRC Over All Lanes (%):	-13.1	Total Delay Over All Lanes(pcuHr):	170.43		

Basic Results Summary

Scenario 2: '2017 PM Peak' (FG2: '2017 PM Peak', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2017 Base	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.7%**	**1185**	**0**	**21**	**172.8**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**	**1182**	**0**	**0**	**37.7**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	40	-	948	1900	1298	72.9%	-	-	-	2.1	8.1	5.8
1/2	Circ @ EB Off Slip Right	U	C1:H		1	40	-	993	1900	1298	76.4%	-	-	-	2.7	9.9	6.5
2/1	A14 EB Off Slip Left	U	C1:G		1	16	-	368	1965	557	66.1%	-	-	-	2.9	28.4	6.3
2/2	A14 EB Off Slip Ahead	U	C1:G		1	16	-	350	2018	572	61.2%	-	-	-	2.6	26.7	5.8
3/1	Circ @ A10 Ahead	U	C1:B		1	34	-	624	1900	1108	56.3%	-	-	-	1.7	9.7	5.6
3/2+3/3	Circ @ A10 Right	U	C1:B		1	34	-	719	1900:1900	995+184	60.9 : 61.0%	-	-	-	1.7	8.4	5.2
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	14	-	423	2057:1910	211+441	64.9 : 64.9%	-	-	-	3.2	27.1	5.0
4/3	A10 Ahead	U	C1:A		1	14	-	256	2029	507	50.5%	-	-	-	1.9	26.5	4.1
6/1	Circ @ Cambridge Rd Ahead	U	-		-	-	-	844	1900	1900	44.4%	-	-	-	0.4	1.7	0.4
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	214	1900	1900	11.3%	-	-	-	0.1	1.1	0.1
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	291	1900	1900	15.3%	-	-	-	0.1	1.1	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	591	1828:1986	151+547	84.7 : 84.7%	1182	0	0	3.0	18.4	8.6
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	383	1900	1045	36.7%	-	-	-	0.7	6.8	2.7

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	585	1900	1045	56.0%	-	-	-	1.3	8.3	4.1
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	391	2029:1871	575+366	41.6 : 41.6%	-	-	-	2.2	20.5	3.5
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	239	2044	579	41.3%	-	-	-	1.5	22.7	3.5
12/1	Circ @ Milton Road Ahead	U	C1:F		1	19	-	441	1900	633	69.6%	-	-	-	3.4	28.0	8.2
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	19	-	391	1900:1900	588+186	50.5 : 50.5%	-	-	-	1.2	10.9	12.9
14/1	Milton Road S Ahead	U	C1:E		1	37	-	651	1894	1200	54.2%	-	-	-	1.7	9.4	6.5
14/2	Milton Road S Ahead	U	C1:E		1	37	-	899	2037	1290	69.6%	-	-	-	2.9	11.8	10.9
15/1	Milton Road S LT Slip Left	U	-		-	-	-	725	1946	1946	37.2%	-	-	-	0.3	1.5	0.3
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.3%**	**0**	**0**	**0**	**13.8**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	98	-	69	1828	1508	4.6%	-	-	-	0.1	3.2	0.4
1/2	Milton Road N Ahead	U	C2:B		1	68	-	466	1965	1130	41.2%	-	-	-	2.2	16.9	8.9
1/3+1/4	Milton Road N Ahead	U	C2:B		1	68	-	231	1965:1965	670+665	17.3 : 17.3%	-	-	-	0.8	13.2	1.8
2/1	Cowley Road Left	U	C2:D		1	29	-	53	1764	441	12.0%	-	-	-	0.4	27.2	1.1
2/2+2/3	Cowley Road Right	U	C2:D		1	29	-	452	1764:1764	258+292	82.3 : 82.3%	-	-	-	4.8	38.0	11.8
3/1	Milton Road S Ahead	U	C2:A		1	81	-	922	1965	1343	68.5%	-	-	-	2.7	10.5	16.6
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	81:8	-	948	1965:1665	1293+67	69.6 : 69.4%	-	-	-	2.8	10.6	10.0
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.2%**	**0**	**0**	**0**	**39.8**	**-**	**-**

Basic Results Summary

1/1	Milton Road N Ahead	U	C3:B		1	75	-	486	1925	1219	39.9%	-	-	-	1.2	8.7	3.5
1/2	Milton Road N Right	U	C3:D		1	30	-	133	1791	463	28.7%	-	-	-	1.3	34.6	3.9
1/3	Milton Road N Right	U	C3:D		1	30	-	131	1791	463	28.3%	-	-	-	1.2	34.3	3.8
2/1	Cowley Road Link Left	U	C3:I		1	25	-	77	1747	379	20.3%	-	-	-	1.1	52.0	2.5
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	7:24	-	340	1828:1687	77+310	87.8 : 87.8%	-	-	-	7.6	80.6	12.8
7/1	Milton Road S Ahead Left	U	C3:A		1	52	-	312	1912	844	36.8%	-	-	-	2.5	29.4	7.4
7/2	Milton Road S Ahead	U	C3:A		1	52	-	794	1965	868	91.2%	-	-	-	11.4	52.0	28.3
8/1	Science Park Left	U	C3:E		1	51	-	411	1702	738	55.7%	-	-	-	3.5	30.9	10.8
8/2	Science Park Left	U	C3:E		1	51	-	411	1741	754	54.5%	-	-	-	3.5	30.4	10.8
8/3	Science Park Ahead Right	U	C3:F		1	16	-	220	1741	247	89.2%	-	-	-	6.4	104.7	10.5
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.3%**	**0**	**0**	**0**	**16.3**	**-**	**-**
1/2+1/1	Milton Road N Left Ahead	U	C3:O C3:Q		1	55:81	-	774	2015:1832	916+24	82.3 : 82.3%	-	-	-	7.5	34.7	20.6
2/1	Cowley Park Right Left	U	C3:R		1	37	-	383	1687	534	71.7%	-	-	-	5.1	48.0	12.5
3/1	Milton Road S Ahead	U	C3:N		1	71	-	231	1965	1179	19.5%	-	-	-	0.8	12.1	4.2
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	71:7	-	587	1965:1709	1153+28	49.5 : 49.5%	-	-	-	2.9	18.1	12.2
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.1%**	**0**	**0**	**0**	**1.5**	**-**	**-**
1/1	Milton Rd N Ahead	U	C4:A		1	95	-	835	1965	1572	53.1%	-	-	-	0.8	3.2	2.0
2/1	Milton Road S Ahead Left	U	C4:B		1	95	-	249	2001	1601	15.5%	-	-	-	0.1	2.1	0.5
2/2	Milton Road S Ahead	U	C4:B		1	95	-	587	1965	1572	37.2%	-	-	-	0.4	2.5	1.3

Basic Results Summary

3/1	Guided Busway Right Ahead	U	C4:C		1	12	-	12	2015	218	5.5%	-	-	-	0.2	56.9	0.4
7/1	Guided Busway Ahead	U	C4:D		1	14	-	0	2015	252	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.8%**	**0**	**0**	**0**	**1.4**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	847	1965	1736	48.8%	-	-	-	0.5	2.1	0.8
2/1	Milton Road S Ahead	U	-		-	-	-	836	1965	1965	42.4%	-	-	-	0.4	1.6	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	836	1965	1736	47.9%	-	-	-	0.5	2.2	1.3
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.7%**	**3**	**0**	**21**	**62.4**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	41	-	739	1915:1717	514+263	95.1 : 95.1%	-	-	-	9.8	48.0	27.2
1/3	Milton Road N Right	U	C6:C		1	7	-	108	1718	115	94.3%	-	-	-	4.9	163.9	7.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	21	-	405	1913:1709	135+280	97.6 : 97.6%	-	-	-	13.2	117.0	17.9
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	30	-	523	1925:1724	454+66	100.7 : 100.7%	3	0	21	19.1	131.3	29.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	371	1870:1762	239+129	100.6 : 100.6%	-	-	-	15.4	149.9	19.5

C1	Stream: 1	PRC for Signalled Lanes (%):	38.8	Total Delay for Signalled Lanes (pcuHr):	8.40	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	60.8	Total Delay for Signalled Lanes (pcuHr):	5.80	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	29.3	Total Delay for Signalled Lanes (pcuHr):	9.25	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	10.38	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	9.4	Total Delay for Signalled Lanes (pcuHr):	13.75	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	39.80	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	9.3	Total Delay for Signalled Lanes (pcuHr):	16.27	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	69.4	Total Delay for Signalled Lanes (pcuHr):	1.48	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	84.4	Total Delay for Signalled Lanes (pcuHr):	1.01	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-11.9	Total Delay for Signalled Lanes (pcuHr):	62.45	Cycle Time (s):	120
		PRC Over All Lanes (%):	-11.9	Total Delay Over All Lanes(pcuHr):	172.83		

C.2 2031 With-Dev Business-as-Usual Do Minimum model results

C.2.1 HIF 2031 Business-as-Usual Do Minimum results

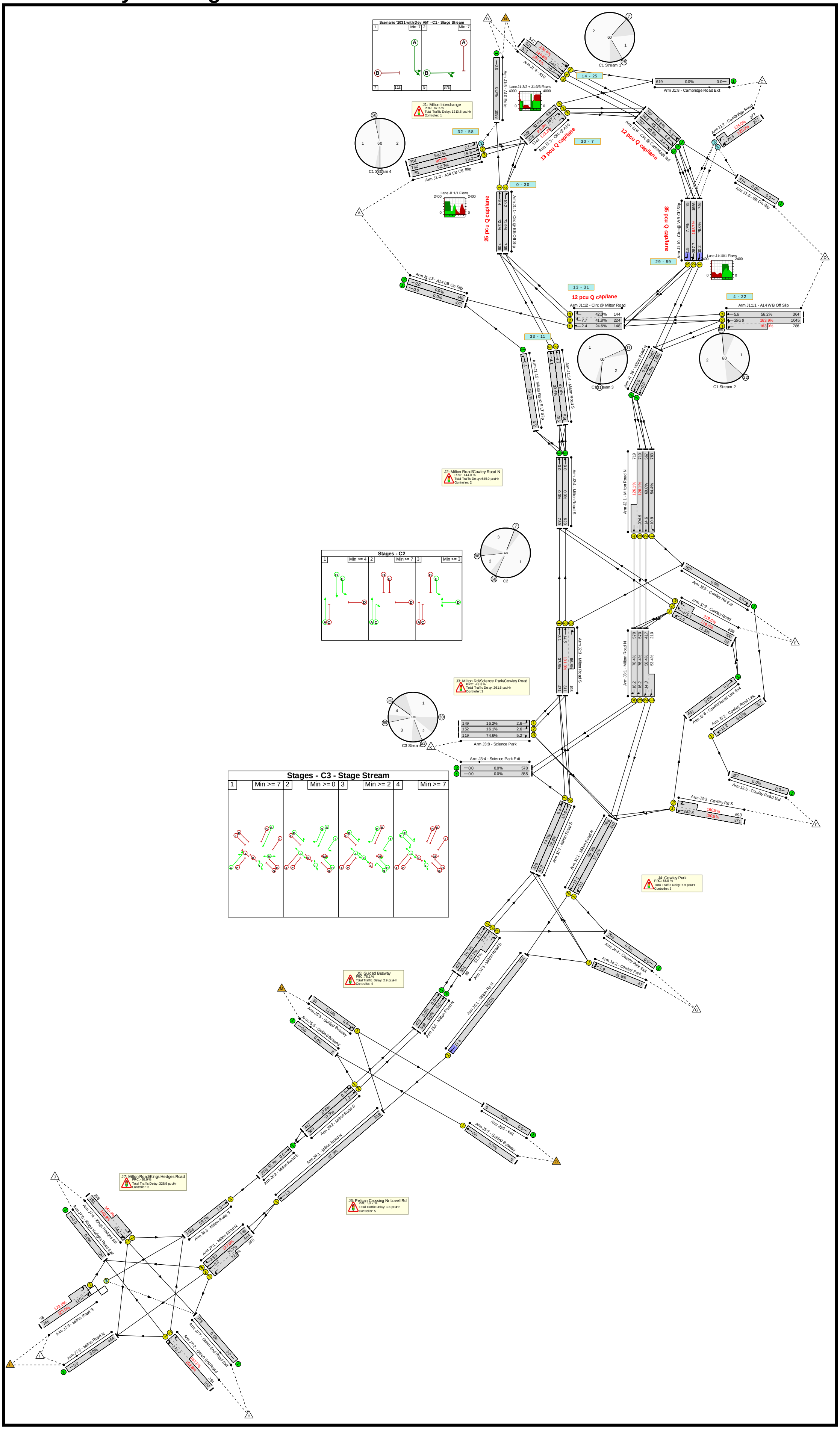
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 'No AAP' DM**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	DM + HIF 1.0 JMcv2.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 HIF DM AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**219.6%**	**1181**	**186**	**1**	**2460.7**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**168.7%**	**1165**	**186**	**0**	**1213.6**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	30	-	1112	1900	982	72.2%	-	-	-	3.4	17.1	9.4
1/2	Circ @ EB Off Slip Right	U	C1:H		1	30	-	1177	1900	982	71.9%	-	-	-	3.3	16.9	10.2
2/1	A14 EB Off Slip Left	O	-		-	-	-	384	1894	766	50.1%	198	186	0	0.5	4.8	2.1
2/2	A14 EB Off Slip Ahead	U	C1:G		1	26	-	762	1871	842	90.5%	-	-	-	7.5	35.6	15.9
2/3	A14 EB Off Slip Ahead	U	C1:G		1	26	-	751	2018	908	82.7%	-	-	-	5.3	25.6	13.2
3/1	Circ @ A10 Ahead	U	C1:B		1	37	-	890	1900	1203	50.0%	-	-	-	2.5	15.1	8.6
3/2+3/3	Circ @ A10 Right	U	C1:B		1	37	-	1800	1900:1900	509+882	93.4 : 129.3%	-	-	-	147.7	328.9	167.7
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	11	-	1043	2057:1910	411+382	126.6 : 136.6%	-	-	-	140.6	485.4	140.2
4/3	A10 Ahead	U	C1:A		1	11	-	521	2029	406	128.4%	-	-	-	66.4	458.8	70.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1158	1900	1900	39.8%	-	-	-	0.3	1.6	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	1201	1900	1900	49.7%	-	-	-	0.5	1.9	4.2
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	982	1900	1900	40.4%	-	-	-	0.3	1.6	3.6
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	604	1828:1986	182+302	125.0 : 125.0%	966	0	0	67.2	400.5	79.5
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	30	-	965	1900	982	76.0%	-	-	-	3.3	16.0	10.2

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	30	-	2107	1900	982	168.7%	-	-	-	369.1	802.2	387.7
10/3	Circ @ WB Off Slip Right	U	C1:D		1	30	-	95	1900	982	7.7%	-	-	-	0.2	7.4	0.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	18	-	1831	2029:1871	638+480	163.9 : 163.9%	-	-	-	389.1	765.1	396.8
11/3	A14 WB Off Slip Ahead	U	C1:C		1	18	-	364	2044	647	56.2%	-	-	-	2.4	23.4	5.6
12/1	Circ @ Milton Road Ahead	U	C1:F		1	18	-	243	1900	602	24.6%	-	-	-	1.1	27.1	2.4
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	18	-	369	1900:1900	536+343	41.8 : 42.0%	-	-	-	0.5	5.1	7.7
14/1	Milton Road S Ahead	U	C1:E		1	38	-	887	1894	1231	39.4%	-	-	-	1.0	7.4	4.1
14/2	Milton Road S Ahead	U	C1:E		1	38	-	1033	2037	1324	42.4%	-	-	-	1.2	7.4	4.7
15/1	Milton Road S LT Slip Left	U	-		-	-	-	683	1946	1946	19.1%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**219.6%**	**0**	**0**	**0**	**645.0**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	91	-	1074	1828	1401	54.4%	-	-	-	1.8	8.4	10.8
1/2	Milton Road N Ahead	U	C2:B		1	56	-	906	1965	933	60.8%	-	-	-	4.4	28.2	14.6
1/3+1/4	Milton Road N Ahead	U	C2:B		1	56	-	2770	1965:1965	570+570	126.1 : 126.1%	-	-	-	179.0	447.9	204.5
2/1	Cowley Road Left	U	C2:D		1	34	-	59	1764	515	11.5%	-	-	-	0.6	35.1	1.5
2/2+2/3	Cowley Road Right	U	C2:D		1	34	-	1660	1764:1764	319+318	219.6 : 219.6%	-	-	-	446.8	1150.8	471.1
3/1	Milton Road S Ahead	U	C2:A		1	76	-	578	1965	1261	37.3%	-	-	-	0.9	6.6	8.1
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	76:15	-	628	1965:1665	308+222	101.0 : 86.8%	-	-	-	11.5	82.2	14.5

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**160.9%**	**0**	**0**	**0**	**261.6**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	63	-	965	1925:1925	739+393	56.4 : 53.4%	-	-	-	2.5	14.1	14.3
1/3	Milton Road N Right	U	C3:D		1	49	-	1385	1791	746	76.4%	-	-	-	2.8	17.8	16.2
1/4	Milton Road N Right	U	C3:D		1	49	-	1385	1791	746	76.4%	-	-	-	2.8	17.8	16.2
2/1	Cowley Road Link Left	U	C3:I		1	44	-	496	1747	655	54.5%	-	-	-	4.1	41.8	11.2
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	25:43	-	1064	1828:1687	231+431	160.9 : 160.9%	-	-	-	236.2	799.3	253.6
7/1	Milton Road S Ahead Left	U	C3:A		1	39	-	603	1792	597	74.7%	-	-	-	4.0	32.3	9.4
7/2	Milton Road S Ahead	U	C3:A		1	39	-	690	1965	655	78.2%	-	-	-	4.7	32.8	10.8
8/1	Science Park Left	U	C3:E		1	64	-	149	1702	922	16.2%	-	-	-	0.7	16.2	2.6
8/2	Science Park Left	U	C3:E		1	64	-	152	1741	943	16.1%	-	-	-	0.7	16.1	2.6
8/3	Science Park Right	U	C3:F		1	10	-	119	1741	160	74.6%	-	-	-	3.1	94.7	5.2
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**57.7%**	**0**	**0**	**0**	**6.9**	-	-
1/1	Milton Road N Left	U	C3:Q		1	76	-	335	1832	1176	17.8%	-	-	-	0.1	2.0	0.1
1/2	Milton Road N Ahead	U	C3:O		1	80	-	1120	2015	1360	56.3%	-	-	-	2.7	12.6	12.1
2/1	Cowley Park Right Left	U	C3:R		1	7	-	47	1687	112	41.8%	-	-	-	1.1	81.0	1.9
3/1	Milton Road S Ahead	U	C3:N		1	101	-	596	1965	1670	26.3%	-	-	-	0.5	4.5	5.3
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	101:12	-	799	1965:1709	868+155	57.7 : 57.2%	-	-	-	2.5	15.1	7.5
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**50.5%**	**0**	**0**	**0**	**2.9**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	95	-	1148	1965	1572	50.5%	-	-	-	1.9	8.5	13.4
2/1	Milton Road S Ahead Left	U	C4:B		1	95	-	606	2012	1610	27.8%	-	-	-	0.3	2.1	0.9
2/2	Milton Road S Ahead	U	C4:B		1	95	-	799	1965	1572	37.5%	-	-	-	0.4	2.4	1.2
3/1	Guided Busway Right Ahead	U	C4:C		1	12	-	24	2015	218	11.0%	-	-	-	0.4	57.6	0.8
7/1	Guided Busway Ahead	U	C4:D		1	14	-	0	2015	252	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.7%**	**0**	**0**	**0**	**1.8**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1172	1965	1736	47.1%	-	-	-	0.5	2.3	1.3
2/1	Milton Road S Ahead	U	-		-	-	-	1405	1965	1965	52.7%	-	-	-	0.6	1.9	0.6
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1405	1965	1736	59.7%	-	-	-	0.8	2.6	1.0
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**162.8%**	**16**	**0**	**1**	**328.9**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	50	-	957	1915:1717	574+370	70.3 : 72.5%	-	-	-	3.8	20.6	6.2
1/3	Milton Road N Right	U	C6:C		1	7	-	215	1718	115	127.8%	-	-	-	21.3	522.7	23.9
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	17	-	544	1929:1709	92+242	162.8 : 162.8%	-	-	-	127.3	842.5	133.7
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	39	-	804	1932:1724	623+31	123.0 : 123.0%	16	0	1	94.1	421.5	110.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	12	-	457	1895:1762	136+189	140.9 : 140.9%	-	-	-	82.4	648.8	84.1

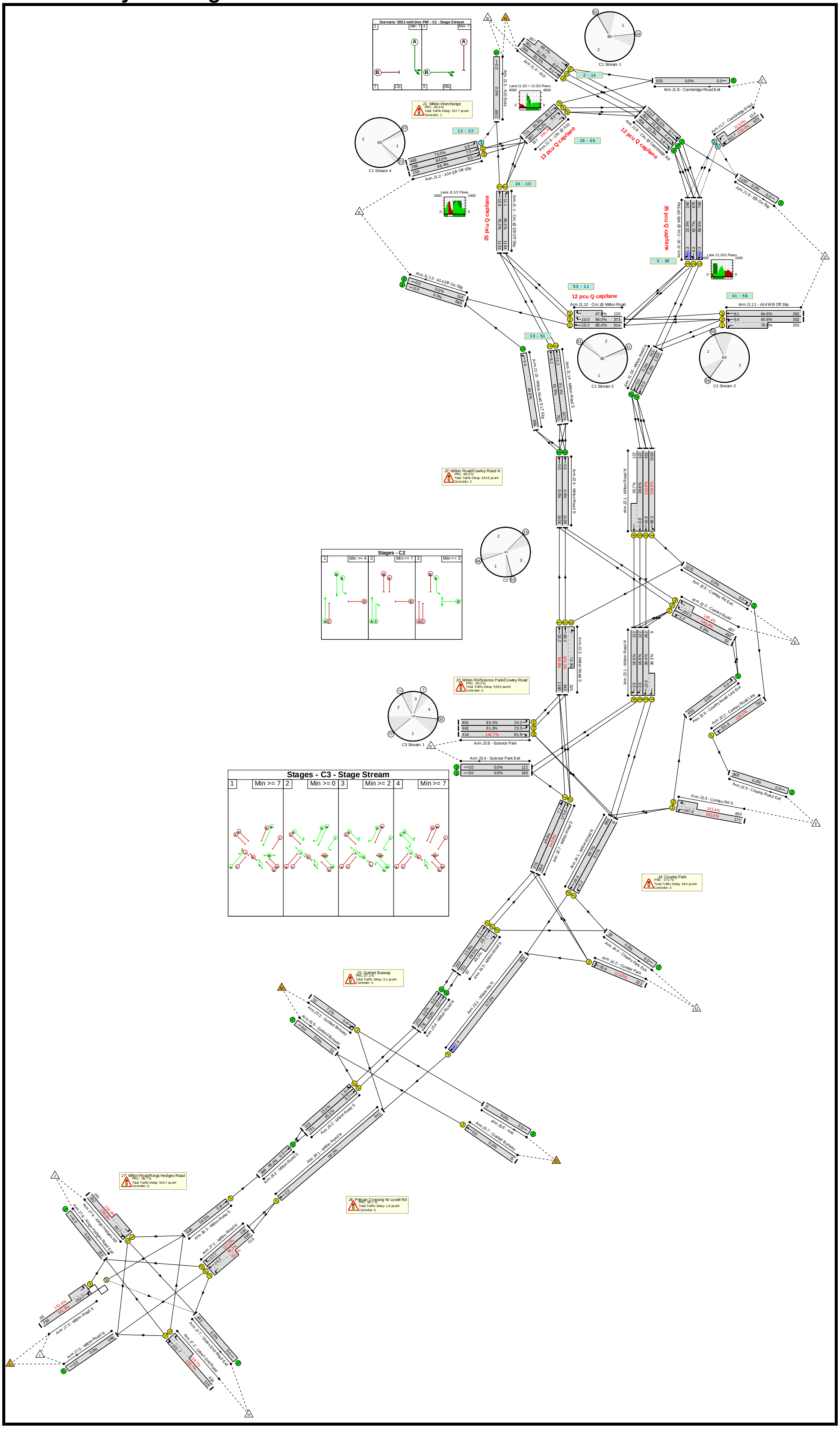
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-51.8	Total Delay for Signalled Lanes (pcuHr):	357.27	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-87.5	Total Delay for Signalled Lanes (pcuHr):	764.01	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	112.3	Total Delay for Signalled Lanes (pcuHr):	3.78	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-0.6	Total Delay for Signalled Lanes (pcuHr):	19.56	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-144.0	Total Delay for Signalled Lanes (pcuHr):	644.95	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-78.8	Total Delay for Signalled Lanes (pcuHr):	261.62	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	56.0	Total Delay for Signalled Lanes (pcuHr):	6.87	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	78.1	Total Delay for Signalled Lanes (pcuHr):	2.92	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	50.7	Total Delay for Signalled Lanes (pcuHr):	1.27	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-80.9	Total Delay for Signalled Lanes (pcuHr):	328.91	Cycle Time (s):	120
		PRC Over All Lanes (%):	-144.0	Total Delay Over All Lanes(pcuHr):	2460.70		

Basic Results Summary

Scenario 2: '2031 HIF DM PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**149.4%**	**2016**	**103**	**6**	**1459.1**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**133.2%**	**2002**	**103**	**0**	**187.7**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	46	-	1428	1900	1488	76.2%	-	-	-	2.9	9.2	13.9
1/2	Circ @ EB Off Slip Right	U	C1:H		1	46	-	1597	1900	1488	80.2%	-	-	-	2.2	6.6	11.1
2/1	A14 EB Off Slip Left	O	-		-	-	-	469	1894	626	75.0%	366	103	0	1.6	12.6	5.6
2/2	A14 EB Off Slip Ahead	U	C1:G		1	10	-	288	1871	343	84.0%	-	-	-	4.3	53.7	7.0
2/3	A14 EB Off Slip Ahead	U	C1:G		1	10	-	253	2018	370	68.4%	-	-	-	2.7	38.0	5.0
3/1	Circ @ A10 Ahead	U	C1:B		1	36	-	905	1900	1172	65.8%	-	-	-	2.2	10.3	10.2
3/2+3/3	Circ @ A10 Right	U	C1:B		1	36	-	1233	1900:1900	1074+157	75.2 : 100.2%	-	-	-	3.2	11.9	8.6
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	12	-	728	2057:1910	446+414	81.0 : 88.7%	-	-	-	7.2	35.7	8.6
4/3	A10 Ahead	U	C1:A		1	12	-	366	2029	440	83.3%	-	-	-	4.6	45.5	8.1
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1381	1900	1900	58.5%	-	-	-	0.7	2.3	0.7
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	480	1900	1900	25.3%	-	-	-	0.2	1.3	2.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	404	1900	1900	21.3%	-	-	-	0.1	1.2	1.8
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	1047	1828:1986	400+418	133.2 : 123.0%	1636	0	0	127.8	439.5	161.7
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	33	-	841	1900	1077	69.5%	-	-	-	2.8	13.7	7.3

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	33	-	742	1900	1077	62.7%	-	-	-	2.0	10.6	5.4
10/3	Circ @ WB Off Slip Right	U	C1:D		1	33	-	269	1900	1077	22.3%	-	-	-	0.4	5.7	1.3
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	15	-	705	2029:1871	535+499	65.8 : 70.8%	-	-	-	4.9	25.1	6.4
11/3	A14 WB Off Slip Ahead	U	C1:C		1	15	-	352	2044	545	64.6%	-	-	-	2.8	28.7	6.1
12/1	Circ @ Milton Road Ahead	U	C1:F		1	18	-	561	1900	602	85.4%	-	-	-	6.2	43.8	10.2
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	18	-	498	1900:1900	564+179	66.0 : 67.0%	-	-	-	1.8	13.3	10.0
14/1	Milton Road S Ahead	U	C1:E		1	38	-	1050	1894	1231	61.8%	-	-	-	2.1	10.0	8.2
14/2	Milton Road S Ahead	U	C1:E		1	38	-	1477	2037	1324	81.1%	-	-	-	4.4	14.8	15.2
15/1	Milton Road S LT Slip Left	U	-		-	-	-	1197	1946	1946	44.6%	-	-	-	0.4	1.7	0.4
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**149.4%**	**0**	**0**	**0**	**343.6**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	60	-	1110	1828	929	109.5%	-	-	-	62.2	220.2	86.3
1/2	Milton Road N Ahead	U	C2:B		1	24	-	481	1965	409	110.6%	-	-	-	34.0	270.4	42.6
1/3+1/4	Milton Road N Ahead	U	C2:B		1	24	-	259	1965:1965	309+306	39.6 : 39.7%	-	-	-	3.0	44.9	3.8
2/1	Cowley Road Left	U	C2:D		1	35	-	52	1764	529	9.8%	-	-	-	0.5	34.1	1.3
2/2+2/3	Cowley Road Right	U	C2:D		1	35	-	1170	1764:1764	326+326	149.4 : 149.4%	-	-	-	188.3	696.5	202.5
3/1	Milton Road S Ahead	U	C2:A		1	75	-	1434	1965	1244	94.8%	-	-	-	12.7	38.8	33.2
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	75:46	-	1667	1965:1665	896+438	105.2 : 74.3%	-	-	-	42.7	121.3	80.2

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**143.4%**	**0**	**0**	**0**	**539.9**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	71	-	533	1925:1925	1148+24	39.4 : 38.3%	-	-	-	0.4	3.2	13.5
1/3	Milton Road N Right	U	C3:D		1	43	-	130	1791	657	18.6%	-	-	-	0.4	13.1	3.9
1/4	Milton Road N Right	U	C3:D		1	43	-	129	1791	657	18.5%	-	-	-	0.4	13.1	3.9
2/1	Cowley Road Link Left	U	C3:I		1	38	-	1126	1747	568	139.1%	-	-	-	136.4	621.7	151.6
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	8:37	-	827	1828:1687	123+453	143.4 : 143.4%	-	-	-	153.8	669.6	167.6
7/1	Milton Road S Ahead Left	U	C3:A		1	36	-	370	1924	593	46.6%	-	-	-	1.9	25.1	7.7
7/2	Milton Road S Ahead	U	C3:A		1	36	-	1181	1965	606	142.9%	-	-	-	155.9	648.4	175.6
8/1	Science Park Left	U	C3:E		1	67	-	801	1702	964	83.1%	-	-	-	7.1	32.0	24.2
8/2	Science Park Left	U	C3:E		1	67	-	802	1741	987	81.3%	-	-	-	6.8	30.4	23.5
8/3	Science Park Right	U	C3:F		1	19	-	414	1741	290	142.7%	-	-	-	76.7	667.0	81.6
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**114.5%**	**0**	**0**	**0**	**38.4**	-	-
1/1	Milton Road N Left	U	C3:Q		1	81	-	11	1832	1252	0.7%	-	-	-	0.1	21.7	0.2
1/2	Milton Road N Ahead	U	C3:O		1	73	-	1113	2015	1243	69.7%	-	-	-	4.3	17.7	18.4
2/1	Cowley Park Right Left	U	C3:R		1	19	-	322	1687	281	114.5%	-	-	-	30.8	344.4	35.9
3/1	Milton Road S Ahead	U	C3:N		1	89	-	286	1965	1474	13.8%	-	-	-	0.4	6.6	2.1
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	89:7	-	1029	1965:1709	1456+20	49.5 : 49.5%	-	-	-	2.9	14.5	18.2
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**57.3%**	**0**	**0**	**0**	**3.1**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	1185	1965	1621	57.3%	-	-	-	1.6	6.3	7.9
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	304	2003	1652	13.1%	-	-	-	0.2	2.8	1.5
2/2	Milton Road S Ahead	U	C4:B		1	98	-	1029	1965	1621	45.1%	-	-	-	1.1	5.2	8.7
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**54.5%**	**0**	**0**	**0**	**1.8**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1197	1965	1736	54.2%	-	-	-	0.7	2.6	2.0
2/1	Milton Road S Ahead	U	-		-	-	-	1333	1965	1965	48.2%	-	-	-	0.5	1.8	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1333	1965	1736	54.5%	-	-	-	0.6	2.3	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**142.8%**	**14**	**0**	**6**	**344.7**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	1025	1915:1717	516+340	96.2 : 91.2%	-	-	-	9.8	43.9	14.2
1/3	Milton Road N Right	U	C6:C		1	7	-	172	1718	115	117.2%	-	-	-	15.6	417.2	17.7
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	23	-	553	1914:1709	86+313	138.7 : 138.7%	-	-	-	93.9	611.0	101.7
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	802	1929:1724	515+46	142.8 : 142.8%	14	0	6	148.2	665.1	162.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	12	-	453	1877:1762	189+138	138.8 : 138.8%	-	-	-	77.3	614.0	80.7

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-11.3	Total Delay for Signalled Lanes (pcuHr):	17.23	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	27.2	Total Delay for Signalled Lanes (pcuHr):	12.94	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	5.4	Total Delay for Signalled Lanes (pcuHr):	14.59	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	7.2	Total Delay for Signalled Lanes (pcuHr):	12.06	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-66.0	Total Delay for Signalled Lanes (pcuHr):	343.56	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-59.3	Total Delay for Signalled Lanes (pcuHr):	539.91	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	-27.2	Total Delay for Signalled Lanes (pcuHr):	38.42	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	57.1	Total Delay for Signalled Lanes (pcuHr):	3.06	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	65.1	Total Delay for Signalled Lanes (pcuHr):	1.29	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-58.7	Total Delay for Signalled Lanes (pcuHr):	344.68	Cycle Time (s):	120
		PRC Over All Lanes (%):	-66.0	Total Delay Over All Lanes(pcuHr):	1459.10		

C.2.2 Option 1 2031 Business-as-Usual Do Minimum results

Basic Results Summary

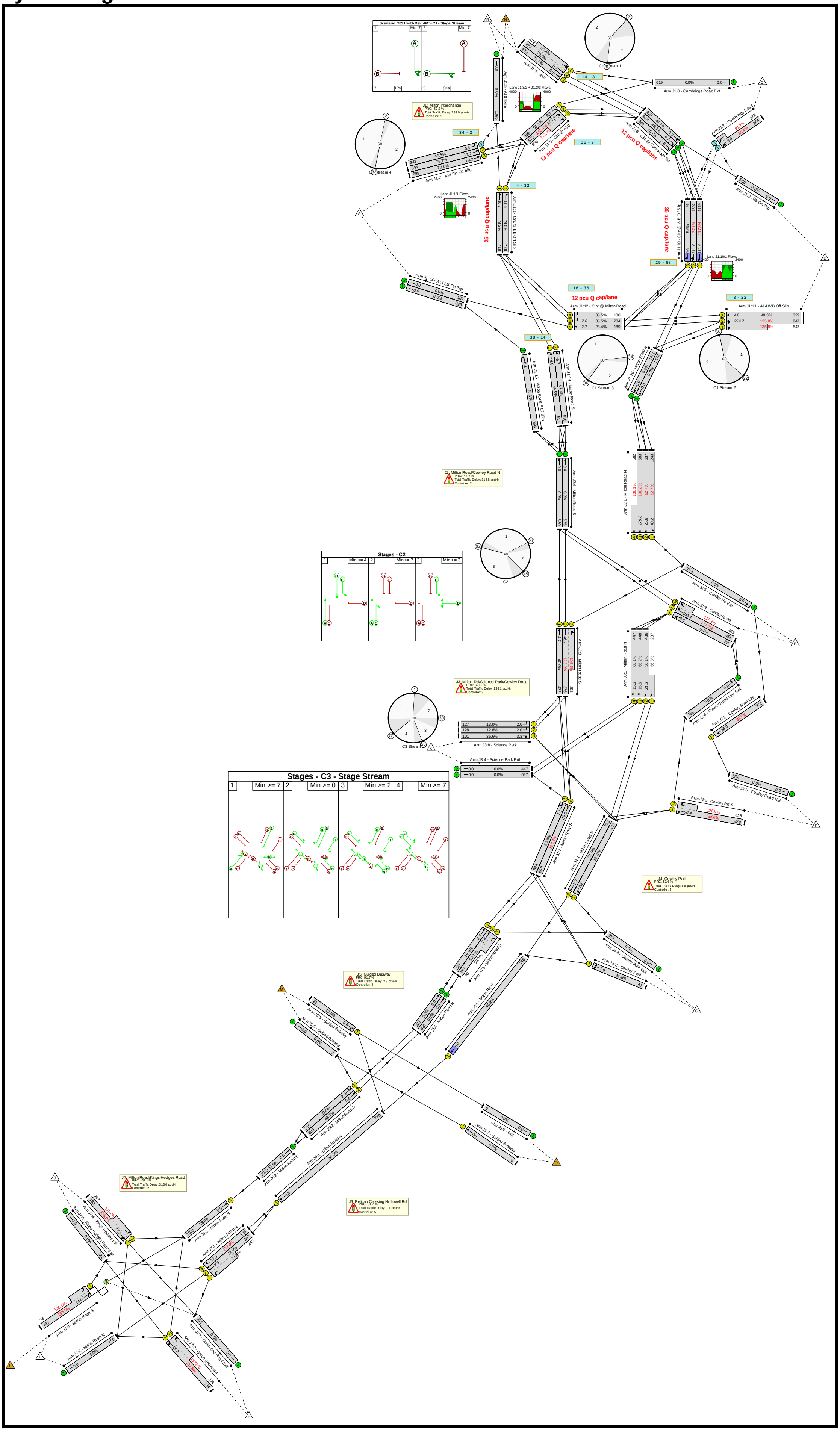
Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 S1 DM**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	DM + S1 1.0 JMcv2.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S1 DM AM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**137.8%**	**1254**	**179**	**1**	**1510.7**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**137.1%**	**1240**	**179**	**0**	**739.0**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	28	-	855	1900	918	78.2%	-	-	-	4.0	20.0	10.7
1/2	Circ @ EB Off Slip Right	U	C1:H		1	28	-	883	1900	918	79.0%	-	-	-	4.0	19.7	11.5
2/1	A14 EB Off Slip Left	O	-		-	-	-	347	1894	763	45.5%	168	179	0	0.4	4.3	0.4
2/2	A14 EB Off Slip Ahead	U	C1:G		1	28	-	694	1871	904	76.7%	-	-	-	4.1	21.2	11.1
2/3	A14 EB Off Slip Ahead	U	C1:G		1	28	-	689	2018	975	70.6%	-	-	-	3.5	18.4	10.2
3/1	Circ @ A10 Ahead	U	C1:B		1	31	-	693	1900	1013	59.1%	-	-	-	3.5	20.9	9.9
3/2+3/3	Circ @ A10 Right	U	C1:B		1	31	-	1573	1900:1900	497+734	115.1 : 127.7%	-	-	-	154.0	367.2	170.8
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	17	-	946	2057:1910	617+573	76.8 : 82.4%	-	-	-	7.0	26.6	9.1
4/3	A10 Ahead	U	C1:A		1	17	-	473	2029	609	77.7%	-	-	-	4.2	32.1	8.8
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1087	1900	1900	48.7%	-	-	-	0.5	1.8	0.5
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	1096	1900	1900	48.1%	-	-	-	0.5	1.9	4.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	789	1900	1900	36.7%	-	-	-	0.3	1.5	3.6
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	536	1828:1986	292+297	90.4 : 91.7%	1072	0	0	5.6	37.7	8.6
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	29	-	1298	1900	950	117.8%	-	-	-	97.7	314.4	111.6

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	29	-	1486	1900	950	137.1%	-	-	-	195.5	540.5	211.0
10/3	Circ @ WB Off Slip Right	U	C1:D		1	29	-	91	1900	950	9.6%	-	-	-	0.2	7.6	0.6
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	19	-	1694	2029:1871	624+624	135.8 : 135.8%	-	-	-	247.3	525.7	254.7
11/3	A14 WB Off Slip Ahead	U	C1:C		1	19	-	329	2044	681	48.3%	-	-	-	1.9	21.0	4.8
12/1	Circ @ Milton Road Ahead	U	C1:F		1	20	-	219	1900	665	28.4%	-	-	-	1.3	24.1	2.7
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	20	-	334	1900:1900	575+366	35.5 : 35.5%	-	-	-	0.7	7.4	7.6
14/1	Milton Road S Ahead	U	C1:E		1	36	-	651	1894	1168	44.0%	-	-	-	1.3	8.8	4.8
14/2	Milton Road S Ahead	U	C1:E		1	36	-	753	2037	1256	47.4%	-	-	-	1.5	9.0	5.7
15/1	Milton Road S LT Slip Left	U	-		-	-	-	501	1946	1946	20.3%	-	-	-	0.1	1.2	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**130.2%**	**0**	**0**	**0**	**314.8**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	87	-	1688	1828	1341	92.7%	-	-	-	10.3	29.9	40.2
1/2	Milton Road N Ahead	U	C2:B		1	41	-	902	1965	688	92.7%	-	-	-	11.9	67.0	25.6
1/3+1/4	Milton Road N Ahead	U	C2:B		1	41	-	1755	1965:1965	448+447	130.2 : 130.1%	-	-	-	166.6	515.1	179.8
2/1	Cowley Road Left	U	C2:D		1	45	-	36	1764	676	5.3%	-	-	-	0.3	26.2	0.8
2/2+2/3	Cowley Road Right	U	C2:D		1	45	-	1025	1764:1764	398+400	117.2 : 117.2%	-	-	-	84.7	326.2	104.4
3/1	Milton Road S Ahead	U	C2:A		1	65	-	545	1965	1081	40.0%	-	-	-	0.8	6.8	4.7
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	65:19	-	746	1965:1665	226+277	122.0 : 105.1%	-	-	-	40.2	254.7	46.1

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**126.6%**	**0**	**0**	**0**	**134.1**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	65	-	938	1925:1925	751+417	58.1 : 56.8%	-	-	-	1.4	7.4	21.3
1/3	Milton Road N Right	U	C3:D		1	45	-	878	1791	687	65.2%	-	-	-	2.4	19.5	15.6
1/4	Milton Road N Right	U	C3:D		1	45	-	877	1791	687	65.1%	-	-	-	2.4	19.4	15.6
2/1	Cowley Road Link Left	U	C3:I		1	40	-	778	1747	597	92.5%	-	-	-	11.9	77.6	23.0
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	15:39	-	656	1828:1687	180+338	126.6 : 126.6%	-	-	-	86.6	475.0	96.4
7/1	Milton Road S Ahead Left	U	C3:A		1	35	-	454	1818	545	61.3%	-	-	-	2.9	31.8	7.1
7/2	Milton Road S Ahead	U	C3:A		1	35	-	827	1965	590	103.3%	-	-	-	24.0	141.7	39.0
8/1	Science Park Left	U	C3:E		1	68	-	127	1702	979	13.0%	-	-	-	0.5	13.8	2.0
8/2	Science Park Left	U	C3:E		1	68	-	128	1741	1001	12.8%	-	-	-	0.5	13.8	2.0
8/3	Science Park Right	U	C3:F		1	18	-	101	1741	276	36.6%	-	-	-	1.6	55.4	3.3
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**59.1%**	**0**	**0**	**0**	**5.8**	-	-
1/1	Milton Road N Left	U	C3:Q		1	78	-	335	1832	1206	19.6%	-	-	-	0.2	2.4	0.2
1/2	Milton Road N Ahead	U	C3:O		1	82	-	932	2015	1394	51.5%	-	-	-	2.0	9.8	7.7
2/1	Cowley Park Right Left	U	C3:R		1	7	-	47	1687	112	41.8%	-	-	-	1.1	81.0	1.9
3/1	Milton Road S Ahead	U	C3:N		1	101	-	447	1965	1670	19.6%	-	-	-	0.3	3.0	2.4
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	101:10	-	936	1965:1709	1010+150	59.1 : 59.0%	-	-	-	2.4	12.5	7.6
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**46.9%**	**0**	**0**	**0**	**2.3**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	96	-	960	1965	1588	46.9%	-	-	-	0.8	3.9	6.0
2/1	Milton Road S Ahead Left	U	C4:B		1	96	-	457	2011	1626	20.6%	-	-	-	0.3	2.9	2.4
2/2	Milton Road S Ahead	U	C4:B		1	96	-	936	1965	1588	43.1%	-	-	-	0.8	4.3	6.4
3/1	Guided Busway Right Ahead	U	C4:C		1	11	-	24	2015	201	11.9%	-	-	-	0.4	59.4	0.8
7/1	Guided Busway Ahead	U	C4:D		1	13	-	0	2015	235	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.8%**	**0**	**0**	**0**	**1.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	984	1965	1736	44.3%	-	-	-	0.4	2.0	0.8
2/1	Milton Road S Ahead	U	-		-	-	-	1393	1965	1965	51.9%	-	-	-	0.5	1.9	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1393	1965	1736	58.8%	-	-	-	0.7	2.6	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**137.8%**	**14**	**0**	**1**	**313.0**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	46	-	812	1915:1717	546+328	72.0 : 73.8%	-	-	-	4.6	25.9	7.5
1/3	Milton Road N Right	U	C6:C		1	7	-	172	1718	115	117.6%	-	-	-	15.7	418.3	17.9
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	513	1929:1709	97+275	137.8 : 137.8%	-	-	-	87.4	613.4	95.3
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	35	-	805	1932:1724	562+28	136.5 : 136.5%	14	0	1	130.6	583.9	144.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	455	1894:1762	139+198	135.0 : 135.0%	-	-	-	74.8	591.7	77.3

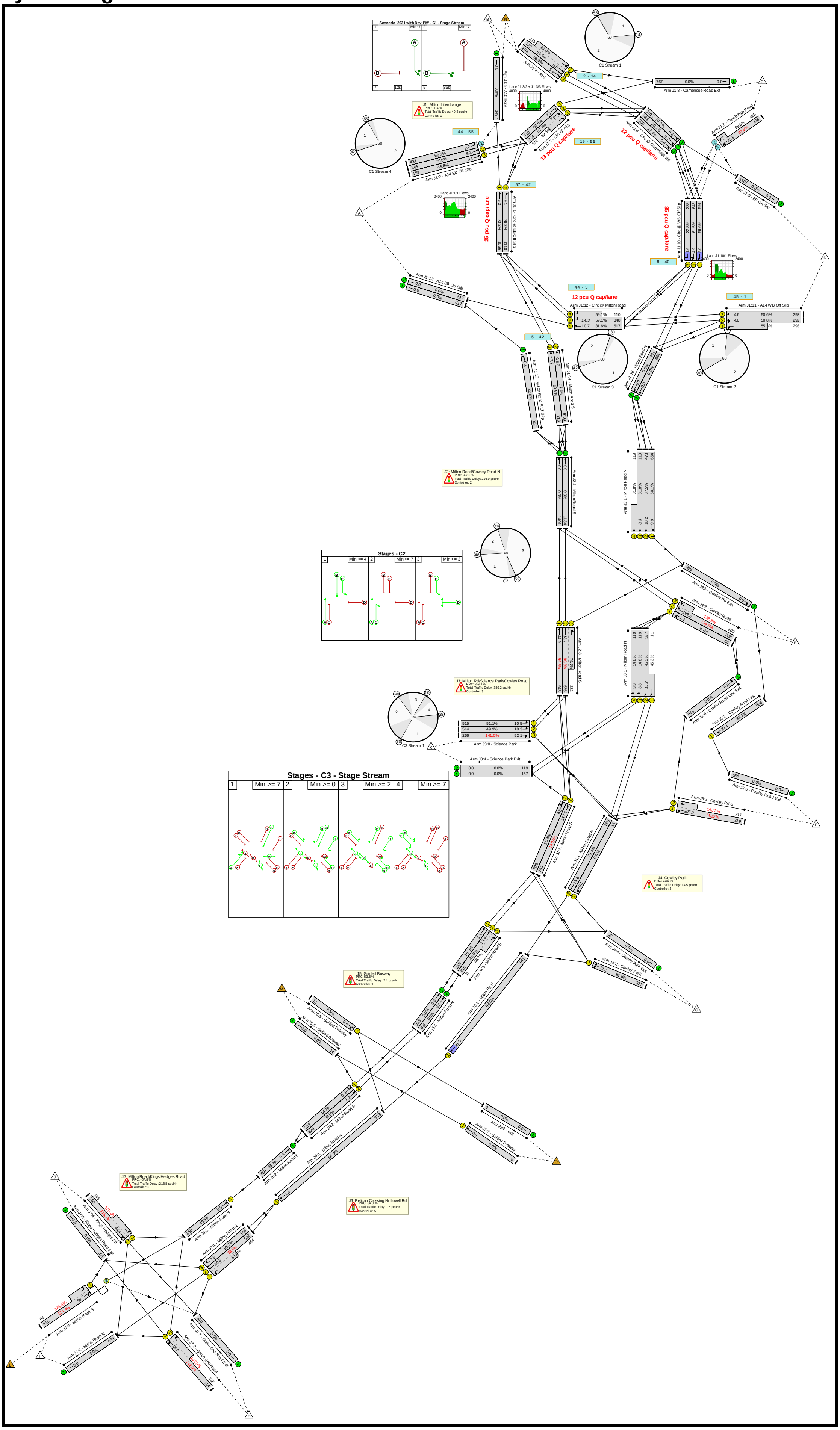
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-41.9	Total Delay for Signalled Lanes (pcuHr):	168.73	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-52.3	Total Delay for Signalled Lanes (pcuHr):	542.65	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	89.7	Total Delay for Signalled Lanes (pcuHr):	4.69	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	13.9	Total Delay for Signalled Lanes (pcuHr):	15.55	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-44.7	Total Delay for Signalled Lanes (pcuHr):	314.77	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-40.6	Total Delay for Signalled Lanes (pcuHr):	134.09	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	52.4	Total Delay for Signalled Lanes (pcuHr):	5.82	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	91.7	Total Delay for Signalled Lanes (pcuHr):	2.29	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	53.2	Total Delay for Signalled Lanes (pcuHr):	1.15	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-53.1	Total Delay for Signalled Lanes (pcuHr):	312.99	Cycle Time (s):	120
		PRC Over All Lanes (%):	-53.1	Total Delay Over All Lanes(pcuHr):	1510.68		

Basic Results Summary

Scenario 2: '2031 S1 DM PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**143.2%**	**2043**	**101**	**14**	**893.2**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**91.3%**	**2036**	**101**	**0**	**49.8**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	1318	1900	1457	73.2%	-	-	-	1.9	6.3	5.2
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	1464	1900	1457	76.2%	-	-	-	2.3	7.6	9.1
2/1	A14 EB Off Slip Left	O	-		-	-	-	431	1894	648	66.5%	330	101	0	1.0	8.3	2.2
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	265	1871	374	70.8%	-	-	-	2.8	38.5	5.2
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	197	2018	404	48.8%	-	-	-	1.6	30.0	3.4
3/1	Circ @ A10 Ahead	U	C1:B		1	36	-	828	1900	1172	60.6%	-	-	-	2.3	11.5	7.1
3/2+3/3	Circ @ A10 Right	U	C1:B		1	36	-	1098	1900:1900	1083+143	67.7 : 89.5%	-	-	-	2.0	8.4	7.8
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	12	-	627	2057:1910	446+414	65.5 : 81.0%	-	-	-	5.2	29.6	6.5
4/3	A10 Ahead	U	C1:A		1	12	-	294	2029	440	66.9%	-	-	-	2.8	33.7	5.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1248	1900	1900	53.2%	-	-	-	0.6	2.0	0.6
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	384	1900	1900	20.2%	-	-	-	0.1	1.2	0.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	330	1900	1900	17.4%	-	-	-	0.1	1.1	0.6
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	853	1828:1986	469+480	91.3 : 88.5%	1706	0	0	5.2	21.8	10.5
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	591	1900	1045	56.6%	-	-	-	1.5	8.9	5.0

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	643	1900	1045	61.5%	-	-	-	1.6	9.2	4.9
10/3	Circ @ WB Off Slip Right	U	C1:D		1	32	-	238	1900	1045	22.8%	-	-	-	0.5	7.4	1.6
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	585	2029:1871	575+530	50.8 : 55.3%	-	-	-	3.5	21.6	4.6
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	293	2044	579	50.6%	-	-	-	2.0	24.3	4.6
12/1	Circ @ Milton Road Ahead	U	C1:F		1	19	-	517	1900	633	81.6%	-	-	-	5.2	36.4	10.7
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	19	-	458	1900:1900	588+186	59.1 : 59.1%	-	-	-	1.4	11.3	14.3
14/1	Milton Road S Ahead	U	C1:E		1	37	-	970	1894	1200	59.9%	-	-	-	2.0	10.2	7.7
14/2	Milton Road S Ahead	U	C1:E		1	37	-	1354	2037	1290	77.5%	-	-	-	3.9	14.1	13.6
15/1	Milton Road S LT Slip Left	U	-		-	-	-	1107	1946	1946	42.0%	-	-	-	0.4	1.6	0.4
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**132.8%**	**0**	**0**	**0**	**216.9**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	86	-	664	1828	1325	50.1%	-	-	-	1.8	9.8	9.9
1/2	Milton Road N Ahead	U	C2:B		1	32	-	473	1965	540	87.5%	-	-	-	8.7	65.9	18.2
1/3+1/4	Milton Road N Ahead	U	C2:B		1	32	-	238	1965:1965	374+374	31.8 : 31.8%	-	-	-	2.5	37.1	3.3
2/1	Cowley Road Left	U	C2:D		1	53	-	65	1764	794	8.2%	-	-	-	0.4	21.3	1.3
2/2+2/3	Cowley Road Right	U	C2:D		1	53	-	1461	1764:1764	458+458	132.8 : 132.8%	-	-	-	176.3	521.9	199.6
3/1	Milton Road S Ahead	U	C2:A		1	57	-	1144	1965	950	99.3%	-	-	-	18.9	72.1	44.9
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	57:20	-	1154	1965:1665	748+291	90.3 : 79.7%	-	-	-	8.4	33.3	18.1

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**143.2%**	**0**	**0**	**0**	**389.2**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	72	-	538	1925:1925	1164+24	45.3 : 45.3%	-	-	-	0.7	4.8	15.2
1/3	Milton Road N Right	U	C3:D		1	53	-	119	1791	806	14.8%	-	-	-	0.3	8.2	3.3
1/4	Milton Road N Right	U	C3:D		1	53	-	119	1791	806	14.8%	-	-	-	0.3	8.2	3.3
2/1	Cowley Road Link Left	U	C3:I		1	48	-	674	1747	713	82.1%	-	-	-	9.2	56.5	20.4
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	14:47	-	1030	1828:1687	153+566	143.2 : 143.2%	-	-	-	189.4	662.0	207.2
7/1	Milton Road S Ahead Left	U	C3:A		1	33	-	363	1927	546	55.4%	-	-	-	2.2	26.5	6.5
7/2	Milton Road S Ahead	U	C3:A		1	33	-	954	1965	557	140.4%	-	-	-	133.1	612.9	147.6
8/1	Science Park Left	U	C3:E		1	70	-	515	1702	1007	51.1%	-	-	-	2.6	18.0	10.5
8/2	Science Park Left	U	C3:E		1	70	-	514	1741	1030	49.9%	-	-	-	2.5	17.7	10.3
8/3	Science Park Right	U	C3:F		1	12	-	266	1741	189	141.0%	-	-	-	48.9	662.4	52.1
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**81.8%**	**0**	**0**	**0**	**14.5**	-	-
1/1	Milton Road N Left	U	C3:Q		1	81	-	11	1832	1252	0.9%	-	-	-	0.0	13.2	0.1
1/2	Milton Road N Ahead	U	C3:O		1	65	-	1012	2015	1108	78.4%	-	-	-	5.6	23.1	15.6
2/1	Cowley Park Right Left	U	C3:R		1	27	-	322	1687	394	81.8%	-	-	-	6.0	67.3	12.2
3/1	Milton Road S Ahead	U	C3:N		1	81	-	279	1965	1343	16.3%	-	-	-	0.5	8.6	3.1
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	81:7	-	802	1965:1709	1321+23	46.6 : 46.3%	-	-	-	2.3	13.5	13.4
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**58.6%**	**0**	**0**	**0**	**2.4**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	97	-	1084	1965	1605	58.6%	-	-	-	1.7	6.3	16.0
2/1	Milton Road S Ahead Left	U	C4:B		1	97	-	297	2003	1636	14.2%	-	-	-	0.1	1.8	0.4
2/2	Milton Road S Ahead	U	C4:B		1	97	-	802	1965	1605	39.0%	-	-	-	0.4	2.3	1.2
3/1	Guided Busway Right Ahead	U	C4:C		1	10	-	12	2015	185	6.5%	-	-	-	0.2	60.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	12	-	0	2015	218	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**54.9%**	**0**	**0**	**0**	**1.6**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1096	1965	1736	54.9%	-	-	-	0.7	2.5	1.4
2/1	Milton Road S Ahead	U	-		-	-	-	1099	1965	1965	43.7%	-	-	-	0.4	1.6	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1099	1965	1736	49.5%	-	-	-	0.5	2.1	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**142.0%**	**7**	**0**	**14**	**218.8**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	47	-	920	1915:1717	556+332	93.8 : 85.6%	-	-	-	6.0	26.9	10.5
1/3	Milton Road N Right	U	C6:C		1	11	-	176	1718	172	85.2%	-	-	-	4.0	97.3	7.3
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	17	-	459	1913:1709	80+243	142.0 : 142.0%	-	-	-	82.6	648.1	88.0
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	32	-	681	1928:1724	494+53	124.4 : 124.4%	7	0	14	86.9	459.1	98.7
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	15	-	415	1873:1762	217+143	115.4 : 115.4%	-	-	-	39.3	340.9	43.4

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	0.5	Total Delay for Signalled Lanes (pcuHr):	12.18	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	46.3	Total Delay for Signalled Lanes (pcuHr):	9.06	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	12.60	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	18.1	Total Delay for Signalled Lanes (pcuHr):	8.67	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-47.6	Total Delay for Signalled Lanes (pcuHr):	216.93	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-59.1	Total Delay for Signalled Lanes (pcuHr):	389.18	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	10.0	Total Delay for Signalled Lanes (pcuHr):	14.50	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	53.6	Total Delay for Signalled Lanes (pcuHr):	2.37	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	64.0	Total Delay for Signalled Lanes (pcuHr):	1.18	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-57.8	Total Delay for Signalled Lanes (pcuHr):	218.77	Cycle Time (s):	120
		PRC Over All Lanes (%):	-59.1	Total Delay Over All Lanes(pcuHr):	893.15		

C.2.3 Option 2 2031 Business-as-Usual Do Minimum results

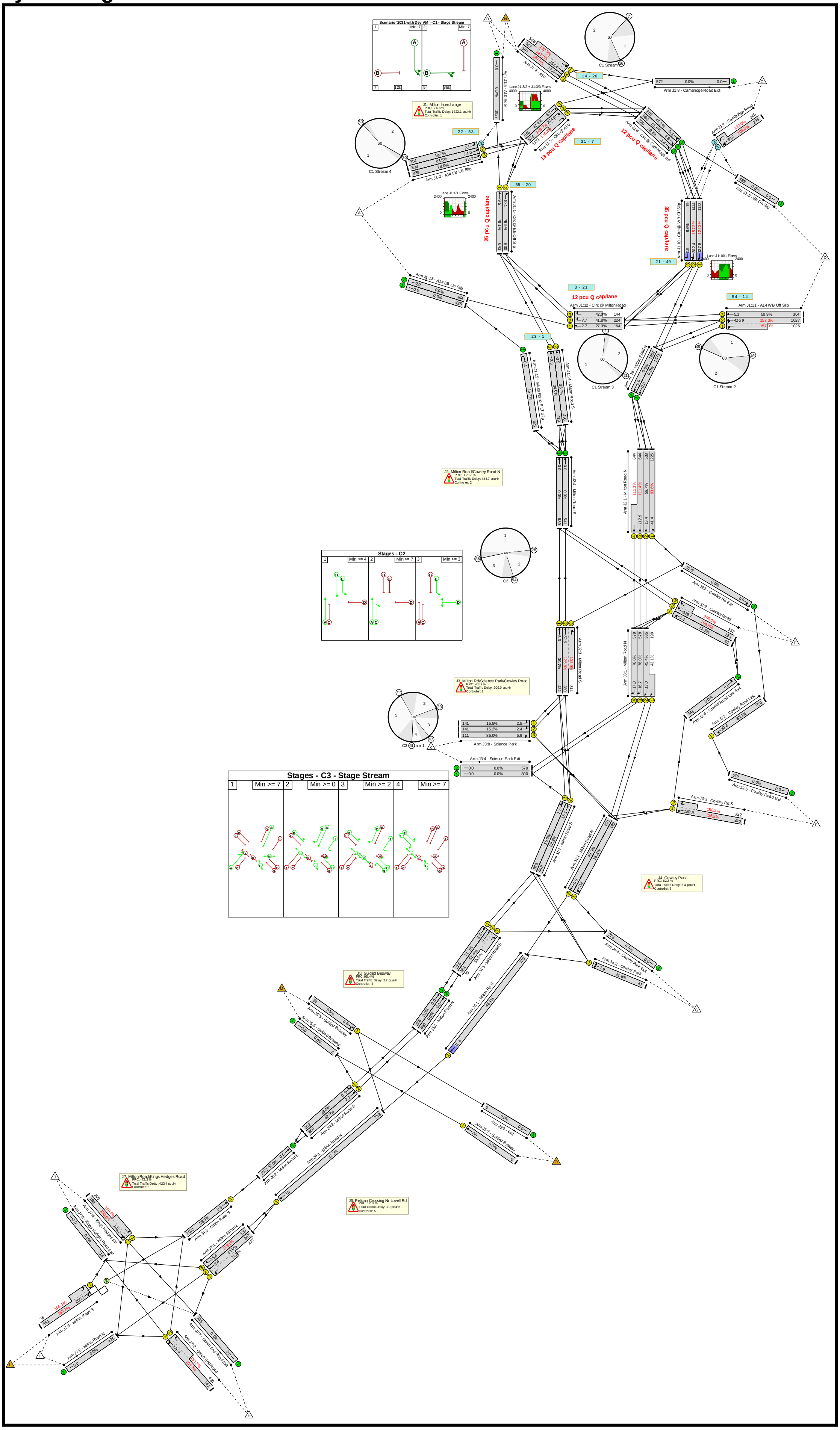
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 'No AAP' DM**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	DM + S2 1.0 JMcv2.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S2 DM AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**206.8%**	**1299**	**218**	**1**	**2450.1**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**157.3%**	**1287**	**218**	**0**	**1322.1**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	25	-	980	1900	823	78.1%	-	-	-	4.2	23.6	9.5
1/2	Circ @ EB Off Slip Right	U	C1:H		1	25	-	1022	1900	823	76.5%	-	-	-	4.0	23.0	10.1
2/1	A14 EB Off Slip Left	O	-		-	-	-	384	1894	788	48.7%	166	218	0	0.5	4.5	2.1
2/2	A14 EB Off Slip Ahead	U	C1:G		1	31	-	833	1871	998	83.5%	-	-	-	5.2	22.4	14.0
2/3	A14 EB Off Slip Ahead	U	C1:G		1	31	-	839	2018	1076	78.0%	-	-	-	4.3	18.7	12.7
3/1	Circ @ A10 Ahead	U	C1:B		1	36	-	794	1900	1172	47.4%	-	-	-	2.2	14.4	6.7
3/2+3/3	Circ @ A10 Right	U	C1:B		1	36	-	1900	1900:1900	527+846	109.3 : 138.3%	-	-	-	204.3	421.0	224.8
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	12	-	1135	2057:1910	446+414	127.2 : 137.3%	-	-	-	154.7	490.6	155.4
4/3	A10 Ahead	U	C1:A		1	12	-	567	2029	440	129.0%	-	-	-	73.0	463.6	77.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1274	1900	1900	45.2%	-	-	-	0.4	1.7	0.4
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	1327	1900	1900	51.6%	-	-	-	0.5	2.0	4.8
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	978	1900	1900	38.4%	-	-	-	0.3	1.6	3.6
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	640	1828:1986	270+283	109.3 : 122.0%	1121	0	0	51.6	290.3	60.2
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	28	-	1484	1900	918	122.3%	-	-	-	114.3	366.4	127.8

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	28	-	1918	1900	918	157.2%	-	-	-	286.5	714.4	302.4
10/3	Circ @ WB Off Slip Right	U	C1:D		1	28	-	98	1900	918	8.6%	-	-	-	0.2	7.5	0.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	20	-	2053	2029:1871	653+652	157.3 : 157.3%	-	-	-	410.2	719.3	416.9
11/3	A14 WB Off Slip Ahead	U	C1:C		1	20	-	364	2044	715	50.9%	-	-	-	2.1	20.5	5.3
12/1	Circ @ Milton Road Ahead	U	C1:F		1	18	-	243	1900	602	27.3%	-	-	-	1.2	26.6	2.7
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	18	-	369	1900:1900	536+343	41.8 : 42.0%	-	-	-	0.5	5.0	7.7
14/1	Milton Road S Ahead	U	C1:E		1	38	-	755	1894	1231	34.0%	-	-	-	0.8	6.9	3.3
14/2	Milton Road S Ahead	U	C1:E		1	38	-	878	2037	1324	36.7%	-	-	-	0.9	7.0	3.9
15/1	Milton Road S LT Slip Left	U	-		-	-	-	581	1946	1946	16.7%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	-	-	-		-	-	-	-	-	-	**206.8%**	**0**	**0**	**0**	**484.7**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	85	-	1971	1828	1310	93.6%	-	-	-	11.3	33.3	41.4
1/2	Milton Road N Ahead	U	C2:B		1	57	-	903	1965	950	56.7%	-	-	-	4.0	26.4	13.4
1/3+1/4	Milton Road N Ahead	U	C2:B		1	57	-	2431	1965:1965	578+579	111.4 : 111.3%	-	-	-	88.6	247.6	112.5
2/1	Cowley Road Left	U	C2:D		1	27	-	46	1764	412	11.2%	-	-	-	0.5	41.2	1.3
2/2+2/3	Cowley Road Right	U	C2:D		1	27	-	1299	1764:1764	267+267	206.8 : 206.6%	-	-	-	334.6	1091.8	349.7
3/1	Milton Road S Ahead	U	C2:A		1	83	-	564	1965	1375	30.7%	-	-	-	0.6	5.0	5.3
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	83:21	-	832	1965:1665	223+305	125.6 : 102.9%	-	-	-	45.2	274.1	52.6

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**156.5%**	**0**	**0**	**0**	**209.0**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	74	-	949	1925:1925	848+463	45.4 : 43.1%	-	-	-	1.3	7.8	13.0
1/3	Milton Road N Right	U	C3:D		1	50	-	1215	1791	761	76.0%	-	-	-	2.9	17.9	16.7
1/4	Milton Road N Right	U	C3:D		1	50	-	1216	1791	761	76.0%	-	-	-	2.9	17.9	17.0
2/1	Cowley Road Link Left	U	C3:I		1	45	-	909	1747	670	85.1%	-	-	-	8.5	54.0	20.4
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	16:44	-	832	1828:1687	185+346	156.5 : 156.5%	-	-	-	178.3	771.5	188.3
7/1	Milton Road S Ahead Left	U	C3:A		1	40	-	552	1799	615	59.0%	-	-	-	2.7	27.3	7.7
7/2	Milton Road S Ahead	U	C3:A		1	40	-	902	1965	671	88.3%	-	-	-	7.1	43.3	15.1
8/1	Science Park Left	U	C3:E		1	63	-	141	1702	908	15.5%	-	-	-	0.7	16.6	2.5
8/2	Science Park Left	U	C3:E		1	63	-	141	1741	929	15.2%	-	-	-	0.6	16.5	2.4
8/3	Science Park Right	U	C3:F		1	8	-	111	1741	131	85.0%	-	-	-	4.0	129.3	5.9
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**55.5%**	**0**	**0**	**0**	**6.4**	-	-
1/1	Milton Road N Left	U	C3:Q		1	79	-	335	1832	1221	16.3%	-	-	-	0.1	2.1	0.2
1/2	Milton Road N Ahead	U	C3:O		1	83	-	1015	2015	1410	48.3%	-	-	-	2.4	12.6	9.9
2/1	Cowley Park Right Left	U	C3:R		1	7	-	47	1687	112	41.8%	-	-	-	1.1	81.0	1.9
3/1	Milton Road S Ahead	U	C3:N		1	101	-	545	1965	1670	21.3%	-	-	-	0.4	4.0	3.8
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	101:9	-	1011	1965:1709	1048+142	55.4 : 55.5%	-	-	-	2.4	13.1	8.9
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**46.1%**	**0**	**0**	**0**	**2.7**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	93	-	1043	1965	1539	46.1%	-	-	-	1.6	8.0	11.4
2/1	Milton Road S Ahead Left	U	C4:B		1	93	-	555	2011	1575	23.0%	-	-	-	0.2	2.1	0.9
2/2	Milton Road S Ahead	U	C4:B		1	93	-	1011	1965	1539	42.9%	-	-	-	0.5	2.8	2.2
3/1	Guided Busway Right Ahead	U	C4:C		1	14	-	24	2015	252	9.5%	-	-	-	0.4	54.5	0.8
7/1	Guided Busway Ahead	U	C4:D		1	16	-	0	2015	285	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.9%**	**0**	**0**	**0**	**1.9**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1067	1965	1736	42.2%	-	-	-	0.6	2.9	3.0
2/1	Milton Road S Ahead	U	-		-	-	-	1566	1965	1965	52.0%	-	-	-	0.5	1.9	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1566	1965	1736	58.9%	-	-	-	0.7	2.6	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**155.1%**	**12**	**0**	**1**	**423.4**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	45	-	876	1915:1717	532+331	68.9 : 71.5%	-	-	-	3.4	20.5	6.6
1/3	Milton Road N Right	U	C6:C		1	7	-	191	1718	115	113.1%	-	-	-	12.9	358.0	15.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	21	-	577	1928:1709	93+287	151.7 : 151.7%	-	-	-	117.5	733.1	126.4
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	34	-	889	1933:1724	549+25	155.1 : 155.1%	12	0	1	188.7	764.0	200.1
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	488	1894:1762	125+198	150.6 : 150.6%	-	-	-	100.9	744.3	106.2

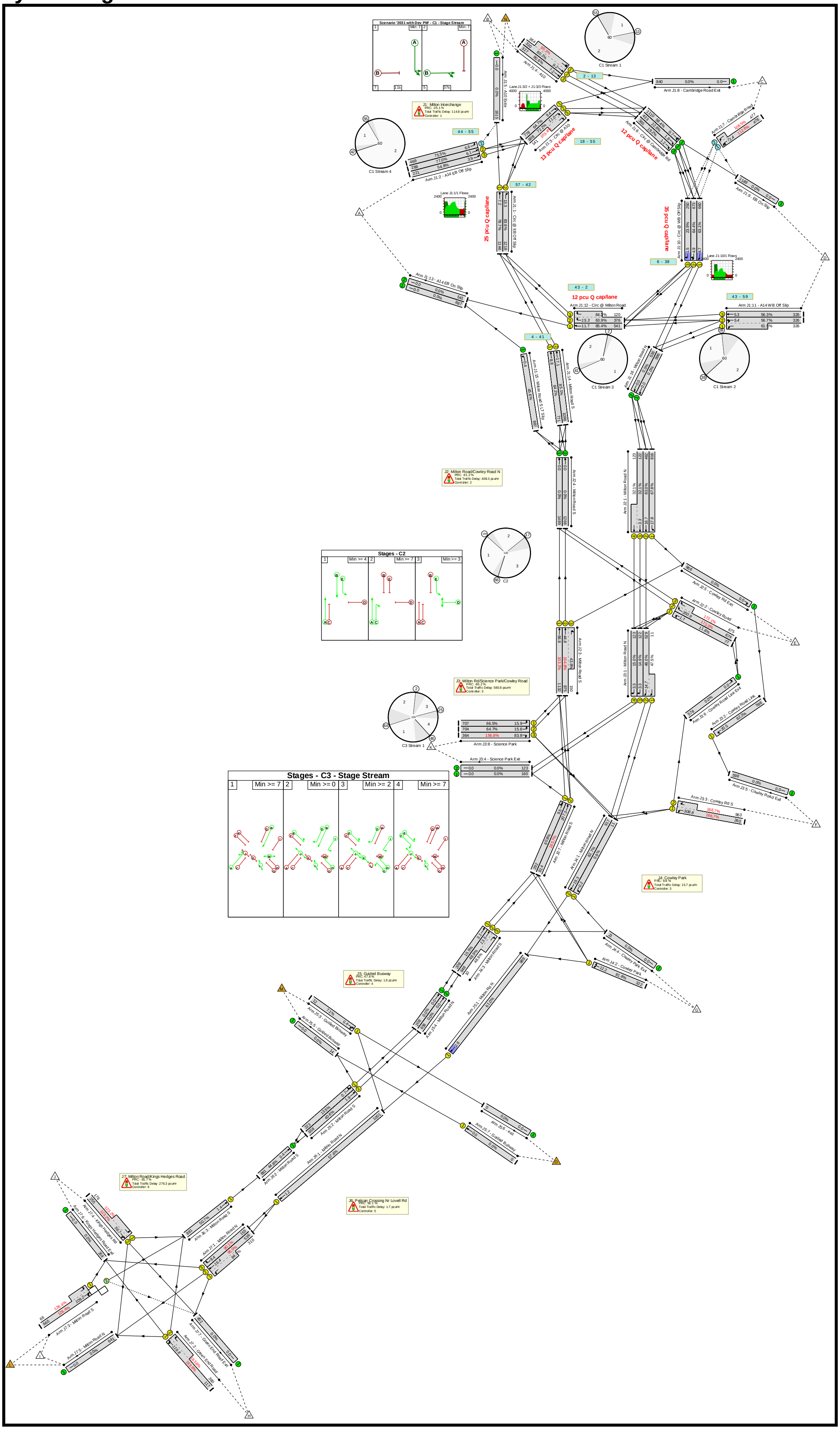
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-53.7	Total Delay for Signalled Lanes (pcuHr):	434.22	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-74.8	Total Delay for Signalled Lanes (pcuHr):	813.17	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	114.3	Total Delay for Signalled Lanes (pcuHr):	3.47	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	7.8	Total Delay for Signalled Lanes (pcuHr):	17.76	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-129.7	Total Delay for Signalled Lanes (pcuHr):	484.74	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-73.9	Total Delay for Signalled Lanes (pcuHr):	209.03	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	62.2	Total Delay for Signalled Lanes (pcuHr):	6.36	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	95.4	Total Delay for Signalled Lanes (pcuHr):	2.65	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	52.9	Total Delay for Signalled Lanes (pcuHr):	1.33	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-72.3	Total Delay for Signalled Lanes (pcuHr):	423.36	Cycle Time (s):	120
		PRC Over All Lanes (%):	-129.7	Total Delay Over All Lanes(pcuHr):	2450.10		

Basic Results Summary

Scenario 2: '2031 S2 DM PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**172.1%**	**2105**	**109**	**3**	**1399.4**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**112.6%**	**2087**	**109**	**0**	**114.8**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	1530	1900	1457	78.7%	-	-	-	2.4	7.5	7.2
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	1737	1900	1457	83.6%	-	-	-	3.5	10.4	13.3
2/1	A14 EB Off Slip Left	O	-		-	-	-	469	1894	622	75.5%	360	109	0	1.6	12.3	6.6
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	288	1871	374	77.0%	-	-	-	3.4	42.8	6.1
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	221	2018	404	54.8%	-	-	-	1.9	31.4	3.9
3/1	Circ @ A10 Ahead	U	C1:B		1	37	-	949	1900	1203	64.7%	-	-	-	2.6	12.2	8.4
3/2+3/3	Circ @ A10 Right	U	C1:B		1	37	-	1297	1900:1900	1118+136	72.2 : 103.4%	-	-	-	4.8	18.1	11.0
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	11	-	694	2057:1910	411+382	80.2 : 95.3%	-	-	-	7.8	40.3	9.2
4/3	A10 Ahead	U	C1:A		1	11	-	327	2029	406	80.6%	-	-	-	4.1	44.6	7.2
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1458	1900	1900	58.4%	-	-	-	0.7	2.3	0.7
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	433	1900	1900	22.8%	-	-	-	0.1	1.2	1.8
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	365	1900	1900	19.2%	-	-	-	0.1	1.2	1.2
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	955	1828:1986	424+439	112.6 : 108.5%	1728	0	0	55.6	209.7	71.4
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	695	1900	1045	63.1%	-	-	-	1.6	9.0	4.7

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	698	1900	1045	64.4%	-	-	-	1.7	9.2	4.9
10/3	Circ @ WB Off Slip Right	U	C1:D		1	32	-	262	1900	1045	23.9%	-	-	-	0.5	6.7	1.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	652	2029:1871	575+530	56.7 : 61.5%	-	-	-	4.1	22.5	5.4
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	326	2044	579	56.3%	-	-	-	2.3	25.4	5.3
12/1	Circ @ Milton Road Ahead	U	C1:F		1	19	-	561	1900	633	85.4%	-	-	-	6.0	40.1	11.7
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	19	-	498	1900:1900	588+187	63.9 : 64.3%	-	-	-	1.6	11.8	15.3
14/1	Milton Road S Ahead	U	C1:E		1	37	-	1152	1894	1200	64.2%	-	-	-	2.3	11.0	8.8
14/2	Milton Road S Ahead	U	C1:E		1	37	-	1617	2037	1290	85.1%	-	-	-	5.4	17.8	17.1
15/1	Milton Road S LT Slip Left	U	-		-	-	-	1320	1946	1946	45.6%	-	-	-	0.4	1.7	0.4
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**172.1%**	**0**	**0**	**0**	**408.3**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	78	-	848	1828	1203	67.8%	-	-	-	3.9	17.3	17.8
1/2	Milton Road N Ahead	U	C2:B		1	33	-	475	1965	557	83.0%	-	-	-	7.5	58.4	16.7
1/3+1/4	Milton Road N Ahead	U	C2:B		1	33	-	251	1965:1965	380+383	32.1 : 32.1%	-	-	-	2.5	36.4	3.3
2/1	Cowley Road Left	U	C2:D		1	44	-	77	1764	662	11.6%	-	-	-	0.6	27.6	1.7
2/2+2/3	Cowley Road Right	U	C2:D		1	44	-	1734	1764:1764	392+392	172.0 : 172.1%	-	-	-	329.9	880.6	350.9
3/1	Milton Road S Ahead	U	C2:A		1	66	-	1337	1965	1097	103.2%	-	-	-	36.0	114.6	66.8
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	66:28	-	1436	1965:1665	834+343	104.8 : 43.8%	-	-	-	27.9	98.1	44.8

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**166.7%**	**0**	**0**	**0**	**580.8**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	68	-	552	1925:1925	1102+22	48.0 : 47.5%	-	-	-	0.8	5.2	14.7
1/3	Milton Road N Right	U	C3:D		1	54	-	125	1791	821	14.9%	-	-	-	0.3	8.1	3.3
1/4	Milton Road N Right	U	C3:D		1	54	-	126	1791	821	15.0%	-	-	-	0.3	8.1	3.3
2/1	Cowley Road Link Left	U	C3:I		1	49	-	860	1747	728	82.2%	-	-	-	7.6	45.7	20.5
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	15:48	-	1223	1828:1687	156+578	166.7 : 166.7%	-	-	-	290.6	855.5	308.8
7/1	Milton Road S Ahead Left	U	C3:A		1	29	-	366	1925	481	60.8%	-	-	-	2.6	32.6	9.5
7/2	Milton Road S Ahead	U	C3:A		1	29	-	1047	1965	491	165.7%	-	-	-	191.2	845.8	207.3
8/1	Science Park Left	U	C3:E		1	74	-	707	1702	1064	66.5%	-	-	-	3.8	19.5	15.9
8/2	Science Park Left	U	C3:E		1	74	-	704	1741	1088	64.7%	-	-	-	3.7	18.8	15.6
8/3	Science Park Right	U	C3:F		1	15	-	364	1741	232	156.8%	-	-	-	79.9	789.7	83.8
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**82.7%**	**0**	**0**	**0**	**15.7**	-	-
1/1	Milton Road N Left	U	C3:Q		1	81	-	11	1832	1252	0.9%	-	-	-	0.1	18.0	0.2
1/2	Milton Road N Ahead	U	C3:O		1	65	-	1165	2015	1108	82.7%	-	-	-	6.5	25.6	19.3
2/1	Cowley Park Right Left	U	C3:R		1	27	-	322	1687	394	81.8%	-	-	-	6.0	67.3	12.2
3/1	Milton Road S Ahead	U	C3:N		1	81	-	282	1965	1343	15.5%	-	-	-	0.5	8.9	3.1
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	81:7	-	895	1965:1709	1324+21	48.9 : 48.6%	-	-	-	2.6	14.1	13.5
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**61.0%**	**0**	**0**	**0**	**1.9**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	1237	1965	1621	61.0%	-	-	-	1.0	3.6	2.8
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	300	2003	1652	13.5%	-	-	-	0.2	2.6	0.7
2/2	Milton Road S Ahead	U	C4:B		1	98	-	895	1965	1621	40.6%	-	-	-	0.6	3.2	1.9
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**57.6%**	**0**	**0**	**0**	**1.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1249	1965	1736	57.6%	-	-	-	0.7	2.6	1.2
2/1	Milton Road S Ahead	U	-		-	-	-	1195	1965	1965	44.8%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1195	1965	1736	50.7%	-	-	-	0.6	2.3	1.4
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**163.6%**	**17**	**0**	**3**	**276.3**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	49	-	1046	1915:1717	564+366	95.0 : 84.7%	-	-	-	7.0	29.9	16.4
1/3	Milton Road N Right	U	C6:C		1	11	-	203	1718	172	90.1%	-	-	-	5.0	116.9	8.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	16	-	497	1913:1709	72+232	163.6 : 163.6%	-	-	-	114.1	826.6	119.8
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	34	-	731	1929:1724	526+52	126.4 : 126.4%	17	0	3	97.5	480.0	109.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	14	-	431	1875:1762	207+143	123.2 : 123.2%	-	-	-	52.7	439.8	56.7

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-14.8	Total Delay for Signalled Lanes (pcuHr):	19.23	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	39.8	Total Delay for Signalled Lanes (pcuHr):	10.21	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	5.3	Total Delay for Signalled Lanes (pcuHr):	15.44	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	7.7	Total Delay for Signalled Lanes (pcuHr):	11.25	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-91.2	Total Delay for Signalled Lanes (pcuHr):	408.32	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-85.2	Total Delay for Signalled Lanes (pcuHr):	580.79	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	8.8	Total Delay for Signalled Lanes (pcuHr):	15.67	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	47.6	Total Delay for Signalled Lanes (pcuHr):	1.94	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	56.1	Total Delay for Signalled Lanes (pcuHr):	1.27	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-81.7	Total Delay for Signalled Lanes (pcuHr):	276.28	Cycle Time (s):	120
		PRC Over All Lanes (%):	-91.2	Total Delay Over All Lanes(pcuHr):	1399.45		

C.2.4 Option 3 2031 Business-as-Usual Do Minimum results

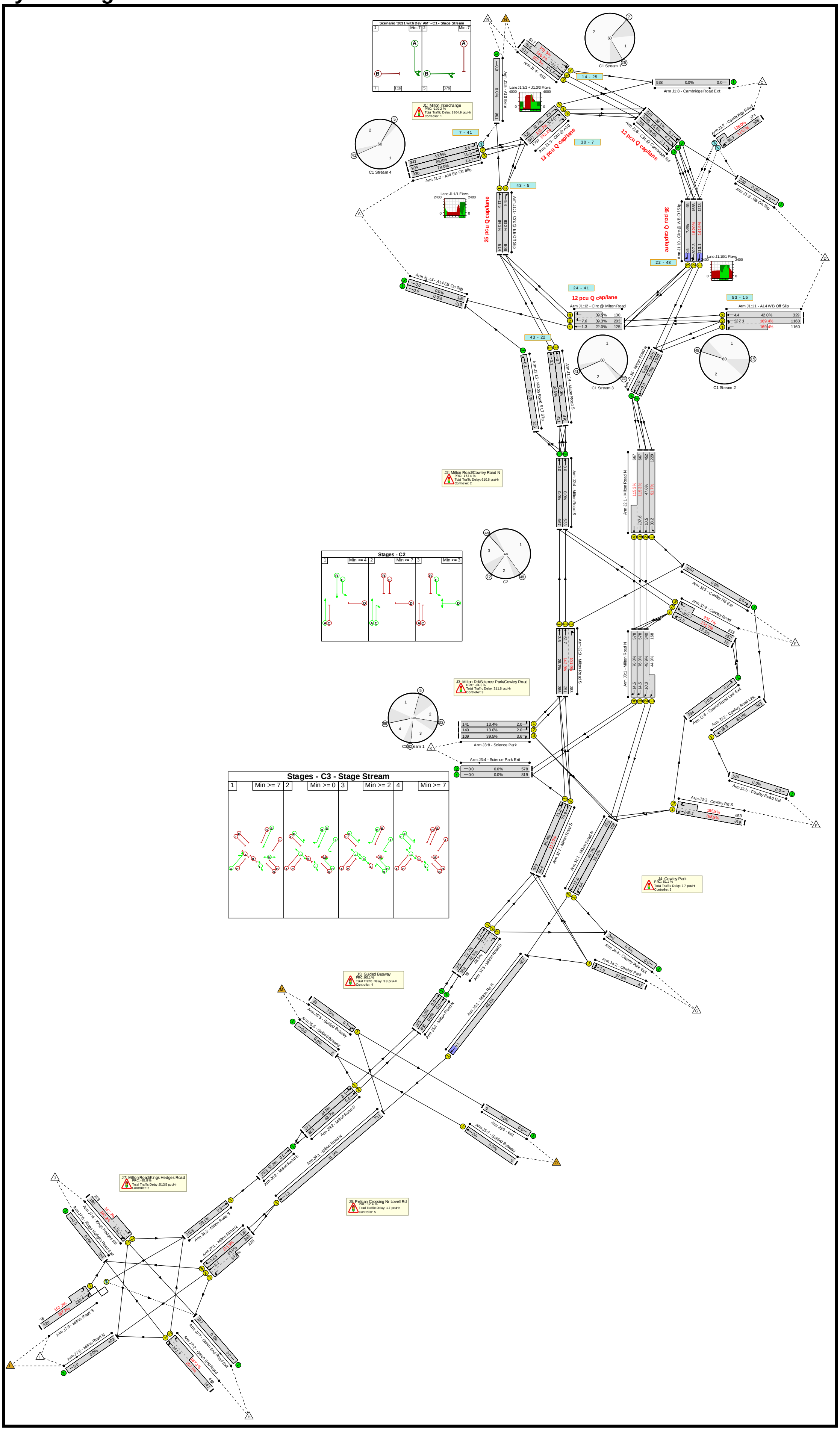
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 S3 DM**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	DM + S3 1.0 JMcv2.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S3 DM AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**231.7%**	**1293**	**214**	**1**	**3313.8**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**182.0%**	**1281**	**214**	**0**	**1864.9**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	22	-	1052	1900	728	84.3%	-	-	-	4.8	28.4	11.5
1/2	Circ @ EB Off Slip Right	U	C1:H		1	22	-	1115	1900	728	83.2%	-	-	-	4.7	28.0	9.4
2/1	A14 EB Off Slip Left	O	-		-	-	-	347	1894	797	43.5%	133	214	0	0.4	4.0	0.4
2/2	A14 EB Off Slip Ahead	U	C1:G		1	34	-	934	1871	1091	85.6%	-	-	-	5.6	21.4	15.6
2/3	A14 EB Off Slip Ahead	U	C1:G		1	34	-	930	2018	1177	79.0%	-	-	-	4.3	16.8	13.7
3/1	Circ @ A10 Ahead	U	C1:B		1	37	-	835	1900	1203	43.7%	-	-	-	0.9	6.0	2.5
3/2+3/3	Circ @ A10 Right	U	C1:B		1	37	-	2144	1900:1900	527+873	115.3 : 153.2%	-	-	-	305.7	566.1	324.5
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	11	-	1233	2057:1910	411+382	149.7 : 161.5%	-	-	-	241.4	704.9	241.2
4/3	A10 Ahead	U	C1:A		1	11	-	618	2029	406	152.3%	-	-	-	117.5	684.2	121.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1404	1900	1900	36.1%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	1480	1900	1900	55.6%	-	-	-	0.6	2.2	4.3
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	1091	1900	1900	39.9%	-	-	-	0.3	1.6	3.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	682	1828:1986	258+292	119.2 : 128.0%	1148	0	0	73.8	389.5	86.9
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	26	-	1671	1900	855	141.9%	-	-	-	197.0	584.5	210.1

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	26	-	2175	1900	855	182.0%	-	-	-	381.9	883.6	397.3
10/3	Circ @ WB Off Slip Right	U	C1:D		1	26	-	88	1900	855	7.6%	-	-	-	0.2	8.6	0.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	22	-	2320	2029:1871	685+685	169.4 : 169.4%	-	-	-	519.2	805.6	527.3
11/3	A14 WB Off Slip Ahead	U	C1:C		1	22	-	329	2044	784	42.0%	-	-	-	1.6	17.6	4.4
12/1	Circ @ Milton Road Ahead	U	C1:F		1	17	-	219	1900	570	22.0%	-	-	-	0.7	20.5	1.3
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	17	-	334	1900:1900	517+329	39.3 : 39.5%	-	-	-	2.3	24.4	7.6
14/1	Milton Road S Ahead	U	C1:E		1	39	-	848	1894	1263	32.5%	-	-	-	0.7	6.4	3.1
14/2	Milton Road S Ahead	U	C1:E		1	39	-	985	2037	1358	35.0%	-	-	-	0.8	6.4	3.7
15/1	Milton Road S LT Slip Left	U	-		-	-	-	651	1946	1946	16.1%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**231.7%**	**0**	**0**	**0**	**610.6**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	87	-	2266	1828	1341	91.7%	-	-	-	9.5	27.8	38.2
1/2	Milton Road N Ahead	U	C2:B		1	57	-	904	1965	950	47.6%	-	-	-	3.1	24.4	10.5
1/3+1/4	Milton Road N Ahead	U	C2:B		1	57	-	2860	1965:1965	578+578	115.3 : 115.3%	-	-	-	112.9	304.7	137.6
2/1	Cowley Road Left	U	C2:D		1	29	-	55	1764	441	12.5%	-	-	-	0.6	39.5	1.5
2/2+2/3	Cowley Road Right	U	C2:D		1	29	-	1564	1764:1764	281+282	231.7 : 231.7%	-	-	-	436.0	1203.1	457.7
3/1	Milton Road S Ahead	U	C2:A		1	81	-	568	1965	1343	28.7%	-	-	-	0.5	4.4	3.5
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	81:19	-	905	1965:1665	177+277	142.3 : 101.9%	-	-	-	48.1	324.3	52.7

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**165.9%**	**0**	**0**	**0**	**311.6**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	59	-	959	1925:1925	695+373	48.9 : 44.9%	-	-	-	2.0	14.0	10.3
1/3	Milton Road N Right	U	C3:D		1	50	-	1430	1791	761	76.0%	-	-	-	2.5	15.5	14.5
1/4	Milton Road N Right	U	C3:D		1	50	-	1430	1791	761	76.0%	-	-	-	2.5	15.5	14.5
2/1	Cowley Road Link Left	U	C3:I		1	45	-	1044	1747	670	81.9%	-	-	-	7.5	49.0	18.9
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	21:44	-	1002	1828:1687	210+394	165.9 : 165.9%	-	-	-	232.8	836.5	246.1
7/1	Milton Road S Ahead Left	U	C3:A		1	30	-	613	1790	462	80.4%	-	-	-	4.8	46.2	13.8
7/2	Milton Road S Ahead	U	C3:A		1	30	-	979	1965	508	117.0%	-	-	-	57.0	345.3	70.9
8/1	Science Park Left	U	C3:E		1	73	-	141	1702	1050	13.4%	-	-	-	0.5	11.6	2.0
8/2	Science Park Left	U	C3:E		1	73	-	140	1741	1074	13.0%	-	-	-	0.4	11.5	2.0
8/3	Science Park Right	U	C3:F		1	18	-	109	1741	276	39.5%	-	-	-	1.7	56.1	3.6
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**49.7%**	**0**	**0**	**0**	**7.7**	-	-
1/1	Milton Road N Left	U	C3:Q		1	55	-	335	1832	855	19.6%	-	-	-	1.6	33.6	4.4
1/2	Milton Road N Ahead	U	C3:O		1	78	-	1082	2015	1327	49.7%	-	-	-	2.6	14.0	12.0
2/1	Cowley Park Right Left	U	C3:R		1	11	-	47	1687	169	27.9%	-	-	-	0.8	64.7	1.6
3/1	Milton Road S Ahead	U	C3:N		1	97	-	606	1965	1605	22.7%	-	-	-	0.5	4.5	3.2
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	97:10	-	1088	1965:1709	1199+150	48.5 : 48.5%	-	-	-	2.3	12.4	7.9
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**46.1%**	**0**	**0**	**0**	**3.8**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	90	-	1110	1965	1490	46.1%	-	-	-	2.2	11.3	9.1
2/1	Milton Road S Ahead Left	U	C4:B		1	90	-	616	2012	1526	24.3%	-	-	-	0.4	3.7	3.1
2/2	Milton Road S Ahead	U	C4:B		1	90	-	1088	1965	1490	43.9%	-	-	-	0.9	5.0	6.6
3/1	Guided Busway Right Ahead	U	C4:C		1	17	-	24	2015	302	7.9%	-	-	-	0.3	50.4	0.7
7/1	Guided Busway Ahead	U	C4:D		1	19	-	0	2015	336	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.1%**	**0**	**0**	**0**	**1.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1134	1965	1736	41.0%	-	-	-	0.4	2.0	1.1
2/1	Milton Road S Ahead	U	-		-	-	-	1704	1965	1965	52.2%	-	-	-	0.5	1.9	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1704	1965	1736	59.1%	-	-	-	0.7	2.6	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**167.2%**	**12**	**0**	**1**	**513.5**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	45	-	928	1915:1717	529+337	65.8 : 69.8%	-	-	-	3.6	22.0	9.1
1/3	Milton Road N Right	U	C6:C		1	7	-	206	1718	115	111.5%	-	-	-	12.0	337.0	14.5
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	21	-	629	1928:1709	88+288	167.1 : 167.1%	-	-	-	150.9	863.5	161.3
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	34	-	958	1933:1724	550+23	167.2 : 167.2%	12	0	1	227.1	853.2	239.4
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	513	1895:1762	117+199	162.3 : 162.3%	-	-	-	120.1	842.7	125.2

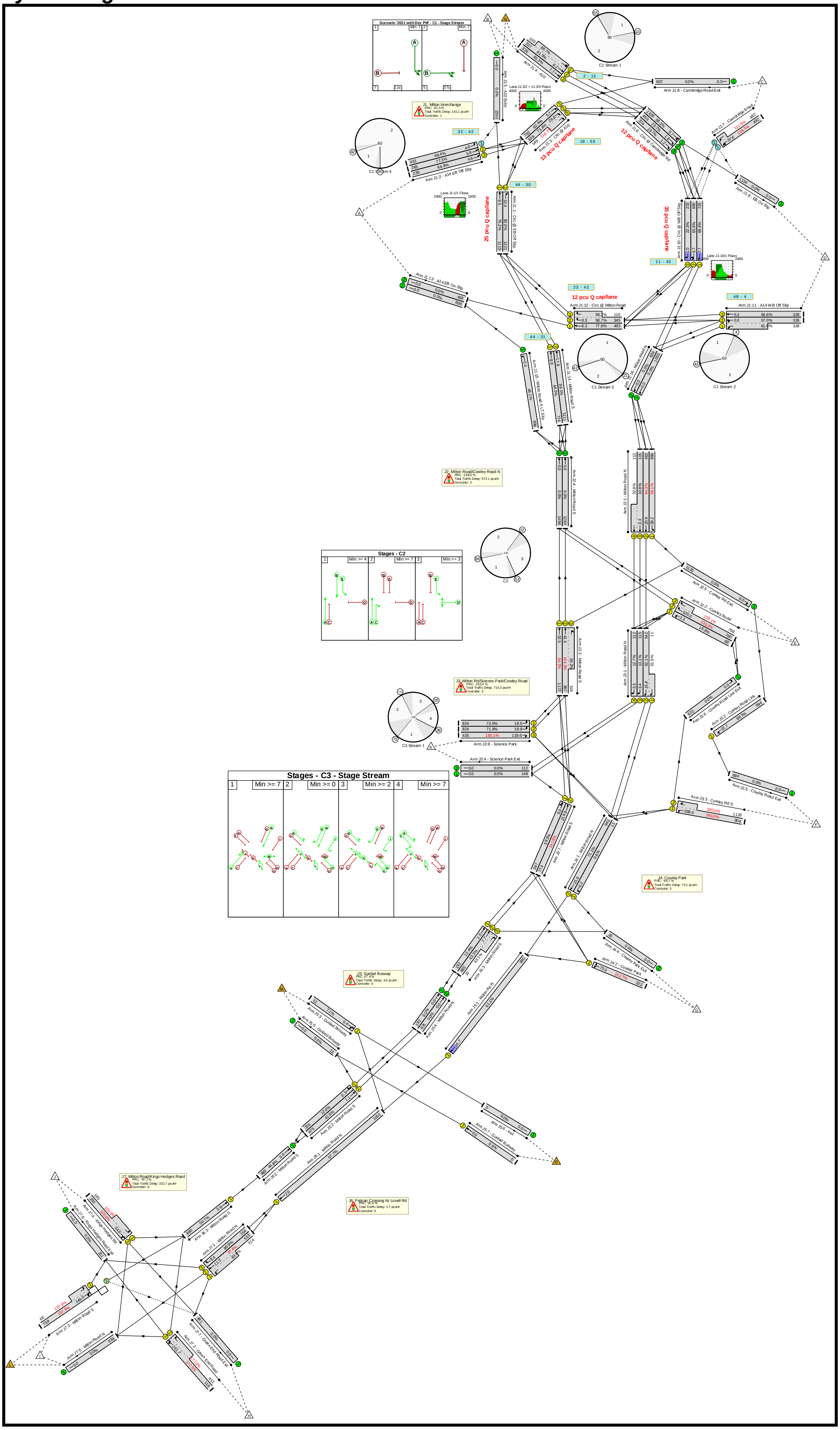
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-79.5	Total Delay for Signalled Lanes (pcuHr):	665.52	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-102.2	Total Delay for Signalled Lanes (pcuHr):	1099.86	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	128.0	Total Delay for Signalled Lanes (pcuHr):	4.55	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	5.2	Total Delay for Signalled Lanes (pcuHr):	19.46	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-157.4	Total Delay for Signalled Lanes (pcuHr):	610.65	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-84.3	Total Delay for Signalled Lanes (pcuHr):	311.57	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	81.1	Total Delay for Signalled Lanes (pcuHr):	7.69	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	95.1	Total Delay for Signalled Lanes (pcuHr):	3.78	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	52.4	Total Delay for Signalled Lanes (pcuHr):	1.12	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-85.8	Total Delay for Signalled Lanes (pcuHr):	513.54	Cycle Time (s):	120
		PRC Over All Lanes (%):	-157.4	Total Delay Over All Lanes(pcuHr):	3313.80		

Basic Results Summary

Scenario 2: '2031 S3 DM PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**233.1%**	**2037**	**93**	**11**	**1839.6**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.1%**	**2028**	**93**	**0**	**142.1**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	46	-	1644	1900	1488	75.2%	-	-	-	2.6	8.3	9.5
1/2	Circ @ EB Off Slip Right	U	C1:H		1	46	-	1934	1900	1488	82.0%	-	-	-	2.9	8.5	13.4
2/1	A14 EB Off Slip Left	O	-		-	-	-	431	1894	630	68.4%	338	93	0	1.2	9.7	4.8
2/2	A14 EB Off Slip Ahead	U	C1:G		1	10	-	265	1871	343	77.3%	-	-	-	3.3	45.5	5.8
2/3	A14 EB Off Slip Ahead	U	C1:G		1	10	-	239	2018	370	64.6%	-	-	-	2.4	36.3	4.6
3/1	Circ @ A10 Ahead	U	C1:B		1	37	-	984	1900	1203	62.4%	-	-	-	1.6	7.9	5.7
3/2+3/3	Circ @ A10 Right	U	C1:B		1	37	-	1454	1900:1900	1124+128	73.4 : 116.1%	-	-	-	13.9	51.2	26.8
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	11	-	676	2057:1910	411+382	81.9 : 88.7%	-	-	-	7.1	37.8	8.2
4/3	A10 Ahead	U	C1:A		1	11	-	338	2029	406	83.3%	-	-	-	4.5	47.9	7.7
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1587	1900	1900	58.3%	-	-	-	0.7	2.3	0.7
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	450	1900	1900	23.7%	-	-	-	0.2	1.3	1.8
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	374	1900	1900	19.7%	-	-	-	0.1	1.2	1.2
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	974	1828:1986	413+432	119.1 : 111.6%	1690	0	0	75.3	278.1	97.6
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	780	1900	1045	69.4%	-	-	-	2.3	11.3	7.7

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	700	1900	1045	63.6%	-	-	-	1.7	9.2	5.7
10/3	Circ @ WB Off Slip Right	U	C1:D		1	32	-	248	1900	1045	22.3%	-	-	-	0.3	5.4	1.0
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	654	2029:1871	572+530	57.0 : 61.9%	-	-	-	4.1	22.5	5.5
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	328	2044	579	56.6%	-	-	-	2.3	25.5	5.3
12/1	Circ @ Milton Road Ahead	U	C1:F		1	19	-	517	1900	633	77.8%	-	-	-	3.0	21.6	8.3
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	19	-	458	1900:1900	588+186	58.7 : 59.1%	-	-	-	4.2	32.9	9.5
14/1	Milton Road S Ahead	U	C1:E		1	37	-	1296	1894	1200	64.5%	-	-	-	2.4	11.0	8.9
14/2	Milton Road S Ahead	U	C1:E		1	37	-	1824	2037	1290	86.1%	-	-	-	5.7	18.6	17.8
15/1	Milton Road S LT Slip Left	U	-		-	-	-	1491	1946	1946	46.1%	-	-	-	0.4	1.7	0.4
J2: Milton Road/Cowley Road N	-	-	-		-	-	-	-	-	-	**233.1%**	**0**	**0**	**0**	**572.1**	-	-
1/1	Milton Road N Left	U	C2:E		1	65	-	1021	1828	1005	96.1%	-	-	-	15.5	57.8	39.2
1/2	Milton Road N Ahead	U	C2:B		1	29	-	479	1965	491	94.3%	-	-	-	11.5	89.6	20.9
1/3+1/4	Milton Road N Ahead	U	C2:B		1	29	-	235	1965:1965	351+342	32.8 : 32.8%	-	-	-	2.5	39.7	3.3
2/1	Cowley Road Left	U	C2:D		1	35	-	89	1764	529	16.8%	-	-	-	0.9	35.1	2.3
2/2+2/3	Cowley Road Right	U	C2:D		1	35	-	2016	1764:1764	326+325	233.0 : 233.1%	-	-	-	504.7	1196.8	520.0
3/1	Milton Road S Ahead	U	C2:A		1	75	-	1455	1965	1244	94.2%	-	-	-	11.0	33.8	32.5
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	75:41	-	1644	1965:1665	918+406	104.3 : 39.2%	-	-	-	25.9	83.6	41.5

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**183.1%**	**0**	**0**	**0**	**715.3**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	64	-	568	1925:1925	1040+21	52.1 : 51.5%	-	-	-	0.9	5.8	15.8
1/3	Milton Road N Right	U	C3:D		1	58	-	119	1791	881	13.1%	-	-	-	0.3	10.7	3.4
1/4	Milton Road N Right	U	C3:D		1	58	-	116	1791	881	12.7%	-	-	-	0.3	10.7	3.3
2/1	Cowley Road Link Left	U	C3:I		1	53	-	1037	1747	786	88.3%	-	-	-	6.8	35.2	22.7
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	19:52	-	1424	1828:1687	169+622	180.0 : 180.0%	-	-	-	374.5	946.8	398.0
7/1	Milton Road S Ahead Left	U	C3:A		1	25	-	362	1927	418	59.3%	-	-	-	2.6	38.1	8.0
7/2	Milton Road S Ahead	U	C3:A		1	25	-	1136	1965	426	181.8%	-	-	-	206.3	959.4	219.9
8/1	Science Park Left	U	C3:E		1	78	-	824	1702	1120	73.5%	-	-	-	4.5	19.6	19.5
8/2	Science Park Left	U	C3:E		1	78	-	824	1741	1146	71.9%	-	-	-	4.3	18.8	18.9
8/3	Science Park Right	U	C3:F		1	15	-	425	1741	232	183.1%	-	-	-	114.7	971.8	119.6
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**152.7%**	**0**	**0**	**0**	**73.1**	-	-
1/1	Milton Road N Left	U	C3:Q		1	81	-	11	1832	1252	0.8%	-	-	-	0.1	18.2	0.2
1/2	Milton Road N Ahead	U	C3:O		1	78	-	1286	2015	1327	71.1%	-	-	-	2.9	11.2	15.8
2/1	Cowley Park Right Left	U	C3:R		1	14	-	322	1687	211	152.7%	-	-	-	68.6	766.8	73.0
3/1	Milton Road S Ahead	U	C3:N		1	94	-	278	1965	1556	12.4%	-	-	-	0.2	4.6	1.5
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	94:7	-	984	1965:1709	1535+22	43.3 : 43.1%	-	-	-	1.3	6.8	7.7
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**61.1%**	**0**	**0**	**0**	**3.6**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	1358	1965	1621	61.1%	-	-	-	2.9	10.4	14.7
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	296	2003	1652	12.4%	-	-	-	0.1	1.6	0.3
2/2	Milton Road S Ahead	U	C4:B		1	98	-	984	1965	1621	41.6%	-	-	-	0.4	2.2	1.1
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**57.7%**	**0**	**0**	**0**	**1.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1370	1965	1736	57.7%	-	-	-	0.8	2.7	2.0
2/1	Milton Road S Ahead	U	-		-	-	-	1280	1965	1965	44.8%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1280	1965	1736	50.7%	-	-	-	0.6	2.3	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**177.5%**	**9**	**0**	**11**	**331.7**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	48	-	1143	1915:1717	547+375	97.4 : 83.6%	-	-	-	7.2	30.6	11.5
1/3	Milton Road N Right	U	C6:C		1	11	-	227	1718	172	89.9%	-	-	-	5.1	118.1	8.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	16	-	531	1913:1709	66+233	177.5 : 177.5%	-	-	-	136.4	924.6	141.7
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	775	1929:1724	514+48	137.9 : 137.9%	9	0	11	132.6	615.9	146.5
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	15	-	445	1877:1762	216+153	120.6 : 120.6%	-	-	-	50.5	408.2	54.6

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-29.0	Total Delay for Signalled Lanes (pcuHr):	27.11	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	29.7	Total Delay for Signalled Lanes (pcuHr):	10.73	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	4.5	Total Delay for Signalled Lanes (pcuHr):	15.23	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	9.7	Total Delay for Signalled Lanes (pcuHr):	11.23	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-159.0	Total Delay for Signalled Lanes (pcuHr):	572.09	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-103.4	Total Delay for Signalled Lanes (pcuHr):	715.34	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	-69.7	Total Delay for Signalled Lanes (pcuHr):	73.09	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	47.4	Total Delay for Signalled Lanes (pcuHr):	3.57	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	55.9	Total Delay for Signalled Lanes (pcuHr):	1.30	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-97.2	Total Delay for Signalled Lanes (pcuHr):	331.69	Cycle Time (s):	120
		PRC Over All Lanes (%):	-159.0	Total Delay Over All Lanes(pcuHr):	1839.61		

C.2.5 Option 4 2031 Business-as-Usual Do Minimum results

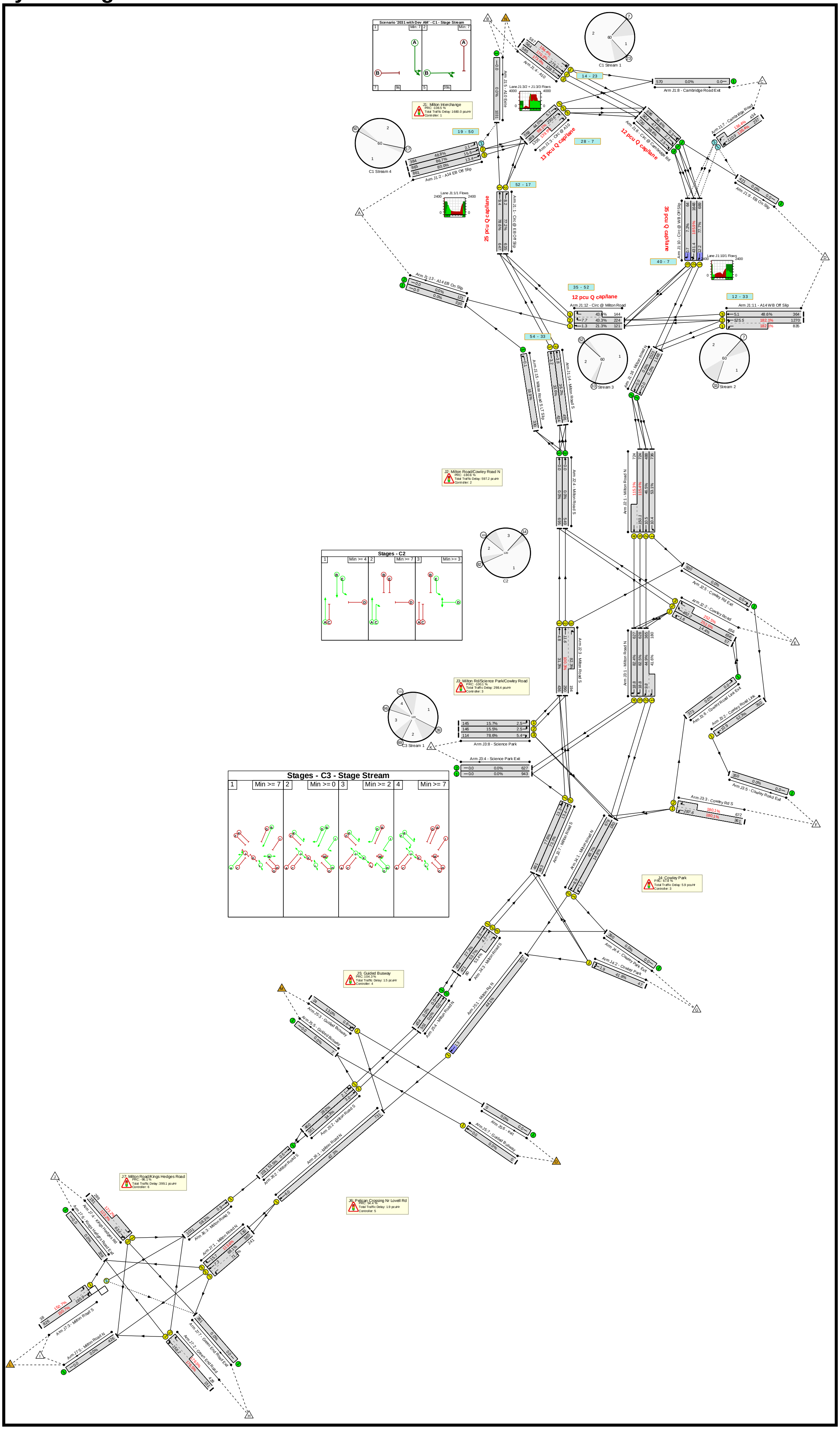
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 S4 DM**
Location:	Cambridge Science Park
Date Started:	22/01/19
Model Assumptions:	
Additional detail:	
File name:	DM + S4 1.0 JMcv2.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S4 DM AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**252.5%**	**1164**	**218**	**1**	**2984.1**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**185.9%**	**1150**	**218**	**0**	**1680.0**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	25	-	1092	1900	823	78.6%	-	-	-	3.8	21.2	9.4
1/2	Circ @ EB Off Slip Right	U	C1:H		1	25	-	1153	1900	823	77.2%	-	-	-	3.8	21.3	8.2
2/1	A14 EB Off Slip Left	O	-		-	-	-	384	1894	786	48.8%	166	218	0	0.5	4.5	2.1
2/2	A14 EB Off Slip Ahead	U	C1:G		1	31	-	865	1871	998	86.7%	-	-	-	6.0	25.1	15.6
2/3	A14 EB Off Slip Ahead	U	C1:G		1	31	-	861	2018	1076	80.0%	-	-	-	4.7	19.6	13.4
3/1	Circ @ A10 Ahead	U	C1:B		1	39	-	875	1900	1267	44.0%	-	-	-	1.8	11.5	5.7
3/2+3/3	Circ @ A10 Right	U	C1:B		1	39	-	2004	1900:1900	478+954	98.1 : 139.9%	-	-	-	208.6	416.3	230.6
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	9	-	1171	2057:1910	343+318	170.3 : 184.4%	-	-	-	278.3	855.5	275.9
4/3	A10 Ahead	U	C1:A		1	9	-	585	2029	338	173.0%	-	-	-	135.5	833.7	138.5
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1233	1900	1900	36.6%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	1370	1900	1900	47.6%	-	-	-	0.5	1.8	2.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	1134	1900	1900	38.4%	-	-	-	0.3	1.5	2.5
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	671	1828:1986	174+318	136.4 : 136.4%	984	0	0	97.7	524.2	110.9
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	27	-	1060	1900	887	77.7%	-	-	-	4.2	22.2	12.2

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	27	-	2485	1900	887	185.9%	-	-	-	415.4	907.4	431.4
10/3	Circ @ WB Off Slip Right	U	C1:D		1	27	-	94	1900	887	7.2%	-	-	-	0.2	10.5	0.7
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	21	-	2105	2029:1871	697+459	182.1 : 182.1%	-	-	-	512.5	876.4	525.5
11/3	A14 WB Off Slip Ahead	U	C1:C		1	21	-	364	2044	749	48.6%	-	-	-	2.0	19.3	5.1
12/1	Circ @ Milton Road Ahead	U	C1:F		1	17	-	243	1900	570	21.3%	-	-	-	0.6	19.1	1.3
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	17	-	369	1900:1900	517+331	43.3 : 43.6%	-	-	-	1.7	17.1	7.7
14/1	Milton Road S Ahead	U	C1:E		1	39	-	867	1894	1263	33.6%	-	-	-	0.8	6.4	3.2
14/2	Milton Road S Ahead	U	C1:E		1	39	-	1009	2037	1358	36.2%	-	-	-	0.9	6.5	3.8
15/1	Milton Road S LT Slip Left	U	-		-	-	-	667	1946	1946	16.9%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**252.5%**	**0**	**0**	**0**	**597.2**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	90	-	1202	1828	1386	53.1%	-	-	-	1.8	8.6	10.4
1/2	Milton Road N Ahead	U	C2:B		1	63	-	906	1965	1048	46.5%	-	-	-	2.8	20.6	10.5
1/3+1/4	Milton Road N Ahead	U	C2:B		1	63	-	3388	1965:1965	628+628	115.4 : 115.3%	-	-	-	119.8	297.8	150.1
2/1	Cowley Road Left	U	C2:D		1	26	-	57	1764	397	14.4%	-	-	-	0.7	42.5	1.6
2/2+2/3	Cowley Road Right	U	C2:D		1	26	-	1610	1764:1764	260+260	252.5 : 252.5%	-	-	-	462.9	1270.9	482.2
3/1	Milton Road S Ahead	U	C2:A		1	84	-	574	1965	1392	31.3%	-	-	-	0.5	4.4	4.8
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	84:16	-	652	1965:1665	289+236	100.3 : 82.3%	-	-	-	8.8	65.5	11.6

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**180.1%**	**0**	**0**	**0**	**298.4**	-	-
1/2+1/1	Milton Road N Ahead	U	C3:B		1	70	-	963	1925:1925	811+433	44.9 : 41.6%	-	-	-	1.5	10.1	9.8
1/3	Milton Road N Right	U	C3:D		1	50	-	1694	1791	761	82.5%	-	-	-	3.9	22.6	18.8
1/4	Milton Road N Right	U	C3:D		1	50	-	1694	1791	761	82.4%	-	-	-	3.9	22.5	18.8
2/1	Cowley Road Link Left	U	C3:I		1	45	-	553	1747	670	52.3%	-	-	-	3.8	38.6	10.9
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	19:44	-	1033	1828:1687	200+373	180.1 : 180.1%	-	-	-	270.5	942.8	287.6
7/1	Milton Road S Ahead Left	U	C3:A		1	39	-	690	1781	594	77.6%	-	-	-	5.2	40.3	13.3
7/2	Milton Road S Ahead	U	C3:A		1	39	-	720	1965	655	73.7%	-	-	-	4.9	36.2	13.4
8/1	Science Park Left	U	C3:E		1	64	-	145	1702	922	15.7%	-	-	-	0.6	16.1	2.5
8/2	Science Park Left	U	C3:E		1	64	-	146	1741	943	15.5%	-	-	-	0.6	16.0	2.5
8/3	Science Park Right	U	C3:F		1	9	-	114	1741	145	78.6%	-	-	-	3.4	106.3	5.4
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**53.7%**	**0**	**0**	**0**	**5.9**	-	-
1/1	Milton Road N Left	U	C3:Q		1	78	-	335	1832	1206	14.9%	-	-	-	0.1	2.3	1.2
1/2	Milton Road N Ahead	U	C3:O		1	82	-	1103	2015	1394	48.7%	-	-	-	2.2	11.7	8.9
2/1	Cowley Park Right Left	U	C3:R		1	7	-	47	1687	112	41.8%	-	-	-	1.1	81.0	1.9
3/1	Milton Road S Ahead	U	C3:N		1	101	-	683	1965	1670	27.2%	-	-	-	0.5	4.3	3.8
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	101:10	-	829	1965:1709	878+150	53.7 : 53.4%	-	-	-	2.0	13.2	4.5
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**44.1%**	**0**	**0**	**0**	**1.5**	-	-

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	97	-	1131	1965	1605	44.1%	-	-	-	0.5	2.4	1.3
2/1	Milton Road S Ahead Left	U	C4:B		1	97	-	693	2012	1643	28.0%	-	-	-	0.3	2.1	2.1
2/2	Milton Road S Ahead	U	C4:B		1	97	-	829	1965	1605	34.3%	-	-	-	0.4	2.4	3.0
3/1	Guided Busway Right Ahead	U	C4:C		1	10	-	24	2015	185	13.0%	-	-	-	0.4	61.4	0.8
7/1	Guided Busway Ahead	U	C4:D		1	12	-	0	2015	218	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.3%**	**0**	**0**	**0**	**1.9**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1155	1965	1736	42.1%	-	-	-	0.7	3.3	6.0
2/1	Milton Road S Ahead	U	-		-	-	-	1522	1965	1965	51.5%	-	-	-	0.5	1.9	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1522	1965	1736	58.3%	-	-	-	0.7	2.6	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**176.5%**	**13**	**0**	**1**	**399.1**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	45	-	944	1915:1717	528+339	68.1 : 71.2%	-	-	-	4.2	25.2	7.3
1/3	Milton Road N Right	U	C6:C		1	7	-	211	1718	115	113.6%	-	-	-	13.3	368.5	15.7
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	17	-	579	1928:1709	86+243	176.5 : 176.5%	-	-	-	150.9	938.3	158.2
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	34	-	864	1933:1724	548+25	150.7 : 150.7%	13	0	1	171.2	713.3	185.9
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	480	1895:1762	155+235	123.2 : 123.2%	-	-	-	59.5	446.2	63.6

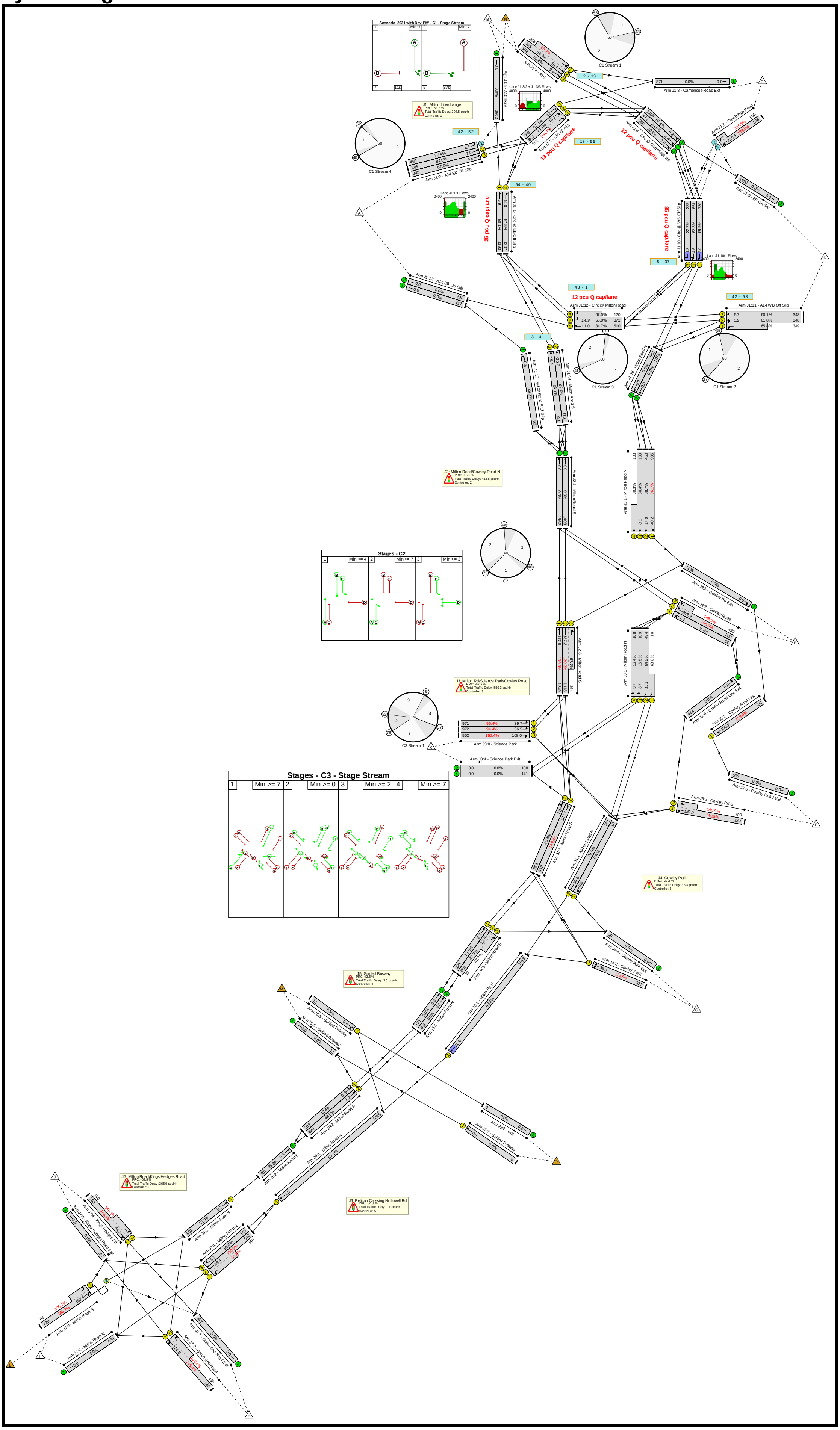
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-104.9	Total Delay for Signalled Lanes (pcuHr):	624.11	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-106.5	Total Delay for Signalled Lanes (pcuHr):	934.23	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	106.6	Total Delay for Signalled Lanes (pcuHr):	4.03	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	3.8	Total Delay for Signalled Lanes (pcuHr):	18.29	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-180.6	Total Delay for Signalled Lanes (pcuHr):	597.24	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-100.1	Total Delay for Signalled Lanes (pcuHr):	298.37	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	67.8	Total Delay for Signalled Lanes (pcuHr):	5.93	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	104.3	Total Delay for Signalled Lanes (pcuHr):	1.51	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	54.4	Total Delay for Signalled Lanes (pcuHr):	1.39	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-96.1	Total Delay for Signalled Lanes (pcuHr):	399.14	Cycle Time (s):	120
		PRC Over All Lanes (%):	-180.6	Total Delay Over All Lanes(pcuHr):	2984.14		

Basic Results Summary

Scenario 2: '2031 S4 DM PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 'No AAP' DM	-	-	-		-	-	-	-	-	-	**150.4%**	**1937**	**102**	**19**	**1608.9**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**138.0%**	**1937**	**102**	**0**	**208.5**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	46	-	1537	1900	1488	80.1%	-	-	-	2.5	7.7	6.9
1/2	Circ @ EB Off Slip Right	U	C1:H		1	46	-	1756	1900	1488	87.8%	-	-	-	5.0	13.7	14.0
2/1	A14 EB Off Slip Left	O	-		-	-	-	469	1894	606	77.4%	367	102	0	1.7	13.4	4.1
2/2	A14 EB Off Slip Ahead	U	C1:G		1	10	-	288	1871	343	84.0%	-	-	-	4.3	53.7	7.0
2/3	A14 EB Off Slip Ahead	U	C1:G		1	10	-	248	2018	370	67.0%	-	-	-	2.6	37.3	4.8
3/1	Circ @ A10 Ahead	U	C1:B		1	37	-	959	1900	1203	67.3%	-	-	-	2.6	11.4	8.2
3/2+3/3	Circ @ A10 Right	U	C1:B		1	37	-	1333	1900:1900	1114+143	79.1 : 106.1%	-	-	-	8.0	27.9	15.1
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	11	-	721	2057:1910	411+382	86.3 : 95.8%	-	-	-	9.1	45.6	10.4
4/3	A10 Ahead	U	C1:A		1	11	-	362	2029	406	89.2%	-	-	-	5.9	58.7	9.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1485	1900	1900	62.4%	-	-	-	0.8	2.5	0.8
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	471	1900	1900	24.8%	-	-	-	0.2	1.3	2.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	398	1900	1900	20.9%	-	-	-	0.1	1.2	1.8
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	1033	1828:1986	383+402	138.0 : 125.5%	1570	0	0	137.5	479.1	169.5
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	831	1900	1045	69.9%	-	-	-	1.9	9.4	5.0

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	722	1900	1045	62.3%	-	-	-	1.6	8.7	4.6
10/3	Circ @ WB Off Slip Right	U	C1:D		1	32	-	269	1900	1045	22.7%	-	-	-	0.4	6.4	1.3
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	697	2029:1871	563+530	61.8 : 65.8%	-	-	-	4.5	23.3	5.9
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	348	2044	579	60.1%	-	-	-	2.5	26.3	5.7
12/1	Circ @ Milton Road Ahead	U	C1:F		1	18	-	561	1900	602	84.7%	-	-	-	5.6	39.8	11.0
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	18	-	498	1900:1900	564+179	66.0 : 67.0%	-	-	-	1.7	12.2	14.9
14/1	Milton Road S Ahead	U	C1:E		1	38	-	1159	1894	1231	66.7%	-	-	-	2.5	10.8	9.4
14/2	Milton Road S Ahead	U	C1:E		1	38	-	1636	2037	1324	89.6%	-	-	-	7.0	21.2	20.6
15/1	Milton Road S LT Slip Left	U	-		-	-	-	1324	1946	1946	49.2%	-	-	-	0.5	1.8	0.5
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**150.0%**	**0**	**0**	**0**	**432.6**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	67	-	1096	1828	1036	96.1%	-	-	-	15.5	56.0	40.2
1/2	Milton Road N Ahead	U	C2:B		1	30	-	481	1965	508	88.7%	-	-	-	8.9	70.8	17.9
1/3+1/4	Milton Road N Ahead	U	C2:B		1	30	-	231	1965:1965	358+355	30.4 : 30.3%	-	-	-	2.3	38.6	3.1
2/1	Cowley Road Left	U	C2:D		1	36	-	54	1764	544	9.9%	-	-	-	0.5	33.3	1.3
2/2+2/3	Cowley Road Right	U	C2:D		1	36	-	1225	1764:1764	333+333	150.0 : 149.9%	-	-	-	195.5	704.7	209.9
3/1	Milton Road S Ahead	U	C2:A		1	74	-	1604	1965	1228	109.9%	-	-	-	85.3	227.7	117.8
3/2+3/3	Milton Road S Ahead Right	U	C2:A C2:C		1	74:39	-	1831	1965:1665	931+390	120.2 : 67.7%	-	-	-	124.7	324.5	157.2

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**150.4%**	**0**	**0**	**0**	**559.3**	-	-	
1/2+1/1	Milton Road N Ahead	U	C3:B		1	47	-	535	1925:1925	770+16	64.2 : 63.0%	-	-	-	1.3	9.1	15.1	
1/3	Milton Road N Right	U	C3:D		1	43	-	116	1791	657	16.5%	-	-	-	0.9	28.5	3.7	
1/4	Milton Road N Right	U	C3:D		1	43	-	115	1791	657	16.4%	-	-	-	0.9	28.5	3.7	
2/1	Cowley Road Link Left	U	C3:I		1	38	-	1112	1747	568	123.6%	-	-	-	85.0	436.2	100.2	
3/1+3/2	Cowley Rd S Right Left	U	C3:G C3:H		1	29:37	-	864	1828:1687	123+454	149.9 : 149.9%	-	-	-	174.7	727.9	189.2	
7/1	Milton Road S Ahead Left	U	C3:A		1	33	-	364	1928	546	48.4%	-	-	-	1.9	25.4	7.0	
7/2	Milton Road S Ahead	U	C3:A		1	33	-	1175	1965	557	149.6%	-	-	-	164.2	709.7	181.7	
8/1	Science Park Left	U	C3:E		1	70	-	971	1702	1007	96.4%	-	-	-	15.3	56.6	39.7	
8/2	Science Park Left	U	C3:E		1	70	-	972	1741	1030	94.4%	-	-	-	12.9	47.8	36.5	
8/3	Science Park Right	U	C3:F		1	22	-	502	1741	334	150.4%	-	-	-	102.3	733.6	108.0	
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**114.5%**	**0**	**0**	**0**	**38.3**	-	-	
1/1	Milton Road N Left	U	C3:Q		1	81	-	11	1832	1252	0.8%	-	-	-	0.0	1.5	0.0	
1/2	Milton Road N Ahead	U	C3:O		1	73	-	1210	2015	1243	76.5%	-	-	-	5.4	20.3	30.8	
2/1	Cowley Park Right Left	U	C3:R		1	19	-	322	1687	281	114.5%	-	-	-	30.6	342.3	35.9	
3/1	Milton Road S Ahead	U	C3:N		1	89	-	280	1965	1474	13.0%	-	-	-	0.3	5.7	2.3	
3/2+3/3	Milton Road S Ahead Right	U	C3:N C3:P		1	89:7	-	1023	1965:1709	1456+20	47.3 : 47.3%	-	-	-	2.0	10.3	12.8	
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**63.2%**	**0**	**0**	**0**	**3.5**	-	-	

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	97	-	1282	1965	1605	63.2%	-	-	-	2.7	9.5	31.9
2/1	Milton Road S Ahead Left	U	C4:B		1	97	-	298	2003	1636	12.4%	-	-	-	0.1	1.7	0.3
2/2	Milton Road S Ahead	U	C4:B		1	97	-	1023	1965	1605	43.5%	-	-	-	0.5	2.4	1.2
3/1	Guided Busway Right Ahead	U	C4:C		1	10	-	12	2015	185	6.5%	-	-	-	0.2	60.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	12	-	0	2015	218	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.1%**	**0**	**0**	**0**	**1.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	1294	1965	1736	59.1%	-	-	-	0.7	2.6	1.0
2/1	Milton Road S Ahead	U	-		-	-	-	1321	1965	1965	45.8%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	1321	1965	1736	51.9%	-	-	-	0.6	2.2	0.7
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**148.4%**	**0**	**0**	**19**	**365.0**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	47	-	1109	1915:1717	538+370	100.9 : 91.8%	-	-	-	14.4	58.6	18.4
1/3	Milton Road N Right	U	C6:C		1	11	-	185	1718	172	83.0%	-	-	-	3.7	94.1	6.7
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	21	-	550	1912:1709	81+290	148.4 : 148.4%	-	-	-	107.5	703.8	114.8
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	32	-	795	1929:1724	500+45	145.7 : 145.7%	0	0	19	153.3	694.2	167.4
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	11	-	453	1878:1762	180+130	146.1 : 146.1%	-	-	-	86.1	684.2	89.3

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-17.8	Total Delay for Signalled Lanes (pcuHr):	25.60	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	28.7	Total Delay for Signalled Lanes (pcuHr):	10.96	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	0.4	Total Delay for Signalled Lanes (pcuHr):	16.74	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	2.5	Total Delay for Signalled Lanes (pcuHr):	14.38	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	-66.6	Total Delay for Signalled Lanes (pcuHr):	432.64	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	-67.2	Total Delay for Signalled Lanes (pcuHr):	559.26	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	-27.2	Total Delay for Signalled Lanes (pcuHr):	38.28	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	42.5	Total Delay for Signalled Lanes (pcuHr):	3.46	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	52.3	Total Delay for Signalled Lanes (pcuHr):	1.29	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-64.9	Total Delay for Signalled Lanes (pcuHr):	365.04	Cycle Time (s):	120
		PRC Over All Lanes (%):	-67.2	Total Delay Over All Lanes(pcuHr):	1608.90		

C.3 2031 With-Dev Trip-Budget Do Something model results

C.3.1 HIF 2031 With-Dev Trip-Budget Do Something results

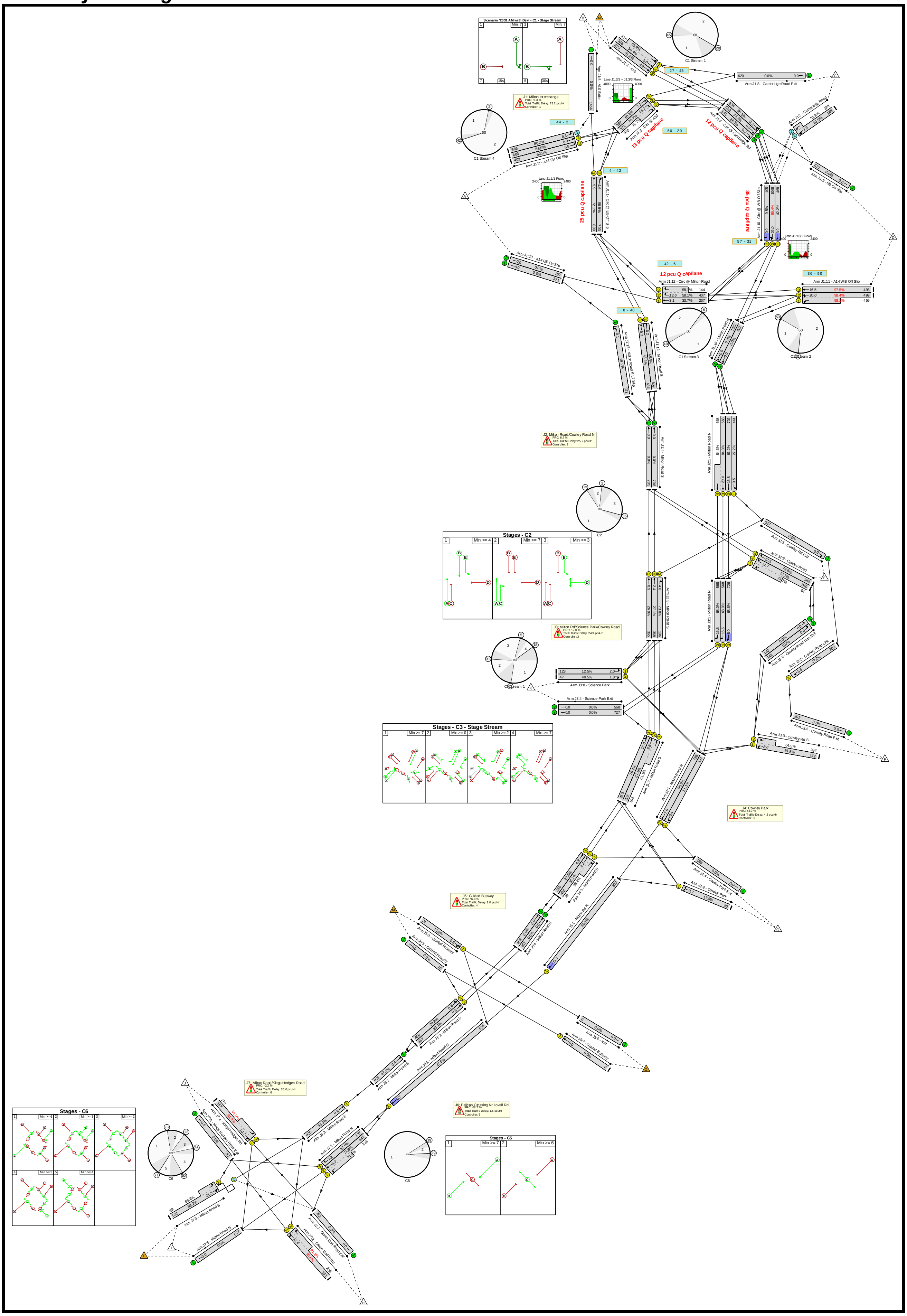
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 HIF DS**
Location:	Cambridge Science Park
Date Started:	22/01/19
Additional detail:	
File name:	HIF With Dev (0.40) PP2 layout_v2_ALL_RED.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 HIF DS AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 HIF DS	-	-	-		-	-	-	-	-	-	**98.4%**	**1164**	**210**	**0**	**167.1**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**98.4%**	**1144**	**210**	**0**	**73.2**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	38	-	890	1900	1235	72.1%	-	-	-	2.8	11.2	9.9
1/2	Circ @ EB Off Slip Right	U	C1:H		1	38	-	703	1900	1235	56.9%	-	-	-	1.4	7.1	4.6
2/1	A14 EB Off Slip Left	O	-		-	-	-	566	1894	706	80.2%	356	210	0	2.4	15.1	8.3
2/2	A14 EB Off Slip Ahead	U	C1:G		1	18	-	403	1871	592	68.0%	-	-	-	3.1	27.3	6.9
2/3	A14 EB Off Slip Ahead	U	C1:G		1	18	-	402	2018	639	62.9%	-	-	-	2.8	25.0	6.5
3/1	Circ @ A10 Ahead	U	C1:B		1	30	-	597	1900	982	60.8%	-	-	-	2.4	14.7	7.2
3/2+3/3	Circ @ A10 Right	U	C1:B		1	30	-	911	1900:1900	490+713	75.7 : 75.7%	-	-	-	3.1	12.4	16.2
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	18	-	652	2057:1910	647+605	50.4 : 53.9%	-	-	-	3.6	19.8	5.0
4/3	A10 Ahead	U	C1:A		1	18	-	328	2029	643	51.0%	-	-	-	2.0	22.4	4.9
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	674	1900	1900	35.5%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	653	1900	1900	34.4%	-	-	-	0.3	1.4	0.8
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	541	1900	1900	28.5%	-	-	-	0.2	1.3	0.2
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	394	1828:1986	324+436	51.9 : 51.9%	788	0	0	0.8	7.3	1.9
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	34	-	468	1900	1108	42.2%	-	-	-	1.0	7.5	3.9

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	34	-	1068	1900	1108	96.4%	-	-	-	12.0	40.4	26.0
10/3	Circ @ WB Off Slip Right	U	C1:D		1	34	-	105	1900	1108	9.5%	-	-	-	0.2	7.1	0.9
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	14	-	958	2029:1871	507+468	98.4 : 98.1%	-	-	-	17.8	66.7	20.0
11/3	A14 WB Off Slip Ahead	U	C1:C		1	14	-	498	2044	511	97.5%	-	-	-	11.5	82.8	16.5
12/1	Circ @ Milton Road Ahead	U	C1:F		1	24	-	267	1900	792	33.7%	-	-	-	1.4	18.8	3.1
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	24	-	551	1900:1900	701+248	58.1 : 58.1%	-	-	-	0.9	5.9	13.6
14/1	Milton Road S Ahead	U	C1:E		1	32	-	483	1894	1042	46.4%	-	-	-	1.5	11.4	5.3
14/2	Milton Road S Ahead	U	C1:E		1	32	-	559	2037	1120	49.9%	-	-	-	1.8	11.6	6.2
15/1	Milton Road S LT Slip Left	U	-		-	-	-	371	1946	1946	19.1%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**	**0**	**0**	**0**	**25.2**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	98	-	441	1965	1621	27.2%	-	-	-	0.5	3.9	3.5
1/2	Milton Road N Ahead	U	C2:B		1	69	-	702	1965	1146	61.2%	-	-	-	3.9	20.2	15.8
1/3+1/4	Milton Road N Ahead	U	C2:B		1	69	-	1136	1965:1940	674+674	84.3 : 84.3%	-	-	-	7.7	24.4	23.4
2/2+2/1	Cowley Road Right Left	U	C2:D		1	28	-	364	1940:1830	461+33	73.7 : 73.7%	-	-	-	4.6	45.5	11.7
2/3	Cowley Road Right	U	C2:D		1	28	-	340	1764	426	79.8%	-	-	-	5.0	52.8	12.5
3/1	Milton Road S Ahead	U	C2:A		1	82	-	365	1965	1359	26.9%	-	-	-	0.3	2.9	0.9
3/2	Milton Road S Ahead	U	C2:A		1	82	-	368	1965	1359	27.1%	-	-	-	0.3	2.9	2.4
3/3	Milton Road S Right	U	C2:C		1	8	-	106	1915	144	73.8%	-	-	-	2.9	97.3	4.8

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**76.4%**	**0**	**0**	**0**	**24.9**	-	-
1/1	Milton Road N Ahead	U	C3:B		1	65	-	726	1925	1059	68.6%	-	-	-	3.4	17.0	8.0
1/2	Milton Road N Right	U	C3:C		1	55	-	568	1791	836	68.0%	-	-	-	2.9	18.2	16.5
1/3	Milton Road N Right	U	C3:C		1	55	-	568	1791	836	68.0%	-	-	-	2.9	18.2	16.5
2/1	Cowley Road Link Left	U	C3:H		1	50	-	202	1747	742	27.2%	-	-	-	1.8	32.4	5.6
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	26:49	-	436	1828:1687	236+440	64.5 : 64.5%	-	-	-	4.5	37.3	8.6
7/1	Milton Road S Ahead Left	U	C3:A		1	36	-	463	1965	606	76.4%	-	-	-	4.7	36.8	16.0
7/2+7/3	Milton Road S Ahead	U	C3:A		1	36	-	412	1965:1940	501+174	61.1 : 61.1%	-	-	-	3.1	27.5	9.8
8/1	Science Park Left	U	C3:D		1	67	-	123	1741	987	12.5%	-	-	-	0.5	14.2	2.0
8/2	Science Park Right	U	C3:E		1	7	-	47	1741	116	40.5%	-	-	-	1.0	79.5	1.8
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**55.2%**	**0**	**0**	**0**	**4.3**	-	-
1/1	Milton Road N Left	U	C3:P		1	80	-	137	1832	1237	11.1%	-	-	-	0.2	4.1	0.4
1/2	Milton Road N Ahead	U	C3:N		1	84	-	788	2015	1427	55.2%	-	-	-	2.0	9.1	7.0
2/1	Cowley Park Right Left	U	C3:Q		1	7	-	20	1687	112	17.8%	-	-	-	0.4	72.4	0.7
3/1	Milton Road S Ahead	U	C3:M		1	101	-	459	1965	1670	27.5%	-	-	-	0.5	3.7	4.8
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	101:8	-	457	1965:1709	1067+128	38.2 : 38.2%	-	-	-	1.3	10.1	4.2
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**50.9%**	**0**	**0**	**0**	**3.0**	-	-
1/1	Milton Rd N Ahead	U	C4:A		1	95	-	800	1965	1572	50.9%	-	-	-	2.2	9.8	13.7

Basic Results Summary

2/1	Milton Road S Ahead Left	U	C4:B		1	95	-	469	2011	1609	29.2%	-	-	-	0.2	1.7	0.6
2/2	Milton Road S Ahead	U	C4:B		1	95	-	457	1965	1572	29.1%	-	-	-	0.2	1.7	0.6
3/1	Guided Busway Right Ahead	U	C4:C		1	12	-	24	2015	218	11.0%	-	-	-	0.4	57.6	0.8
7/1	Guided Busway Ahead	U	C4:D		1	14	-	0	2015	252	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.3%**	**0**	**0**	**0**	**1.5**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	824	1965	1736	47.5%	-	-	-	0.5	2.0	0.7
2/1	Milton Road S Ahead	U	-		-	-	-	926	1965	1965	47.1%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	926	1965	1736	53.3%	-	-	-	0.6	2.3	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.9%**	**20**	**0**	**0**	**35.0**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	52	-	687	1915:1717	614+342	71.8 : 71.8%	-	-	-	2.3	11.9	6.3
1/3	Milton Road N Right	U	C6:C		1	10	-	137	1718	157	87.0%	-	-	-	4.0	103.9	7.2
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	19	-	367	1928:1709	143+258	91.6 : 91.6%	-	-	-	9.1	89.6	12.4
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	38	-	570	1929:1724	597+43	89.2 : 89.2%	20	0	0	9.9	62.4	21.3
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	365	1894:1762	203+194	91.9 : 91.9%	-	-	-	9.7	96.0	10.7

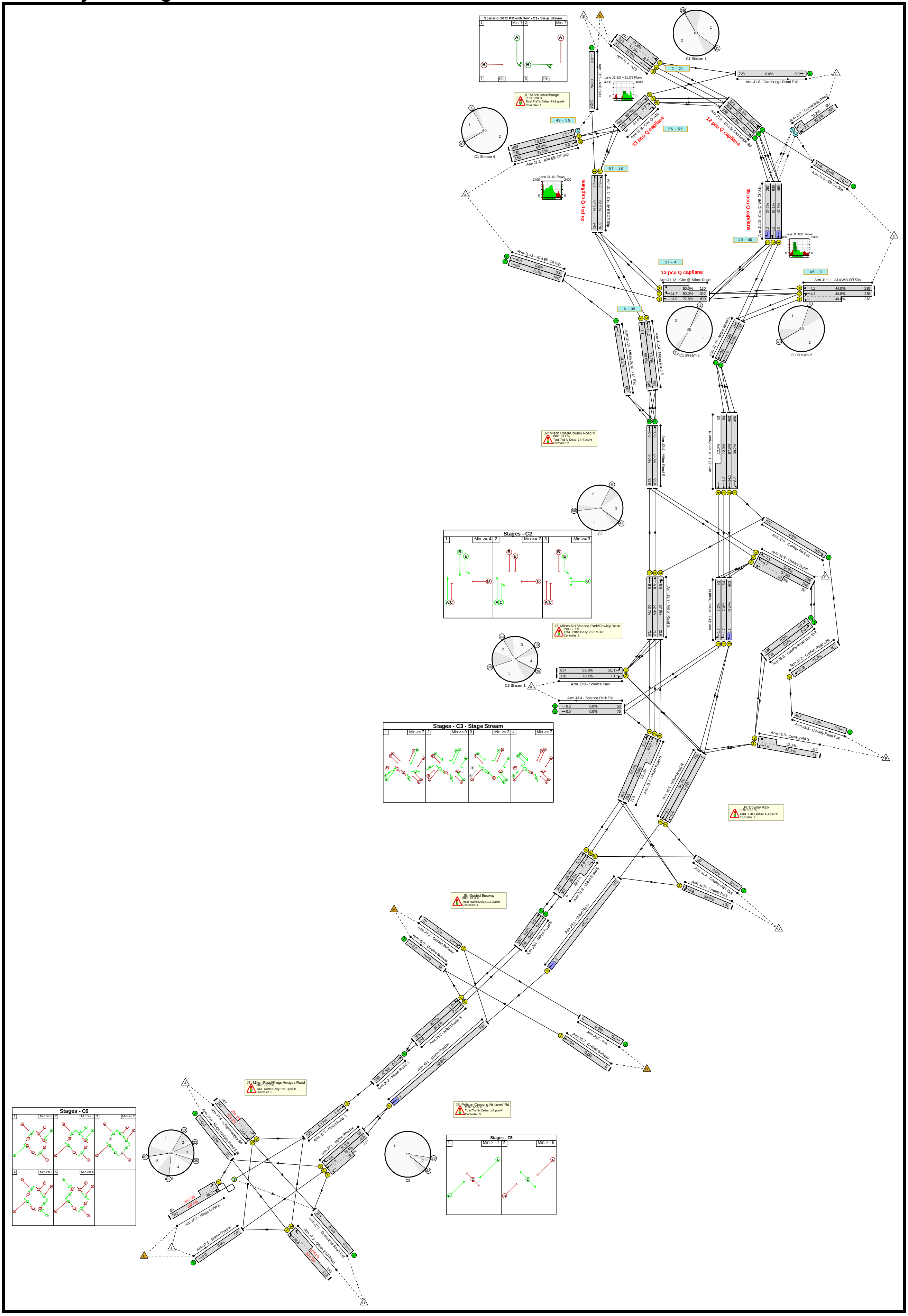
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	18.8	Total Delay for Signalled Lanes (pcuHr):	11.18	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-9.3	Total Delay for Signalled Lanes (pcuHr):	42.39	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	54.9	Total Delay for Signalled Lanes (pcuHr):	5.62	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	24.9	Total Delay for Signalled Lanes (pcuHr):	10.01	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	6.7	Total Delay for Signalled Lanes (pcuHr):	25.18	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	24.92	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	63.0	Total Delay for Signalled Lanes (pcuHr):	4.31	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	76.8	Total Delay for Signalled Lanes (pcuHr):	3.01	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	68.7	Total Delay for Signalled Lanes (pcuHr):	1.06	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-2.2	Total Delay for Signalled Lanes (pcuHr):	34.98	Cycle Time (s):	120
		PRC Over All Lanes (%):	-9.3	Total Delay Over All Lanes(pcuHr):	167.12		

Basic Results Summary

Scenario 2: '2031 HIF DS PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 HIF DS	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.1%**	**1927**	**129**	**1**	**172.0**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.2%**	**1904**	**129**	**0**	**44.8**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	43	-	947	1900	1393	67.5%	-	-	-	1.5	5.6	3.3
1/2	Circ @ EB Off Slip Right	U	C1:H		1	43	-	878	1900	1393	62.5%	-	-	-	1.3	5.3	6.2
2/1	A14 EB Off Slip Left	O	-		-	-	-	483	1894	689	70.1%	354	129	0	1.2	8.8	2.9
2/2	A14 EB Off Slip Ahead	U	C1:G		1	13	-	288	1871	437	66.0%	-	-	-	2.6	32.8	5.3
2/3	A14 EB Off Slip Ahead	U	C1:G		1	13	-	153	2018	471	32.5%	-	-	-	1.1	24.8	2.3
3/1	Circ @ A10 Ahead	U	C1:B		1	29	-	664	1900	950	69.6%	-	-	-	2.8	15.2	7.3
3/2+3/3	Circ @ A10 Right	U	C1:B		1	29	-	655	1900:1900	868+149	63.8 : 64.4%	-	-	-	1.6	8.9	5.3
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	19	-	815	2057:1910	418+637	77.3 : 77.3%	-	-	-	5.6	24.5	8.9
4/3	A10 Ahead	U	C1:A		1	19	-	322	2029	676	47.6%	-	-	-	1.9	20.9	4.7
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	989	1900	1900	51.8%	-	-	-	0.5	2.0	0.5
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	393	1900	1900	20.7%	-	-	-	0.1	1.2	0.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	348	1900	1900	18.3%	-	-	-	0.1	1.2	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	775	1828:1986	478+476	81.2 : 81.2%	1550	0	0	3.2	14.9	7.1
10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	30	-	469	1900	982	47.8%	-	-	-	1.5	11.1	4.9

Basic Results Summary

10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	30	-	639	1900	982	65.1%	-	-	-	2.0	11.2	5.2
10/3	Circ @ WB Off Slip Right	U	C1:D		1	30	-	287	1900	982	29.2%	-	-	-	0.7	9.4	2.2
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	18	-	548	2029:1871	637+588	44.8 : 44.8%	-	-	-	2.9	19.0	4.1
11/3	A14 WB Off Slip Ahead	U	C1:C		1	18	-	285	2044	647	44.0%	-	-	-	1.7	21.2	4.1
12/1	Circ @ Milton Road Ahead	U	C1:F		1	27	-	690	1900	887	77.8%	-	-	-	4.9	25.6	13.0
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	27	-	512	1900:1900	784+240	50.0 : 50.0%	-	-	-	1.3	9.2	14.7
14/1	Milton Road S Ahead	U	C1:E		1	29	-	555	1894	947	58.0%	-	-	-	2.3	15.1	7.1
14/2	Milton Road S Ahead	U	C1:E		1	29	-	758	2037	1018	73.7%	-	-	-	3.9	18.5	11.2
15/1	Milton Road S LT Slip Left	U	-		-	-	-	613	1946	1946	31.2%	-	-	-	0.2	1.3	0.2
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.3%**	**0**	**0**	**0**	**17.4**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	70	-	456	1965	1163	39.2%	-	-	-	2.0	15.6	8.3
1/2	Milton Road N Ahead	U	C2:B		1	41	-	463	1965	688	67.3%	-	-	-	5.3	41.1	14.1
1/3+1/4	Milton Road N Ahead	U	C2:B		1	41	-	107	1965:1940	448+440	12.0 : 12.0%	-	-	-	0.8	28.4	1.3
2/2+2/1	Cowley Road Right Left	U	C2:D		1	28	-	260	1940:1830	459+38	52.3 : 52.3%	-	-	-	2.4	32.9	6.7
2/3	Cowley Road Right	U	C2:D		1	28	-	238	1764	426	55.8%	-	-	-	2.3	34.3	7.1
3/1	Milton Road S Ahead	U	C2:A		1	82	-	726	1965	1359	52.7%	-	-	-	2.1	10.7	8.5
3/2	Milton Road S Ahead	U	C2:A		1	82	-	722	1965	1359	52.4%	-	-	-	1.6	8.1	5.8
3/3	Milton Road S Right	U	C2:C		1	36	-	225	1915	590	37.0%	-	-	-	1.0	15.8	6.5

Basic Results Summary

J3: Milton Rd/Science Park/Cowley Road	-	-	-		-	-	-	-	-	-	**83.5%**	**0**	**0**	**0**	**29.7**	-	-
1/1	Milton Road N Ahead	U	C3:B		1	63	-	483	1925	1027	47.0%	-	-	-	0.5	4.1	1.1
1/2	Milton Road N Right	U	C3:C		1	48	-	54	1791	731	7.4%	-	-	-	0.4	27.2	1.7
1/3	Milton Road N Right	U	C3:C		1	48	-	53	1791	731	7.2%	-	-	-	0.4	27.2	1.7
2/1	Cowley Road Link Left	U	C3:H		1	43	-	463	1747	641	71.4%	-	-	-	5.5	43.6	12.8
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	21:42	-	337	1828:1687	136+511	52.1 : 52.1%	-	-	-	3.5	37.8	7.8
7/1	Milton Road S Ahead Left	U	C3:A		1	36	-	420	1965	606	67.6%	-	-	-	4.0	35.3	9.3
7/2+7/3	Milton Road S Ahead	U	C3:A		1	36	-	618	1965:1940	459+263	83.5 : 83.2%	-	-	-	6.9	41.2	10.0
8/1	Science Park Left	U	C3:D		1	67	-	657	1741	987	66.6%	-	-	-	4.3	23.5	16.1
8/2	Science Park Right	U	C3:E		1	14	-	170	1741	218	78.1%	-	-	-	4.1	86.2	7.1
J4: Cowley Park	-	-	-		-	-	-	-	-	-	**55.7%**	**0**	**0**	**0**	**6.4**	-	-
1/1	Milton Road N Left	U	C3:P		1	81	-	4	1832	1252	0.3%	-	-	-	0.0	1.5	0.0
1/2	Milton Road N Ahead	U	C3:N		1	76	-	720	2015	1293	55.7%	-	-	-	1.9	9.3	8.1
2/1	Cowley Park Right Left	U	C3:Q		1	16	-	131	1687	239	54.8%	-	-	-	2.3	64.4	4.6
3/1	Milton Road S Ahead	U	C3:M		1	92	-	368	1965	1523	23.5%	-	-	-	0.7	7.3	5.1
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	92:7	-	574	1965:1709	1509+16	36.6 : 36.5%	-	-	-	1.5	9.5	8.6
J5: Guided Busway	-	-	-		-	-	-	-	-	-	**46.2%**	**0**	**0**	**0**	**1.3**	-	-
1/1	Milton Rd N Ahead	U	C4:A		1	98	-	749	1965	1621	46.2%	-	-	-	0.5	2.6	1.4

Basic Results Summary

2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	386	2006	1655	22.7%	-	-	-	0.2	1.8	1.0
2/2	Milton Road S Ahead	U	C4:B		1	98	-	574	1965	1621	34.4%	-	-	-	0.3	2.1	2.0
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.7%**	**0**	**0**	**0**	**1.6**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	761	1965	1736	43.8%	-	-	-	0.5	2.3	1.4
2/1	Milton Road S Ahead	U	-		-	-	-	960	1965	1965	47.5%	-	-	-	0.5	1.7	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	960	1965	1736	53.7%	-	-	-	0.6	2.5	1.4
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.1%**	**23**	**0**	**1**	**70.9**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	46	-	673	1915:1717	573+274	79.4 : 79.4%	-	-	-	3.2	17.2	7.9
1/3	Milton Road N Right	U	C6:C		1	7	-	88	1718	115	76.8%	-	-	-	2.6	106.4	4.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	21	-	409	1913:1709	109+284	104.1 : 104.1%	-	-	-	21.0	184.5	26.6
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	35	-	608	1927:1724	532+65	102.0 : 102.0%	23	0	1	23.5	139.2	36.0
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	394	1872:1762	237+141	104.1 : 104.1%	-	-	-	20.6	188.2	24.8

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	16.5	Total Delay for Signalled Lanes (pcuHr):	11.81	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	38.3	Total Delay for Signalled Lanes (pcuHr):	8.76	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	15.7	Total Delay for Signalled Lanes (pcuHr):	12.37	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	33.2	Total Delay for Signalled Lanes (pcuHr):	6.43	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	33.7	Total Delay for Signalled Lanes (pcuHr):	17.44	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	7.7	Total Delay for Signalled Lanes (pcuHr):	29.70	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	61.6	Total Delay for Signalled Lanes (pcuHr):	6.40	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	94.8	Total Delay for Signalled Lanes (pcuHr):	1.26	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	67.5	Total Delay for Signalled Lanes (pcuHr):	1.12	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-15.7	Total Delay for Signalled Lanes (pcuHr):	70.88	Cycle Time (s):	120
		PRC Over All Lanes (%):	-15.7	Total Delay Over All Lanes(pcuHr):	172.02		

C.3.2 Option 1 2031 With-Dev Trip-Budget Do Something results

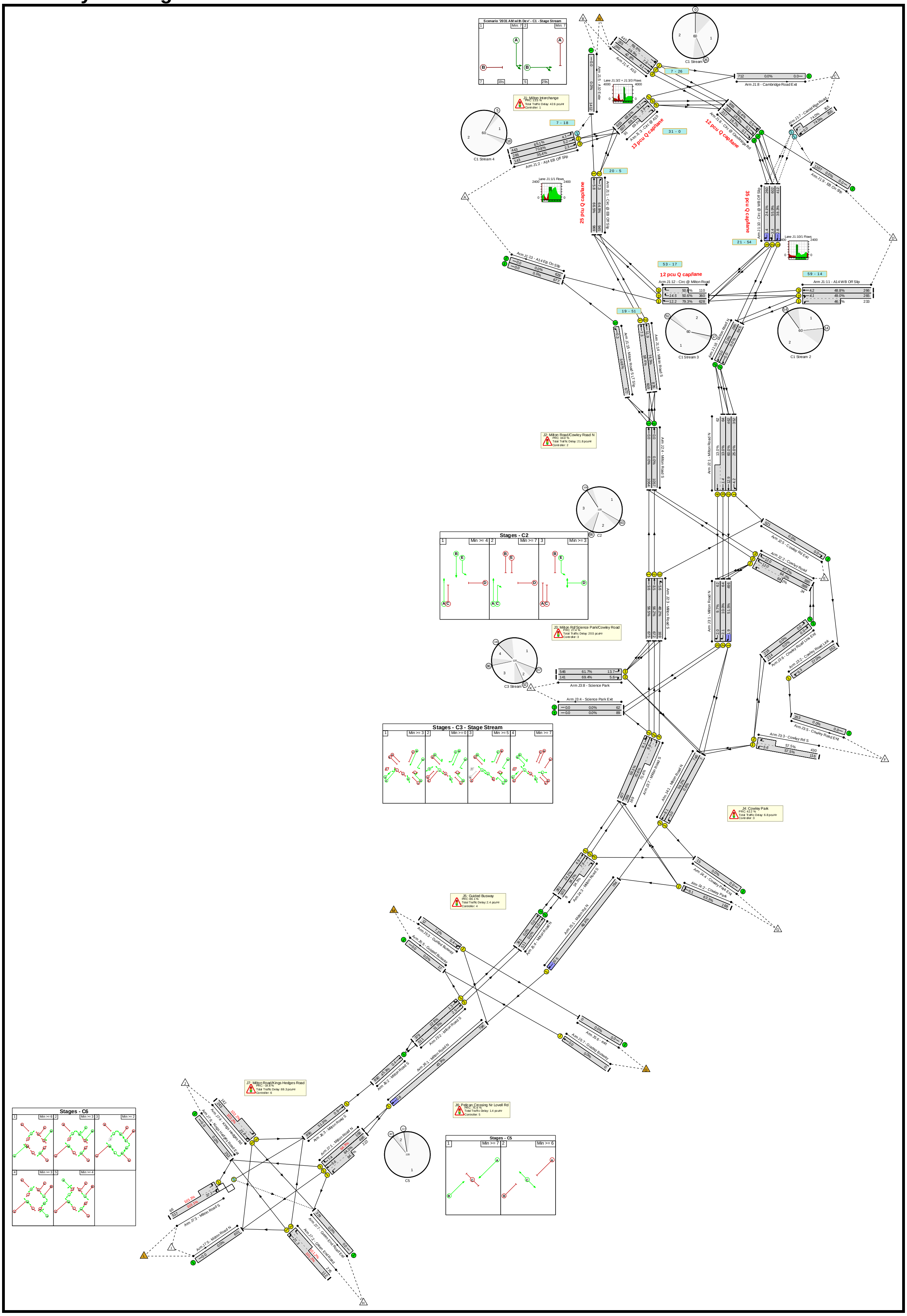
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 CCC Option 1 DS**
Location:	Cambridge Science Park
Date Started:	22/01/19
Additional detail:	
File name:	S1 With Dev (0.X) PP2 layout_v2_ALL_RED.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S1 DS AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 1 DS	-	-	-		-	-	-	-	-	-	**103.1%**	**1782**	**103**	**1**	**164.8**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**79.3%**	**1760**	**103**	**0**	**42.6**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	974	1900	1457	66.5%	-	-	-	1.3	4.7	5.8
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	951	1900	1457	64.9%	-	-	-	1.0	3.9	7.3
2/1	A14 EB Off Slip Left	O	-		-	-	-	443	1894	680	65.1%	340	103	0	1.0	7.9	4.1
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	265	1871	374	70.8%	-	-	-	2.8	38.5	5.2
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	143	2018	404	35.4%	-	-	-	1.1	27.6	2.3
3/1	Circ @ A10 Ahead	U	C1:B		1	29	-	657	1900	950	68.9%	-	-	-	3.3	17.9	9.7
3/2+3/3	Circ @ A10 Right	U	C1:B		1	29	-	702	1900:1900	879+131	69.1 : 69.5%	-	-	-	2.6	13.2	3.9
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	19	-	740	2057:1910	422+637	69.9 : 69.9%	-	-	-	4.6	22.3	7.6
4/3	A10 Ahead	U	C1:A		1	19	-	290	2029	676	42.9%	-	-	-	1.6	20.2	4.1
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	999	1900	1900	52.4%	-	-	-	0.5	2.0	0.5
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	359	1900	1900	18.9%	-	-	-	0.1	1.2	0.1
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	317	1900	1900	16.7%	-	-	-	0.1	1.1	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	710	1828:1986	477+480	74.5 : 74.0%	1420	0	0	2.0	10.3	5.0

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	33	-	412	1900	1077	38.3%	-	-	-	1.0	8.5	2.8
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	33	-	602	1900	1077	55.9%	-	-	-	1.2	7.5	3.4
10/3	Circ @ WB Off Slip Right	U	C1:D		1	33	-	260	1900	1077	24.1%	-	-	-	0.5	6.5	1.4
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	15	-	498	2029:1871	541+499	49.0 : 46.7%	-	-	-	3.0	21.8	4.1
11/3	A14 WB Off Slip Ahead	U	C1:C		1	15	-	266	2044	545	48.8%	-	-	-	1.8	25.0	4.2
12/1	Circ @ Milton Road Ahead	U	C1:F		1	24	-	628	1900	792	79.3%	-	-	-	5.5	31.6	12.2
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	24	-	470	1900:1900	711+217	50.6 : 50.6%	-	-	-	1.2	9.5	14.5
14/1	Milton Road S Ahead	U	C1:E		1	32	-	614	1894	1042	58.4%	-	-	-	2.2	13.1	7.3
14/2	Milton Road S Ahead	U	C1:E		1	32	-	841	2037	1120	74.5%	-	-	-	3.8	16.5	11.9
15/1	Milton Road S LT Slip Left	U	-		-	-	-	682	1946	1946	34.8%	-	-	-	0.3	1.4	0.3
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.2%**	**0**	**0**	**0**	**21.8**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	85	-	352	1965	1408	25.0%	-	-	-	0.7	7.6	4.2
1/2	Milton Road N Ahead	U	C2:B		1	46	-	462	1965	770	60.0%	-	-	-	4.5	34.9	12.9
1/3+1/4	Milton Road N Ahead	U	C2:B		1	46	-	126	1965:1940	491+476	13.0 : 13.0%	-	-	-	0.9	25.1	1.4
2/2+2/1	Cowley Road Right Left	U	C2:D		1	38	-	423	1940:1830	606+53	64.2 : 64.2%	-	-	-	4.5	38.6	12.0
2/3	Cowley Road Right	U	C2:D		1	38	-	385	1764	573	67.2%	-	-	-	4.4	41.4	12.0
3/1	Milton Road S Ahead	U	C2:A		1	72	-	683	1965	1195	56.5%	-	-	-	2.8	14.7	9.6
3/2	Milton Road S Ahead	U	C2:A		1	72	-	680	1965	1195	56.2%	-	-	-	2.7	14.5	8.5

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	21	-	173	1915	351	48.2%	-	-	-	1.2	26.4	5.6
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.6%**	**0**	**0**	**0**	**20.5**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	59	-	496	1925	962	51.5%	-	-	-	0.9	6.3	1.9
1/2	Milton Road N Right	U	C3:C		1	42	-	64	1791	642	10.0%	-	-	-	0.6	32.0	2.1
1/3	Milton Road N Right	U	C3:C		1	42	-	62	1791	642	9.7%	-	-	-	0.6	32.0	2.0
2/1	Cowley Road Link Left	U	C3:H		1	89	-	357	1747	1310	27.0%	-	-	-	1.1	11.4	6.3
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	26:88	-	546	1828:1687	202+747	57.5 : 57.5%	-	-	-	2.6	16.9	5.6
7/1	Milton Road S Ahead Left	U	C3:A		1	43	-	436	1965	721	59.3%	-	-	-	3.2	27.1	9.1
7/2+7/3	Milton Road S Ahead	U	C3:A		1	43	-	580	1965:1940	565+240	70.6 : 70.4%	-	-	-	4.5	28.7	9.8
8/1	Science Park Left	U	C3:D		1	60	-	546	1741	885	61.7%	-	-	-	4.0	26.4	13.7
8/2	Science Park Right	U	C3:E		1	13	-	141	1741	203	69.4%	-	-	-	3.1	78.9	5.6
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.3%**	**0**	**0**	**0**	**6.8**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	81	-	7	1832	1252	0.6%	-	-	-	0.0	1.8	0.0
1/2	Milton Road N Ahead	U	C3:N		1	74	-	746	2015	1259	59.2%	-	-	-	2.0	9.6	8.1
2/1	Cowley Park Right Left	U	C3:Q		1	18	-	169	1687	267	63.3%	-	-	-	3.1	65.3	6.1
3/1	Milton Road S Ahead	U	C3:M		1	90	-	370	1965	1490	24.2%	-	-	-	0.6	6.2	4.9
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	90:7	-	523	1965:1709	1469+23	34.2 : 34.3%	-	-	-	1.1	7.9	7.9
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.4%**	**0**	**0**	**0**	**2.4**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	784	1965	1621	48.4%	-	-	-	1.7	8.0	20.5
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	388	2006	1655	22.9%	-	-	-	0.2	1.8	1.3
2/2	Milton Road S Ahead	U	C4:B		1	98	-	523	1965	1621	31.5%	-	-	-	0.3	2.1	2.5
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.3%**	**0**	**0**	**0**	**1.4**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	796	1965	1736	45.9%	-	-	-	0.4	2.0	0.8
2/1	Milton Road S Ahead	U	-		-	-	-	911	1965	1965	45.3%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	911	1965	1736	51.3%	-	-	-	0.6	2.3	0.9
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**103.1%**	**22**	**0**	**1**	**69.3**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	688	1915:1717	553+263	84.3 : 84.3%	-	-	-	4.4	23.0	9.6
1/3	Milton Road N Right	U	C6:C		1	7	-	108	1718	115	94.3%	-	-	-	5.4	180.5	7.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	388	1912:1709	111+273	101.2 : 101.2%	-	-	-	16.4	152.5	21.3
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	583	1927:1724	501+64	103.1 : 103.1%	22	0	1	25.1	155.2	37.1
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	385	1871:1762	238+139	102.2 : 102.2%	-	-	-	17.9	167.2	21.8

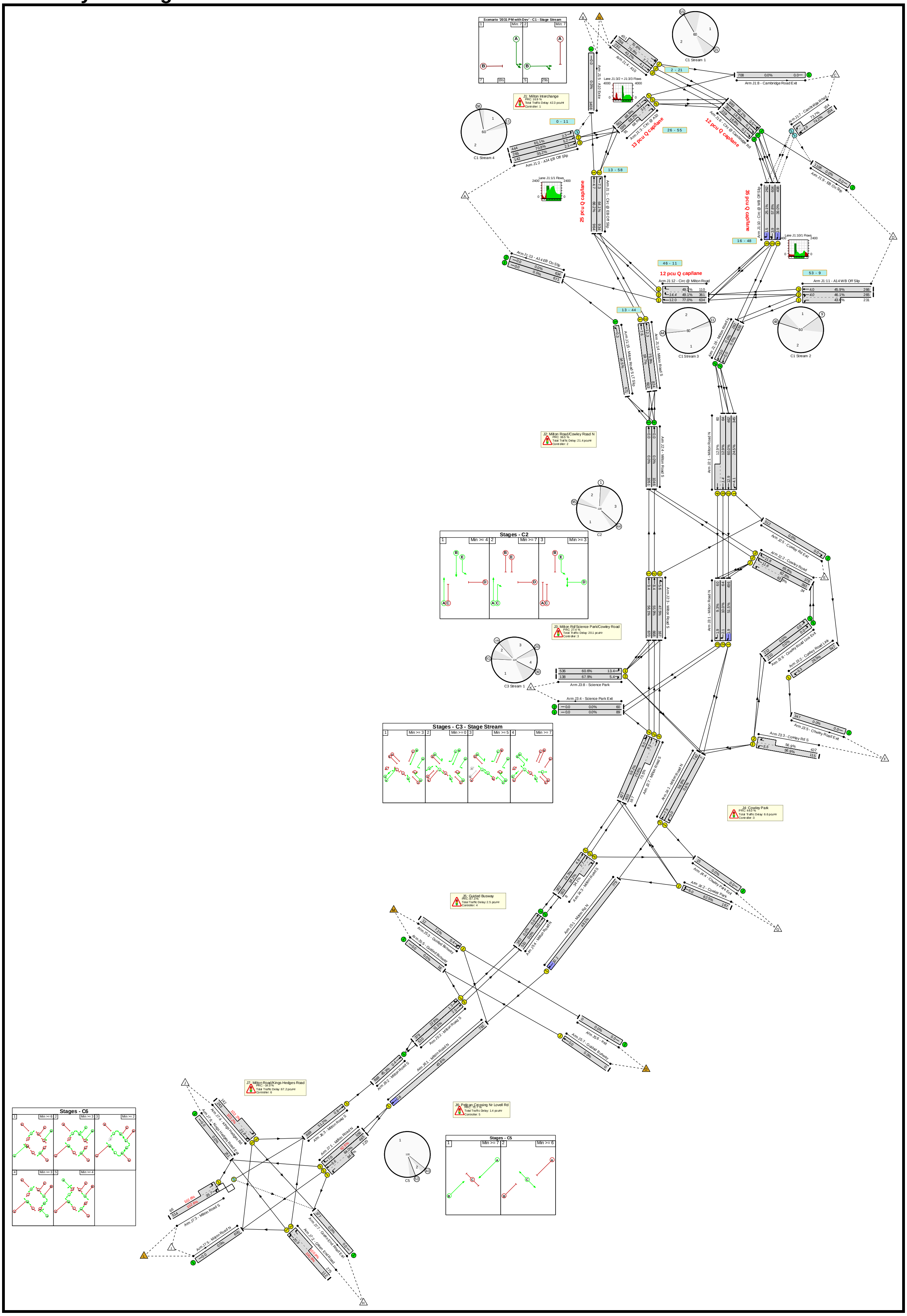
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	28.8	Total Delay for Signalled Lanes (pcuHr):	12.02	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	61.0	Total Delay for Signalled Lanes (pcuHr):	7.56	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	13.5	Total Delay for Signalled Lanes (pcuHr):	12.81	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	6.21	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	34.0	Total Delay for Signalled Lanes (pcuHr):	21.78	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	27.4	Total Delay for Signalled Lanes (pcuHr):	20.51	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	42.2	Total Delay for Signalled Lanes (pcuHr):	6.80	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	86.1	Total Delay for Signalled Lanes (pcuHr):	2.44	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	75.6	Total Delay for Signalled Lanes (pcuHr):	1.01	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-14.6	Total Delay for Signalled Lanes (pcuHr):	69.26	Cycle Time (s):	120
		PRC Over All Lanes (%):	-14.6	Total Delay Over All Lanes(pcuHr):	164.84		

Basic Results Summary

Scenario 2: '2031 S1 DS PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 1 DS	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.6%**	**1778**	**104**	**1**	**161.6**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.0%**	**1756**	**104**	**0**	**42.3**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	968	1900	1457	66.2%	-	-	-	1.2	4.4	4.7
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	939	1900	1457	64.1%	-	-	-	1.0	3.8	7.3
2/1	A14 EB Off Slip Left	O	-		-	-	-	444	1894	682	65.1%	340	104	0	0.9	7.7	2.3
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	265	1871	374	70.8%	-	-	-	2.8	38.5	5.2
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	142	2018	404	35.2%	-	-	-	1.1	27.5	2.3
3/1	Circ @ A10 Ahead	U	C1:B		1	29	-	653	1900	950	68.6%	-	-	-	3.3	18.4	9.7
3/2+3/3	Circ @ A10 Right	U	C1:B		1	29	-	693	1900:1900	878+133	68.2 : 68.6%	-	-	-	2.4	12.8	3.5
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	19	-	747	2057:1910	418+637	70.8 : 70.8%	-	-	-	4.7	22.5	7.7
4/3	A10 Ahead	U	C1:A		1	19	-	292	2029	676	43.2%	-	-	-	1.6	20.3	4.1
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	996	1900	1900	52.2%	-	-	-	0.5	2.0	0.5
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	360	1900	1900	18.9%	-	-	-	0.1	1.2	0.1
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	319	1900	1900	16.8%	-	-	-	0.1	1.1	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	708	1828:1986	477+480	74.2 : 73.7%	1416	0	0	2.0	10.3	4.9

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	32	-	408	1900	1045	39.0%	-	-	-	1.1	9.4	2.9
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	32	-	604	1900	1045	57.8%	-	-	-	1.4	8.2	3.9
10/3	Circ @ WB Off Slip Right	U	C1:D		1	32	-	262	1900	1045	25.1%	-	-	-	0.5	6.9	1.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	16	-	496	2029:1871	575+530	46.1 : 43.6%	-	-	-	2.8	20.6	4.0
11/3	A14 WB Off Slip Ahead	U	C1:C		1	16	-	266	2044	579	45.9%	-	-	-	1.7	23.5	4.0
12/1	Circ @ Milton Road Ahead	U	C1:F		1	25	-	634	1900	823	77.0%	-	-	-	5.1	28.7	12.0
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	25	-	471	1900:1900	736+224	49.1 : 49.1%	-	-	-	1.2	9.1	14.4
14/1	Milton Road S Ahead	U	C1:E		1	31	-	607	1894	1010	59.7%	-	-	-	2.3	14.0	7.6
14/2	Milton Road S Ahead	U	C1:E		1	31	-	829	2037	1086	75.8%	-	-	-	4.1	17.7	12.3
15/1	Milton Road S LT Slip Left	U	-		-	-	-	675	1946	1946	34.5%	-	-	-	0.3	1.4	0.3
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**65.9%**	**0**	**0**	**0**	**21.4**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	85	-	345	1965	1408	24.5%	-	-	-	0.7	7.5	4.1
1/2	Milton Road N Ahead	U	C2:B		1	46	-	462	1965	770	60.0%	-	-	-	4.5	34.9	12.9
1/3+1/4	Milton Road N Ahead	U	C2:B		1	46	-	124	1965:1940	496+465	12.9 : 12.9%	-	-	-	0.9	25.1	1.4
2/2+2/1	Cowley Road Right Left	U	C2:D		1	38	-	415	1940:1830	605+54	62.9 : 62.9%	-	-	-	4.4	38.2	11.6
2/3	Cowley Road Right	U	C2:D		1	38	-	378	1764	573	65.9%	-	-	-	4.3	41.0	11.8
3/1	Milton Road S Ahead	U	C2:A		1	72	-	677	1965	1195	56.1%	-	-	-	2.8	14.8	9.4
3/2	Milton Road S Ahead	U	C2:A		1	72	-	675	1965	1195	55.9%	-	-	-	2.6	14.0	8.4

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	21	-	170	1915	351	47.5%	-	-	-	1.2	26.9	5.6
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.6%**	**0**	**0**	**0**	**20.1**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	59	-	496	1925	962	51.5%	-	-	-	0.9	6.5	1.9
1/2	Milton Road N Right	U	C3:C		1	42	-	64	1791	642	10.0%	-	-	-	0.6	31.1	2.1
1/3	Milton Road N Right	U	C3:C		1	42	-	60	1791	642	9.3%	-	-	-	0.5	31.0	1.9
2/1	Cowley Road Link Left	U	C3:H		1	89	-	350	1747	1310	26.5%	-	-	-	1.1	11.8	6.3
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	26:88	-	537	1828:1687	202+741	56.9 : 56.9%	-	-	-	2.5	16.9	5.5
7/1	Milton Road S Ahead Left	U	C3:A		1	43	-	434	1965	721	59.2%	-	-	-	3.2	26.8	9.0
7/2+7/3	Milton Road S Ahead	U	C3:A		1	43	-	577	1965:1940	567+237	70.6 : 70.5%	-	-	-	4.5	28.4	9.3
8/1	Science Park Left	U	C3:D		1	60	-	536	1741	885	60.6%	-	-	-	3.9	26.1	13.4
8/2	Science Park Right	U	C3:E		1	13	-	138	1741	203	67.9%	-	-	-	3.0	77.6	5.4
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**62.5%**	**0**	**0**	**0**	**6.6**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	81	-	7	1832	1252	0.6%	-	-	-	0.0	1.8	0.0
1/2	Milton Road N Ahead	U	C3:N		1	74	-	742	2015	1259	58.9%	-	-	-	2.0	9.5	7.9
2/1	Cowley Park Right Left	U	C3:Q		1	18	-	167	1687	267	62.5%	-	-	-	3.0	64.9	6.0
3/1	Milton Road S Ahead	U	C3:M		1	90	-	369	1965	1490	24.3%	-	-	-	0.6	5.9	4.8
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	90:7	-	520	1965:1709	1469+23	34.2 : 34.2%	-	-	-	1.1	7.7	7.7
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.1%**	**0**	**0**	**0**	**2.5**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	779	1965	1621	48.1%	-	-	-	1.8	8.2	20.2
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	387	2006	1655	22.9%	-	-	-	0.2	1.8	1.3
2/2	Milton Road S Ahead	U	C4:B		1	98	-	520	1965	1621	31.5%	-	-	-	0.3	2.1	2.5
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.2%**	**0**	**0**	**0**	**1.4**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	791	1965	1736	45.6%	-	-	-	0.4	2.0	0.8
2/1	Milton Road S Ahead	U	-		-	-	-	907	1965	1965	45.3%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	907	1965	1736	51.2%	-	-	-	0.6	2.2	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.6%**	**22**	**0**	**1**	**67.2**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	685	1915:1717	553+262	84.0 : 84.0%	-	-	-	4.3	22.8	9.6
1/3	Milton Road N Right	U	C6:C		1	7	-	106	1718	115	92.5%	-	-	-	5.0	170.3	7.0
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	387	1912:1709	111+273	100.9 : 100.9%	-	-	-	16.0	148.4	20.9
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	580	1927:1724	501+64	102.6 : 102.6%	22	0	1	24.2	150.0	35.7
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	385	1871:1762	238+139	102.2 : 102.2%	-	-	-	17.8	166.0	21.8

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	12.09	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	55.7	Total Delay for Signalled Lanes (pcuHr):	7.51	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	12.64	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	6.09	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	36.5	Total Delay for Signalled Lanes (pcuHr):	21.37	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	27.4	Total Delay for Signalled Lanes (pcuHr):	20.13	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	44.0	Total Delay for Signalled Lanes (pcuHr):	6.65	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	87.3	Total Delay for Signalled Lanes (pcuHr):	2.46	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	75.7	Total Delay for Signalled Lanes (pcuHr):	0.99	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-14.0	Total Delay for Signalled Lanes (pcuHr):	67.23	Cycle Time (s):	120
		PRC Over All Lanes (%):	-14.0	Total Delay Over All Lanes(pcuHr):	161.57		

C.3.3 Option 2 2031 With-Dev Trip-Budget Do Something results

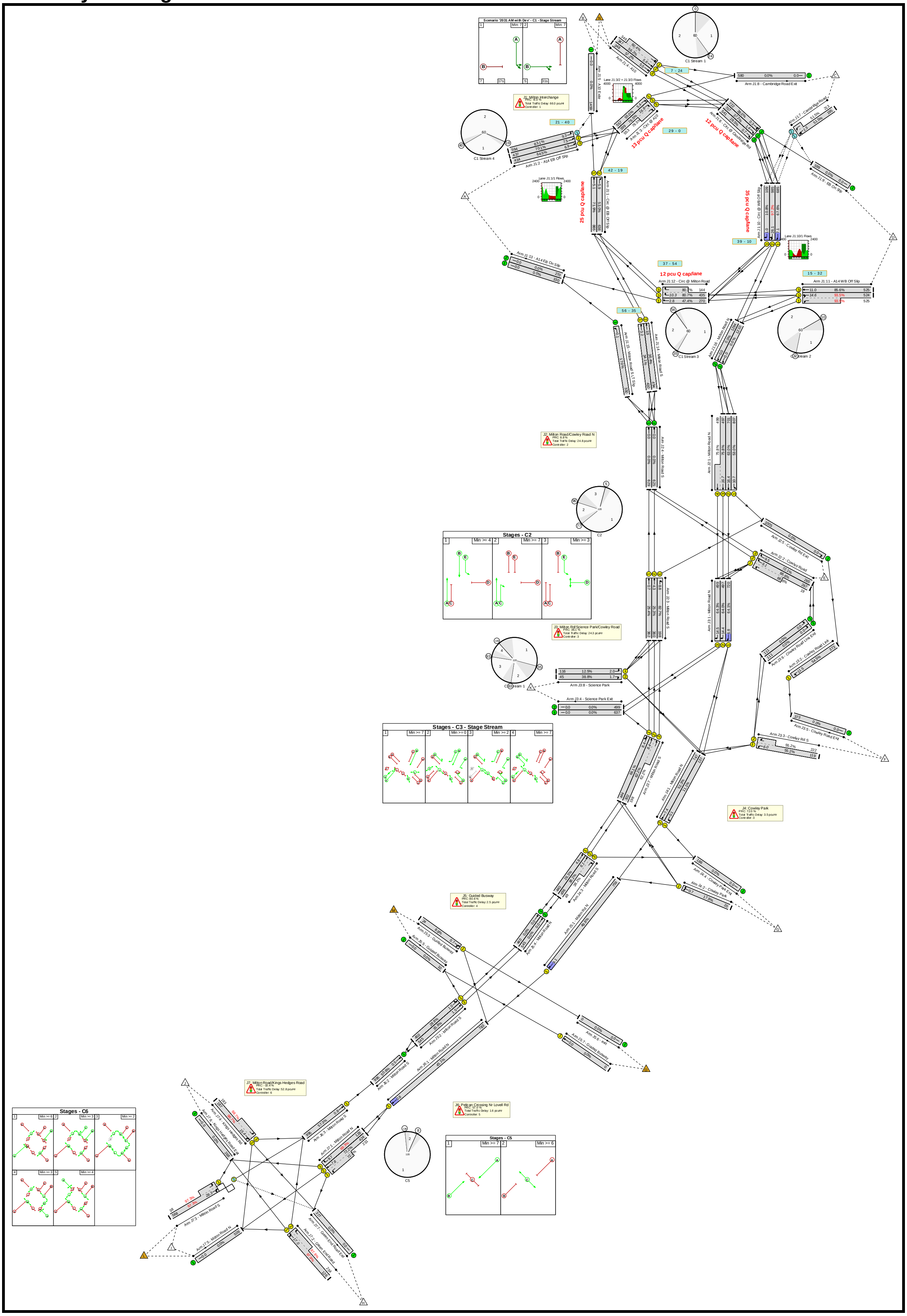
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 CCC Option 2 DS**
Location:	Cambridge Science Park
Date Started:	22/01/19
Additional detail:	
File name:	S2 With Dev (0.42) PP2 layout_v2_ALL_RED.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S2 DS AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 2 DS	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**1183**	**246**	**0**	**175.6**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.2%**	**1164**	**246**	**0**	**66.0**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	37	-	865	1900	1203	71.9%	-	-	-	2.0	8.1	5.1
1/2	Circ @ EB Off Slip Right	U	C1:H		1	37	-	638	1900	1203	53.0%	-	-	-	1.4	7.9	5.9
2/1	A14 EB Off Slip Left	O	-		-	-	-	594	1894	714	83.1%	348	246	0	2.8	16.8	9.3
2/2	A14 EB Off Slip Ahead	U	C1:G		1	19	-	437	1871	624	70.1%	-	-	-	3.3	26.9	7.5
2/3	A14 EB Off Slip Ahead	U	C1:G		1	19	-	434	2018	673	64.5%	-	-	-	3.0	24.5	6.9
3/1	Circ @ A10 Ahead	U	C1:B		1	31	-	557	1900	1013	55.0%	-	-	-	1.7	10.9	5.4
3/2+3/3	Circ @ A10 Right	U	C1:B		1	31	-	952	1900:1900	522+723	76.5 : 76.5%	-	-	-	2.9	10.9	16.8
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	17	-	693	2057:1910	617+573	56.2 : 60.4%	-	-	-	4.1	21.4	5.6
4/3	A10 Ahead	U	C1:A		1	17	-	348	2029	609	57.2%	-	-	-	2.4	24.6	5.5
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	722	1900	1900	38.0%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	707	1900	1900	37.2%	-	-	-	0.3	1.5	1.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	541	1900	1900	28.5%	-	-	-	0.2	1.3	0.7
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	408	1828:1986	379+414	51.5 : 51.5%	816	0	0	0.8	7.0	1.5

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	31	-	685	1900	1013	67.6%	-	-	-	2.3	11.9	7.1
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	31	-	985	1900	1013	97.2%	-	-	-	13.1	48.0	26.1
10/3	Circ @ WB Off Slip Right	U	C1:D		1	31	-	109	1900	1013	10.8%	-	-	-	0.3	8.3	1.0
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	17	-	1049	2029:1871	560+561	93.5 : 93.5%	-	-	-	12.0	41.3	14.6
11/3	A14 WB Off Slip Ahead	U	C1:C		1	17	-	525	2044	613	85.6%	-	-	-	5.7	39.0	11.0
12/1	Circ @ Milton Road Ahead	U	C1:F		1	17	-	270	1900	570	47.4%	-	-	-	1.6	20.7	2.8
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	17	-	579	1900:1900	539+178	80.7 : 80.7%	-	-	-	4.3	26.6	10.3
14/1	Milton Road S Ahead	U	C1:E		1	39	-	430	1894	1263	34.1%	-	-	-	0.8	6.5	3.2
14/2	Milton Road S Ahead	U	C1:E		1	39	-	494	2037	1358	36.4%	-	-	-	0.9	6.5	3.9
15/1	Milton Road S LT Slip Left	U	-		-	-	-	330	1946	1946	17.0%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.7%**	**0**	**0**	**0**	**24.8**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	92	-	807	1965	1523	53.0%	-	-	-	1.7	7.7	10.7
1/2	Milton Road N Ahead	U	C2:B		1	67	-	701	1965	1113	63.0%	-	-	-	4.3	21.9	16.4
1/3+1/4	Milton Road N Ahead	U	C2:B		1	67	-	996	1965:1940	656+658	75.8 : 75.8%	-	-	-	5.9	21.4	16.7
2/2+2/1	Cowley Road Right Left	U	C2:D		1	24	-	286	1940:1830	401+29	66.6 : 66.6%	-	-	-	3.6	45.8	9.1
2/3	Cowley Road Right	U	C2:D		1	24	-	265	1764	367	72.1%	-	-	-	3.8	51.1	9.5
3/1	Milton Road S Ahead	U	C2:A		1	86	-	362	1965	1425	25.4%	-	-	-	0.3	2.5	0.7
3/2	Milton Road S Ahead	U	C2:A		1	86	-	360	1965	1425	25.3%	-	-	-	0.3	3.0	4.3

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	14	-	198	1915	239	82.7%	-	-	-	5.0	90.3	8.8
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.1%**	**0**	**0**	**0**	**24.3**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	69	-	720	1925	1123	64.1%	-	-	-	2.8	13.9	6.8
1/2	Milton Road N Right	U	C3:C		1	51	-	497	1791	776	64.0%	-	-	-	2.8	20.0	14.4
1/3	Milton Road N Right	U	C3:C		1	51	-	499	1791	776	64.3%	-	-	-	2.8	20.0	14.5
2/1	Cowley Road Link Left	U	C3:H		1	46	-	373	1747	684	54.5%	-	-	-	4.1	39.7	11.5
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	22:45	-	341	1828:1687	216+402	55.2 : 55.2%	-	-	-	3.6	38.2	6.0
7/1	Milton Road S Ahead Left	U	C3:A		1	40	-	444	1965	671	66.1%	-	-	-	3.4	27.4	8.4
7/2+7/3	Milton Road S Ahead	U	C3:A		1	40	-	500	1965:1940	486+318	62.2 : 62.2%	-	-	-	3.3	24.1	8.4
8/1	Science Park Left	U	C3:D		1	63	-	116	1741	929	12.5%	-	-	-	0.5	16.2	2.0
8/2	Science Park Right	U	C3:E		1	7	-	45	1741	116	38.8%	-	-	-	1.0	78.8	1.7
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.3%**	**0**	**0**	**0**	**3.5**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	80	-	137	1832	1237	11.1%	-	-	-	0.1	2.1	0.1
1/2	Milton Road N Ahead	U	C3:N		1	84	-	747	2015	1427	52.3%	-	-	-	1.1	5.2	7.4
2/1	Cowley Park Right Left	U	C3:Q		1	7	-	20	1687	112	17.8%	-	-	-	0.4	72.4	0.7
3/1	Milton Road S Ahead	U	C3:M		1	101	-	440	1965	1670	26.3%	-	-	-	0.5	4.0	4.8
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	101:8	-	545	1965:1709	1297+128	38.2 : 38.2%	-	-	-	1.4	9.5	6.1
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**49.8%**	**0**	**0**	**0**	**2.5**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	92	-	759	1965	1523	49.8%	-	-	-	1.6	7.5	9.1
2/1	Milton Road S Ahead Left	U	C4:B		1	92	-	450	2011	1559	28.9%	-	-	-	0.3	2.1	1.0
2/2	Milton Road S Ahead	U	C4:B		1	92	-	545	1965	1523	35.8%	-	-	-	0.3	2.2	1.5
3/1	Guided Busway Right Ahead	U	C4:C		1	15	-	24	2015	269	8.9%	-	-	-	0.4	53.0	0.7
7/1	Guided Busway Ahead	U	C4:D		1	17	-	0	2015	302	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**57.3%**	**0**	**0**	**0**	**1.6**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	783	1965	1736	45.1%	-	-	-	0.4	2.0	0.8
2/1	Milton Road S Ahead	U	-		-	-	-	995	1965	1965	50.6%	-	-	-	0.5	1.9	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	995	1965	1736	57.3%	-	-	-	0.7	2.5	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**20**	**0**	**0**	**52.8**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	49	-	655	1915:1717	587+320	72.2 : 72.2%	-	-	-	3.2	17.3	7.8
1/3	Milton Road N Right	U	C6:C		1	8	-	128	1718	129	99.3%	-	-	-	7.0	196.1	9.7
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	19	-	380	1928:1709	129+259	97.9 : 97.9%	-	-	-	13.0	122.9	17.0
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	37	-	606	1930:1724	584+39	97.3 : 97.3%	20	0	0	15.6	92.7	28.3
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	380	1894:1762	189+195	98.7 : 98.7%	-	-	-	14.1	133.9	15.4

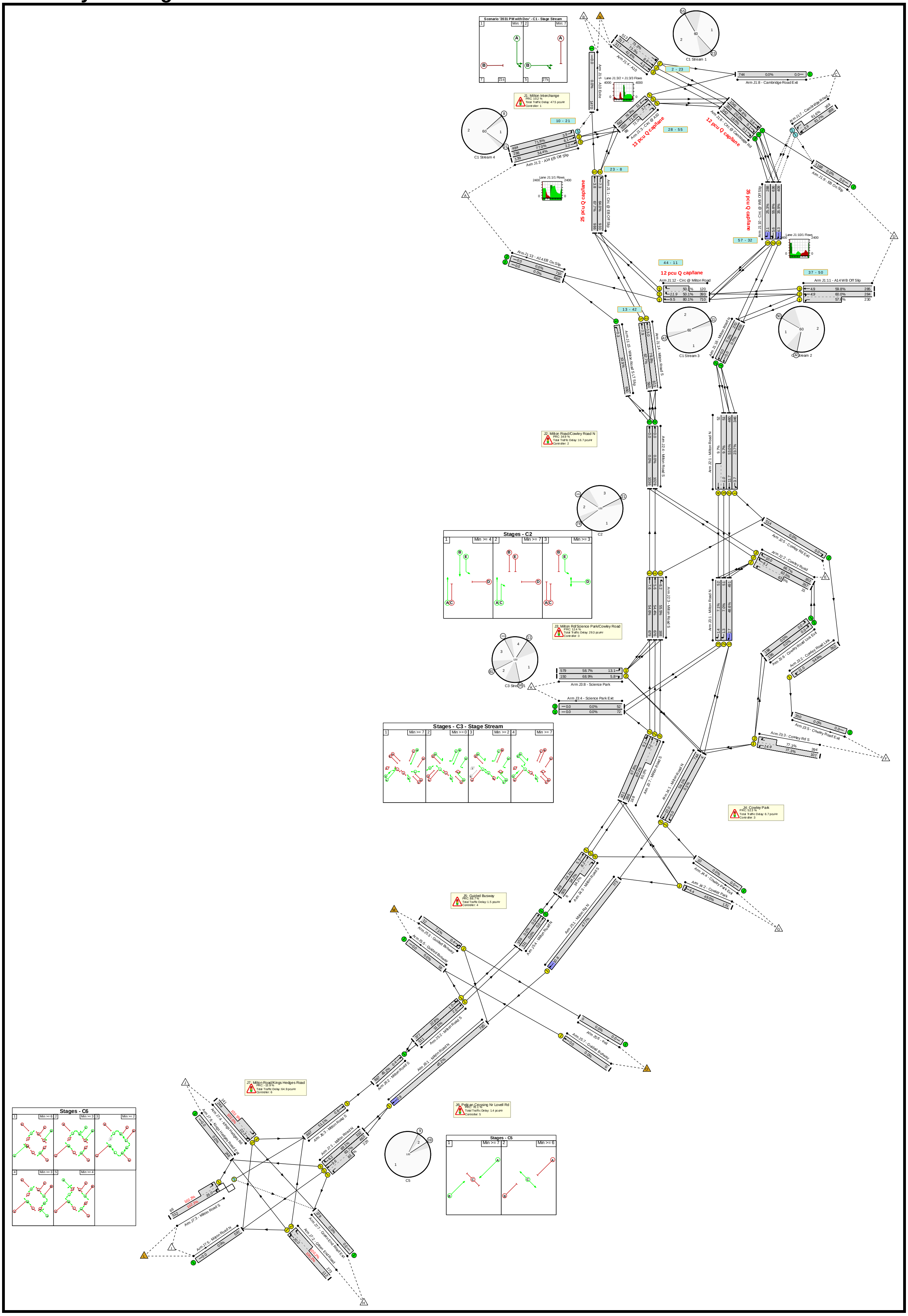
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	17.7	Total Delay for Signalled Lanes (pcuHr):	11.07	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	33.38	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	11.5	Total Delay for Signalled Lanes (pcuHr):	7.50	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	25.2	Total Delay for Signalled Lanes (pcuHr):	9.57	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	8.8	Total Delay for Signalled Lanes (pcuHr):	24.80	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	36.1	Total Delay for Signalled Lanes (pcuHr):	24.29	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	72.0	Total Delay for Signalled Lanes (pcuHr):	3.48	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	80.6	Total Delay for Signalled Lanes (pcuHr):	2.53	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	57.0	Total Delay for Signalled Lanes (pcuHr):	1.12	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-10.4	Total Delay for Signalled Lanes (pcuHr):	52.84	Cycle Time (s):	120
		PRC Over All Lanes (%):	-10.4	Total Delay Over All Lanes(pcuHr):	175.57		

Basic Results Summary

Scenario 2: '2031 S2 DS PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 2 DS	-	-	-		-	-	-	-	-	-	**102.5%**	**1869**	**113**	**1**	**168.1**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**81.7%**	**1847**	**113**	**0**	**47.5**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	990	1900	1457	67.7%	-	-	-	1.3	4.8	3.8
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	937	1900	1457	64.0%	-	-	-	1.0	3.8	7.3
2/1	A14 EB Off Slip Left	O	-		-	-	-	484	1894	674	71.8%	371	113	0	1.3	9.8	3.9
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	288	1871	374	77.0%	-	-	-	3.4	42.8	6.1
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	139	2018	404	34.4%	-	-	-	1.1	27.4	2.2
3/1	Circ @ A10 Ahead	U	C1:B		1	27	-	683	1900	887	76.9%	-	-	-	4.0	20.9	11.4
3/2+3/3	Circ @ A10 Right	U	C1:B		1	27	-	681	1900:1900	824+122	71.6 : 72.0%	-	-	-	2.3	12.0	3.7
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	21	-	830	2057:1910	433+700	73.3 : 73.3%	-	-	-	5.0	21.5	8.6
4/3	A10 Ahead	U	C1:A		1	21	-	317	2029	744	42.6%	-	-	-	1.6	18.5	4.3
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1044	1900	1900	54.8%	-	-	-	0.6	2.1	0.6
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	380	1900	1900	20.0%	-	-	-	0.1	1.2	0.1
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	342	1900	1900	18.0%	-	-	-	0.1	1.2	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	738	1828:1986	452+452	81.7 : 81.6%	1476	0	0	3.1	15.3	6.9

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	35	-	409	1900	1140	35.9%	-	-	-	1.1	9.5	4.3
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	35	-	636	1900	1140	55.8%	-	-	-	1.8	10.4	5.6
10/3	Circ @ WB Off Slip Right	U	C1:D		1	35	-	288	1900	1140	25.3%	-	-	-	0.6	7.7	2.1
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	13	-	514	2029:1871	473+399	60.0 : 57.6%	-	-	-	3.6	25.3	4.9
11/3	A14 WB Off Slip Ahead	U	C1:C		1	13	-	285	2044	477	59.8%	-	-	-	2.4	29.8	4.9
12/1	Circ @ Milton Road Ahead	U	C1:F		1	27	-	710	1900	887	80.1%	-	-	-	4.4	22.4	9.5
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	27	-	513	1900:1900	784+239	50.1 : 50.1%	-	-	-	1.0	7.1	11.9
14/1	Milton Road S Ahead	U	C1:E		1	29	-	597	1894	947	62.7%	-	-	-	2.6	16.0	7.9
14/2	Milton Road S Ahead	U	C1:E		1	29	-	817	2037	1018	79.8%	-	-	-	4.8	21.1	13.0
15/1	Milton Road S LT Slip Left	U	-		-	-	-	663	1946	1946	33.9%	-	-	-	0.3	1.4	0.3
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.7%**	**0**	**0**	**0**	**16.7**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	88	-	346	1965	1457	23.7%	-	-	-	0.6	6.5	3.7
1/2	Milton Road N Ahead	U	C2:B		1	52	-	460	1965	868	53.0%	-	-	-	3.7	28.8	11.7
1/3+1/4	Milton Road N Ahead	U	C2:B		1	52	-	103	1965:1940	528+539	9.7 : 9.7%	-	-	-	0.6	21.1	1.0
2/2+2/1	Cowley Road Right Left	U	C2:D		1	35	-	388	1940:1830	562+49	63.5 : 63.5%	-	-	-	3.1	28.7	9.1
2/3	Cowley Road Right	U	C2:D		1	35	-	353	1764	529	66.7%	-	-	-	3.0	30.4	10.0
3/1	Milton Road S Ahead	U	C2:A		1	75	-	685	1965	1244	54.6%	-	-	-	2.3	12.3	7.6
3/2	Milton Road S Ahead	U	C2:A		1	75	-	682	1965	1244	54.4%	-	-	-	1.5	8.2	5.6

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	18	-	171	1915	303	55.5%	-	-	-	1.9	40.2	6.2
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.1%**	**0**	**0**	**0**	**29.3**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	62	-	491	1925	1011	48.6%	-	-	-	1.2	8.9	2.7
1/2	Milton Road N Right	U	C3:C		1	48	-	51	1791	731	7.0%	-	-	-	0.3	18.6	1.3
1/3	Milton Road N Right	U	C3:C		1	48	-	52	1791	731	7.1%	-	-	-	0.3	18.7	1.4
2/1	Cowley Road Link Left	U	C3:H		1	43	-	352	1747	641	54.6%	-	-	-	4.9	50.3	11.0
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	22:42	-	501	1828:1687	138+510	77.3 : 77.3%	-	-	-	6.5	47.0	14.9
7/1	Milton Road S Ahead Left	U	C3:A		1	36	-	417	1965	606	67.8%	-	-	-	3.8	33.7	9.2
7/2+7/3	Milton Road S Ahead	U	C3:A		1	36	-	563	1965:1940	483+211	80.1 : 80.0%	-	-	-	5.7	37.2	9.2
8/1	Science Park Left	U	C3:D		1	67	-	579	1741	987	58.7%	-	-	-	3.4	21.3	13.1
8/2	Science Park Right	U	C3:E		1	14	-	150	1741	218	68.9%	-	-	-	3.2	76.1	5.8
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.1%**	**0**	**0**	**0**	**6.7**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	81	-	4	1832	1252	0.3%	-	-	-	0.0	2.7	0.0
1/2	Milton Road N Ahead	U	C3:N		1	74	-	744	2015	1259	59.1%	-	-	-	2.5	12.3	10.0
2/1	Cowley Park Right Left	U	C3:Q		1	18	-	131	1687	267	49.0%	-	-	-	2.2	59.2	4.4
3/1	Milton Road S Ahead	U	C3:M		1	90	-	365	1965	1490	24.1%	-	-	-	0.7	7.4	5.3
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	90:7	-	519	1965:1709	1475+17	34.2 : 34.2%	-	-	-	1.3	9.3	8.2
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.7%**	**0**	**0**	**0**	**1.5**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	773	1965	1621	47.7%	-	-	-	0.9	4.0	10.8
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	383	2006	1655	22.8%	-	-	-	0.2	1.8	1.0
2/2	Milton Road S Ahead	U	C4:B		1	98	-	519	1965	1621	31.5%	-	-	-	0.3	2.1	2.0
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.1%**	**0**	**0**	**0**	**1.4**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	785	1965	1736	45.2%	-	-	-	0.5	2.1	0.9
2/1	Milton Road S Ahead	U	-		-	-	-	902	1965	1965	45.2%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	902	1965	1736	51.1%	-	-	-	0.5	2.2	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.5%**	**22**	**0**	**1**	**64.9**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	683	1915:1717	553+263	83.7 : 83.7%	-	-	-	4.3	22.8	9.6
1/3	Milton Road N Right	U	C6:C		1	7	-	102	1718	115	89.1%	-	-	-	4.1	145.0	6.2
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	385	1912:1709	112+273	100.2 : 100.2%	-	-	-	15.1	141.3	20.0
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	578	1926:1724	501+65	102.2 : 102.2%	22	0	1	23.1	143.9	35.0
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	385	1871:1762	238+138	102.5 : 102.5%	-	-	-	18.2	170.6	22.3

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	17.1	Total Delay for Signalled Lanes (pcuHr):	12.81	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	50.0	Total Delay for Signalled Lanes (pcuHr):	9.51	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	12.4	Total Delay for Signalled Lanes (pcuHr):	12.83	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	6.78	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	34.9	Total Delay for Signalled Lanes (pcuHr):	16.71	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	12.4	Total Delay for Signalled Lanes (pcuHr):	29.34	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	52.3	Total Delay for Signalled Lanes (pcuHr):	6.75	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	88.7	Total Delay for Signalled Lanes (pcuHr):	1.55	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	76.1	Total Delay for Signalled Lanes (pcuHr):	1.00	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-13.9	Total Delay for Signalled Lanes (pcuHr):	64.90	Cycle Time (s):	120
		PRC Over All Lanes (%):	-13.9	Total Delay Over All Lanes(pcuHr):	168.13		

C.3.4 Option 3 2031 With-Dev Trip-Budget Do Something results

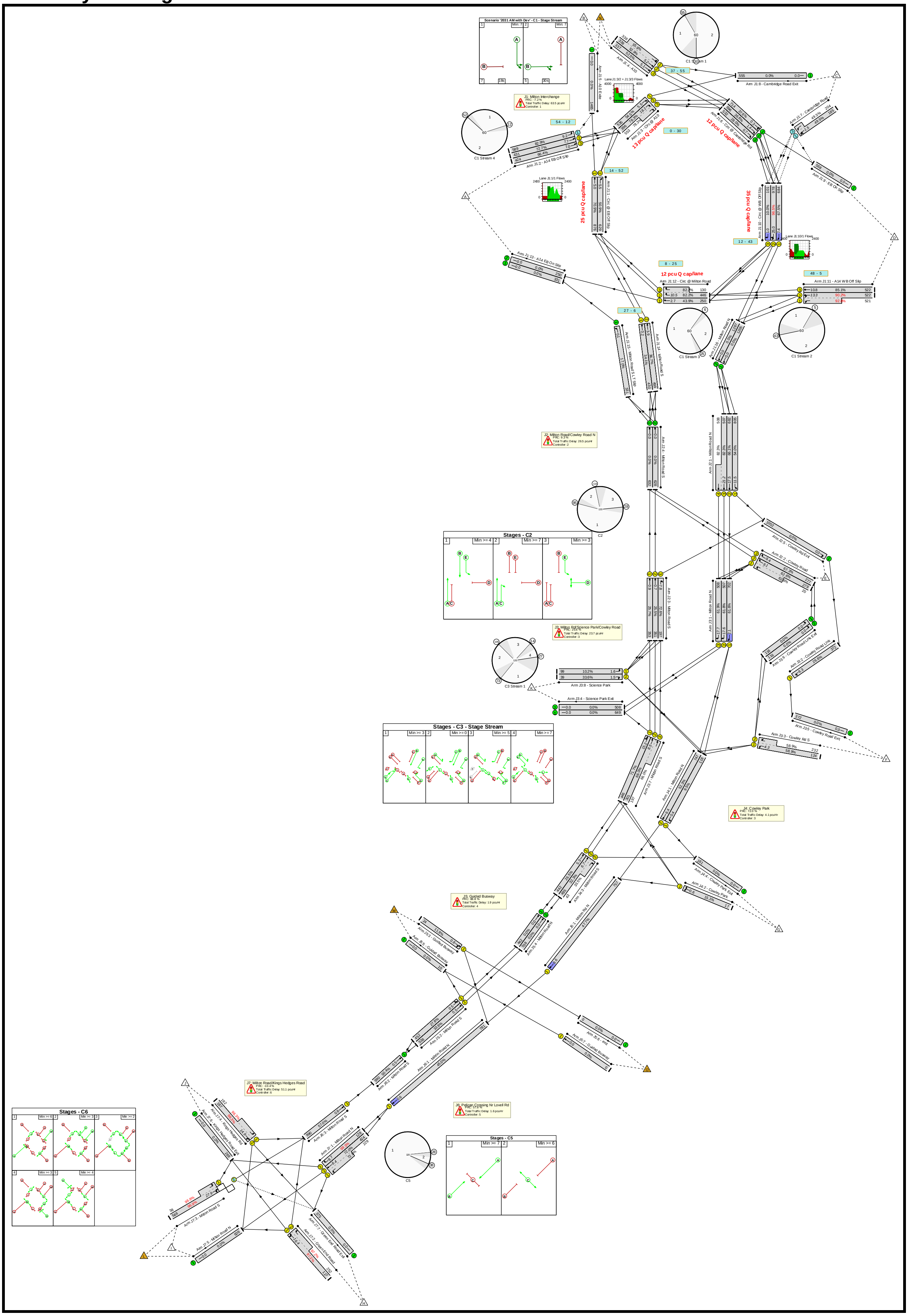
Basic Results Summary

Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 CCC Option 3 DS**
Location:	Cambridge Science Park
Date Started:	22/01/19
Additional detail:	
File name:	S3 With Dev (0.37) PP2 layout_v2_ALL_RED.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 S3 DS AM'
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 3 DS	-	-	-		-	-	-	-	-	-	**99.3%**	**1158**	**228**	**0**	**172.3**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**96.5%**	**1139**	**228**	**0**	**63.5**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	38	-	876	1900	1235	70.9%	-	-	-	1.8	7.5	5.0
1/2	Circ @ EB Off Slip Right	U	C1:H		1	38	-	629	1900	1235	50.9%	-	-	-	1.3	7.3	5.5
2/1	A14 EB Off Slip Left	O	-		-	-	-	589	1894	711	82.9%	361	228	0	2.7	16.7	9.2
2/2	A14 EB Off Slip Ahead	U	C1:G		1	18	-	431	1871	592	72.7%	-	-	-	3.5	29.2	7.7
2/3	A14 EB Off Slip Ahead	U	C1:G		1	18	-	424	2018	639	66.4%	-	-	-	3.1	26.0	7.0
3/1	Circ @ A10 Ahead	U	C1:B		1	30	-	535	1900	982	54.5%	-	-	-	1.8	12.1	5.5
3/2+3/3	Circ @ A10 Right	U	C1:B		1	30	-	949	1900:1900	506+706	78.3 : 78.3%	-	-	-	3.0	11.6	18.1
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	18	-	676	2057:1910	639+605	52.9 : 55.9%	-	-	-	3.8	20.1	5.2
4/3	A10 Ahead	U	C1:A		1	18	-	337	2029	643	52.5%	-	-	-	2.1	22.7	5.1
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	714	1900	1900	37.6%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	696	1900	1900	36.6%	-	-	-	0.3	1.5	1.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	532	1900	1900	28.0%	-	-	-	0.2	1.3	0.7
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	389	1828:1986	373+412	49.5 : 49.5%	778	0	0	0.7	6.2	1.5

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	31	-	684	1900	1013	67.5%	-	-	-	2.5	13.1	7.4
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	31	-	978	1900	1013	96.5%	-	-	-	12.4	45.8	25.0
10/3	Circ @ WB Off Slip Right	U	C1:D		1	31	-	101	1900	1013	10.0%	-	-	-	0.3	9.2	1.0
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	17	-	1043	2029:1871	579+561	90.2 : 92.8%	-	-	-	10.7	36.9	13.3
11/3	A14 WB Off Slip Ahead	U	C1:C		1	17	-	522	2044	613	85.1%	-	-	-	5.6	38.4	10.8
12/1	Circ @ Milton Road Ahead	U	C1:F		1	17	-	250	1900	570	43.9%	-	-	-	1.5	21.7	2.7
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	17	-	576	1900:1900	543+158	82.2 : 82.2%	-	-	-	4.2	26.2	10.5
14/1	Milton Road S Ahead	U	C1:E		1	39	-	430	1894	1263	34.1%	-	-	-	0.8	6.5	3.2
14/2	Milton Road S Ahead	U	C1:E		1	39	-	499	2037	1358	36.7%	-	-	-	0.9	6.5	3.9
15/1	Milton Road S LT Slip Left	U	-		-	-	-	331	1946	1946	17.0%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.3%**	**0**	**0**	**0**	**26.5**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	90	-	805	1965	1490	54.0%	-	-	-	1.9	8.6	11.5
1/2	Milton Road N Ahead	U	C2:B		1	62	-	682	1965	1032	66.1%	-	-	-	4.9	25.9	17.5
1/3+1/4	Milton Road N Ahead	U	C2:B		1	62	-	1015	1965:1940	616+617	82.3 : 82.3%	-	-	-	7.8	27.7	21.2
2/2+2/1	Cowley Road Right Left	U	C2:D		1	27	-	299	1940:1830	446+32	62.6 : 62.6%	-	-	-	4.1	49.6	9.1
2/3	Cowley Road Right	U	C2:D		1	27	-	277	1764	412	67.3%	-	-	-	4.1	53.7	9.4
3/1	Milton Road S Ahead	U	C2:A		1	83	-	353	1965	1375	25.7%	-	-	-	0.3	3.0	0.9
3/2	Milton Road S Ahead	U	C2:A		1	83	-	351	1965	1375	25.5%	-	-	-	0.2	2.6	0.7

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	16	-	197	1915	271	72.6%	-	-	-	3.0	55.5	7.8
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.7%**	**0**	**0**	**0**	**23.7**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	70	-	702	1925	1139	61.6%	-	-	-	1.2	6.0	2.1
1/2	Milton Road N Right	U	C3:C		1	54	-	507	1791	821	61.8%	-	-	-	4.7	33.6	17.6
1/3	Milton Road N Right	U	C3:C		1	54	-	508	1791	821	61.9%	-	-	-	4.7	33.7	17.7
2/1	Cowley Road Link Left	U	C3:H		1	95	-	372	1747	1398	26.6%	-	-	-	0.9	9.1	6.3
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	21:94	-	356	1828:1687	210+394	58.9 : 58.9%	-	-	-	2.4	24.1	4.3
7/1	Milton Road S Ahead Left	U	C3:A		1	37	-	446	1965	622	71.7%	-	-	-	4.4	35.7	15.2
7/2+7/3	Milton Road S Ahead	U	C3:A		1	37	-	498	1965:1940	456+299	66.0 : 66.0%	-	-	-	4.0	29.0	8.5
8/1	Science Park Left	U	C3:D		1	66	-	99	1741	972	10.2%	-	-	-	0.4	14.5	1.6
8/2	Science Park Right	U	C3:E		1	7	-	39	1741	116	33.6%	-	-	-	0.8	76.7	1.5
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.3%**	**0**	**0**	**0**	**4.1**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	80	-	118	1832	1237	9.5%	-	-	-	0.1	4.5	0.4
1/2	Milton Road N Ahead	U	C3:N		1	84	-	747	2015	1427	52.3%	-	-	-	1.7	8.4	6.4
2/1	Cowley Park Right Left	U	C3:Q		1	7	-	17	1687	112	15.1%	-	-	-	0.3	71.7	0.6
3/1	Milton Road S Ahead	U	C3:M		1	101	-	442	1965	1670	26.5%	-	-	-	0.5	4.3	5.3
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	101:8	-	538	1965:1709	1534+128	32.3 : 33.5%	-	-	-	1.3	8.9	6.7
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.7%**	**0**	**0**	**0**	**1.9**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	96	-	757	1965	1588	47.7%	-	-	-	1.0	4.9	8.6
2/1	Milton Road S Ahead Left	U	C4:B		1	96	-	452	2011	1626	27.8%	-	-	-	0.2	1.8	0.5
2/2	Milton Road S Ahead	U	C4:B		1	96	-	538	1965	1588	33.9%	-	-	-	0.3	1.9	0.5
3/1	Guided Busway Right Ahead	U	C4:C		1	11	-	24	2015	201	11.9%	-	-	-	0.4	59.4	0.8
7/1	Guided Busway Ahead	U	C4:D		1	13	-	0	2015	235	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**57.0%**	**0**	**0**	**0**	**1.6**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	781	1965	1736	45.0%	-	-	-	0.4	1.9	0.6
2/1	Milton Road S Ahead	U	-		-	-	-	990	1965	1965	50.4%	-	-	-	0.5	1.8	0.5
3/1	Milton Road S Ahead	U	C5:B		1	105	-	990	1965	1736	57.0%	-	-	-	0.7	2.4	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**20**	**0**	**0**	**51.1**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	49	-	653	1915:1717	589+318	72.0 : 72.0%	-	-	-	2.9	16.2	8.4
1/3	Milton Road N Right	U	C6:C		1	8	-	128	1718	129	99.3%	-	-	-	6.8	191.4	9.7
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	19	-	379	1929:1709	131+259	97.2 : 97.2%	-	-	-	12.4	118.0	16.4
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	37	-	604	1930:1724	584+39	96.9 : 96.9%	20	0	0	15.2	90.8	27.9
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	379	1894:1762	190+195	98.3 : 98.3%	-	-	-	13.7	130.1	14.9

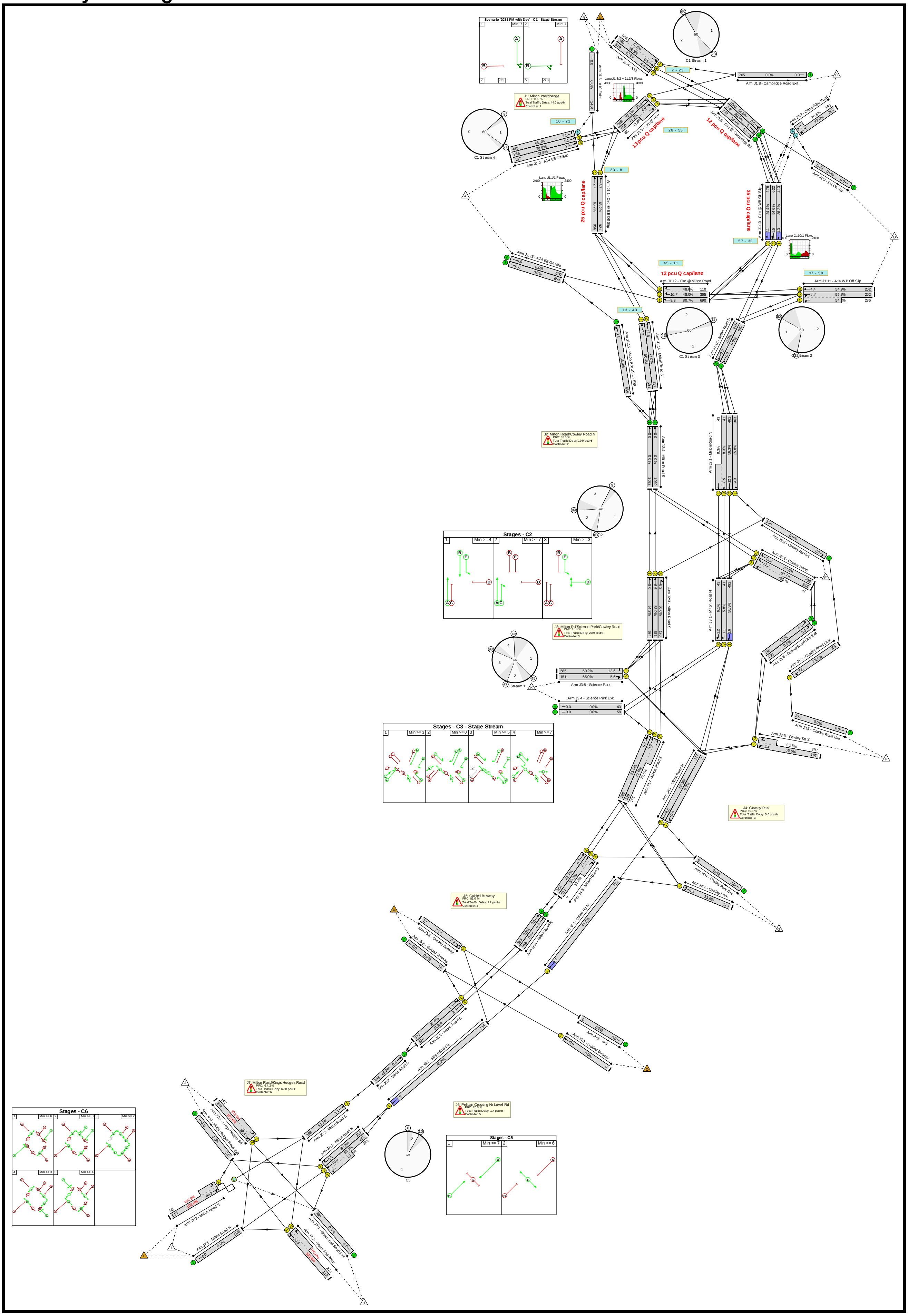
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	10.73	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-7.2	Total Delay for Signalled Lanes (pcuHr):	31.45	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	9.5	Total Delay for Signalled Lanes (pcuHr):	7.38	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	23.7	Total Delay for Signalled Lanes (pcuHr):	9.65	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	9.3	Total Delay for Signalled Lanes (pcuHr):	26.45	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	25.6	Total Delay for Signalled Lanes (pcuHr):	23.65	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	72.0	Total Delay for Signalled Lanes (pcuHr):	4.10	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	88.8	Total Delay for Signalled Lanes (pcuHr):	1.94	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	57.8	Total Delay for Signalled Lanes (pcuHr):	1.09	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-10.4	Total Delay for Signalled Lanes (pcuHr):	51.09	Cycle Time (s):	120
		PRC Over All Lanes (%):	-10.4	Total Delay Over All Lanes(pcuHr):	172.35		

Basic Results Summary

Scenario 2: '2031 S3 DS PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 3 DS	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.8%**	**1768**	**105**	**1**	**160.6**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**	**1745**	**105**	**0**	**44.0**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	45	-	961	1900	1457	65.7%	-	-	-	1.2	4.4	2.7
1/2	Circ @ EB Off Slip Right	U	C1:H		1	45	-	926	1900	1457	63.2%	-	-	-	0.9	3.6	6.7
2/1	A14 EB Off Slip Left	O	-		-	-	-	448	1894	684	65.5%	343	105	0	1.0	7.6	2.8
2/2	A14 EB Off Slip Ahead	U	C1:G		1	11	-	265	1871	374	70.8%	-	-	-	2.8	38.5	5.2
2/3	A14 EB Off Slip Ahead	U	C1:G		1	11	-	137	2018	404	33.9%	-	-	-	1.0	27.4	2.2
3/1	Circ @ A10 Ahead	U	C1:B		1	27	-	650	1900	887	73.1%	-	-	-	3.5	19.5	10.4
3/2+3/3	Circ @ A10 Right	U	C1:B		1	27	-	678	1900:1900	826+118	71.3 : 71.8%	-	-	-	2.3	12.3	4.0
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	21	-	828	2057:1910	441+700	72.5 : 72.5%	-	-	-	4.9	21.3	8.5
4/3	A10 Ahead	U	C1:A		1	21	-	319	2029	744	42.9%	-	-	-	1.6	18.5	4.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1044	1900	1900	54.8%	-	-	-	0.6	2.1	0.6
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	382	1900	1900	20.1%	-	-	-	0.1	1.2	0.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	342	1900	1900	18.0%	-	-	-	0.1	1.2	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	701	1828:1986	453+455	77.8 : 76.8%	1402	0	0	2.5	12.7	5.7

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	35	-	413	1900	1140	36.2%	-	-	-	1.1	9.7	4.3
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	35	-	622	1900	1140	54.6%	-	-	-	1.8	10.4	5.5
10/3	Circ @ WB Off Slip Right	U	C1:D		1	35	-	278	1900	1140	24.4%	-	-	-	0.6	7.8	2.1
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	13	-	498	2029:1871	473+437	55.3 : 54.1%	-	-	-	3.4	24.6	4.4
11/3	A14 WB Off Slip Ahead	U	C1:C		1	13	-	262	2044	477	54.9%	-	-	-	2.1	28.6	4.4
12/1	Circ @ Milton Road Ahead	U	C1:F		1	26	-	690	1900	855	80.7%	-	-	-	4.5	23.4	9.3
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	26	-	475	1900:1900	761+229	48.0 : 48.0%	-	-	-	0.9	7.2	10.7
14/1	Milton Road S Ahead	U	C1:E		1	30	-	596	1894	979	60.4%	-	-	-	2.4	14.8	7.7
14/2	Milton Road S Ahead	U	C1:E		1	30	-	816	2037	1052	77.0%	-	-	-	4.3	19.0	12.5
15/1	Milton Road S LT Slip Left	U	-		-	-	-	663	1946	1946	33.9%	-	-	-	0.3	1.4	0.3
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.6%**	**0**	**0**	**0**	**19.9**	**-**	**-**
1/1	Milton Road N Left	U	C2:E		1	85	-	363	1965	1408	25.8%	-	-	-	0.8	7.6	4.3
1/2	Milton Road N Ahead	U	C2:B		1	49	-	461	1965	819	56.3%	-	-	-	4.1	31.7	12.3
1/3+1/4	Milton Road N Ahead	U	C2:B		1	49	-	84	1965:1940	494+518	8.3 : 8.3%	-	-	-	0.5	22.9	0.9
2/2+2/1	Cowley Road Right Left	U	C2:D		1	35	-	389	1940:1830	562+49	63.7 : 63.7%	-	-	-	4.4	40.8	11.2
2/3	Cowley Road Right	U	C2:D		1	35	-	358	1764	529	67.6%	-	-	-	4.4	44.5	11.5
3/1	Milton Road S Ahead	U	C2:A		1	75	-	681	1965	1244	54.2%	-	-	-	2.4	12.8	8.0
3/2	Milton Road S Ahead	U	C2:A		1	75	-	678	1965	1244	53.9%	-	-	-	1.6	8.8	6.6

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	21	-	179	1915	351	50.0%	-	-	-	1.7	34.8	6.2
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.6%**	**0**	**0**	**0**	**20.9**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	60	-	492	1925	979	50.3%	-	-	-	1.2	8.8	2.6
1/2	Milton Road N Right	U	C3:C		1	46	-	41	1791	701	5.8%	-	-	-	0.2	20.0	1.1
1/3	Milton Road N Right	U	C3:C		1	46	-	43	1791	701	6.1%	-	-	-	0.2	20.0	1.2
2/1	Cowley Road Link Left	U	C3:H		1	87	-	368	1747	1281	28.5%	-	-	-	1.3	12.7	7.5
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	23:86	-	504	1828:1687	192+714	55.6 : 55.6%	-	-	-	2.5	17.8	5.4
7/1	Milton Road S Ahead Left	U	C3:A		1	37	-	405	1965	622	63.9%	-	-	-	3.5	31.7	9.2
7/2+7/3	Milton Road S Ahead	U	C3:A		1	37	-	565	1965:1940	489+227	77.6 : 77.5%	-	-	-	5.4	34.8	8.8
8/1	Science Park Left	U	C3:D		1	66	-	585	1741	972	60.2%	-	-	-	3.6	22.3	13.6
8/2	Science Park Right	U	C3:E		1	15	-	151	1741	232	65.0%	-	-	-	3.0	71.1	5.6
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**56.3%**	**0**	**0**	**0**	**5.6**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	81	-	3	1832	1252	0.2%	-	-	-	0.0	1.7	0.0
1/2	Milton Road N Ahead	U	C3:N		1	78	-	747	2015	1327	56.3%	-	-	-	1.8	8.7	8.5
2/1	Cowley Park Right Left	U	C3:Q		1	14	-	113	1687	211	53.6%	-	-	-	2.1	67.4	4.1
3/1	Milton Road S Ahead	U	C3:M		1	94	-	361	1965	1556	22.7%	-	-	-	0.6	5.8	4.7
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	94:7	-	527	1965:1709	1540+18	33.2 : 33.2%	-	-	-	1.1	7.6	7.8
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.6%**	**0**	**0**	**0**	**1.7**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	772	1965	1621	47.6%	-	-	-	1.0	4.9	9.7
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	379	2005	1654	22.4%	-	-	-	0.2	1.8	1.3
2/2	Milton Road S Ahead	U	C4:B		1	98	-	527	1965	1621	31.9%	-	-	-	0.3	2.1	2.5
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.1%**	**0**	**0**	**0**	**1.4**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	784	1965	1736	45.2%	-	-	-	0.5	2.1	0.9
2/1	Milton Road S Ahead	U	-		-	-	-	906	1965	1965	45.2%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	906	1965	1736	51.1%	-	-	-	0.5	2.2	1.1
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.8%**	**23**	**0**	**1**	**67.0**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	683	1915:1717	552+264	83.7 : 83.7%	-	-	-	4.5	23.6	10.0
1/3	Milton Road N Right	U	C6:C		1	7	-	101	1718	115	88.2%	-	-	-	4.2	148.1	6.0
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	387	1913:1709	112+272	100.6 : 100.6%	-	-	-	15.6	145.4	20.5
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	581	1926:1724	501+64	102.8 : 102.8%	23	0	1	24.3	150.8	36.2
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	386	1871:1762	238+138	102.6 : 102.6%	-	-	-	18.4	171.6	22.4

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	23.1	Total Delay for Signalled Lanes (pcuHr):	12.34	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	62.6	Total Delay for Signalled Lanes (pcuHr):	9.00	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	11.5	Total Delay for Signalled Lanes (pcuHr):	12.14	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	5.96	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	33.0	Total Delay for Signalled Lanes (pcuHr):	19.93	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	16.0	Total Delay for Signalled Lanes (pcuHr):	20.90	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	59.8	Total Delay for Signalled Lanes (pcuHr):	5.60	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	89.0	Total Delay for Signalled Lanes (pcuHr):	1.75	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	76.0	Total Delay for Signalled Lanes (pcuHr):	0.99	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-14.2	Total Delay for Signalled Lanes (pcuHr):	67.00	Cycle Time (s):	120
		PRC Over All Lanes (%):	-14.2	Total Delay Over All Lanes(pcuHr):	160.55		

C.3.5 Option 4 2031 With-Dev Trip-Budget Do Something results

Basic Results Summary

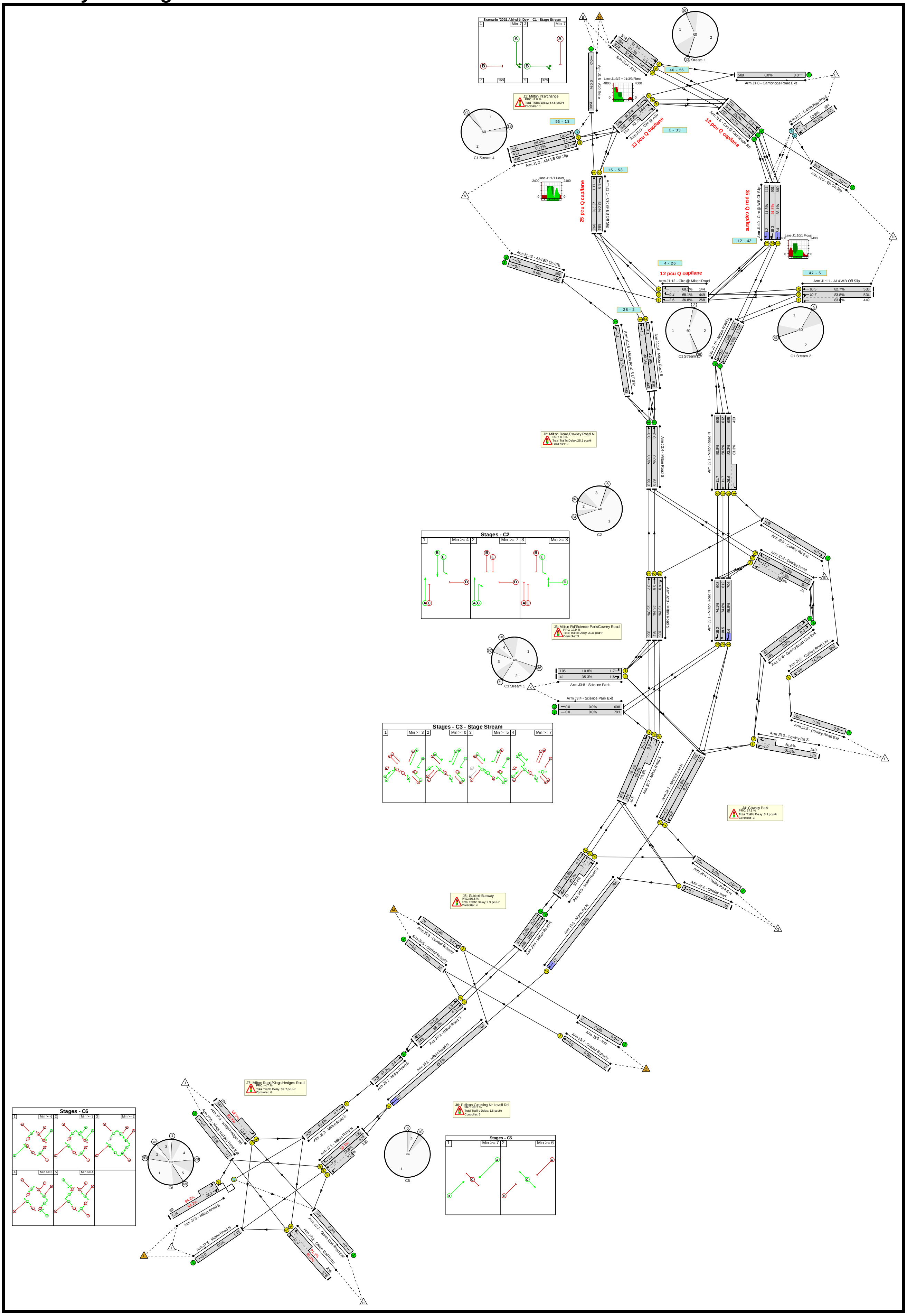
Project and User Details

Project:	**Cambridge Science Park**
Title:	**2031 CCC Option 4 DS**
Location:	Cambridge Science Park
Date Started:	22/01/19
Additional detail:	
File name:	S4 With Dev (0.X) PP2 layout_V2_ALL_RED.lsg3x
Author:	B PRICE
Company:	Mott MacDonald
Address:	Liverpool
Linsig Version:	3, 2, 39, 0

Basic Results Summary

Scenario 1: '2031 D4 DS AM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 4 DS	-	-	-		-	-	-	-	-	-	**94.2%**	**1173**	**253**	**0**	**148.6**	-	-
J1: Milton Interchange	-	-	-		-	-	-	-	-	-	**91.8%**	**1153**	**253**	**0**	**54.6**	-	-
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	38	-	892	1900	1235	72.2%	-	-	-	2.3	9.3	11.1
1/2	Circ @ EB Off Slip Right	U	C1:H		1	38	-	654	1900	1235	53.0%	-	-	-	1.4	8.0	5.9
2/1	A14 EB Off Slip Left	O	-		-	-	-	608	1894	705	86.2%	355	253	0	3.5	20.5	10.5
2/2	A14 EB Off Slip Ahead	U	C1:G		1	18	-	413	1871	592	69.7%	-	-	-	3.2	27.9	7.1
2/3	A14 EB Off Slip Ahead	U	C1:G		1	18	-	410	2018	639	64.2%	-	-	-	2.9	25.4	6.7
3/1	Circ @ A10 Ahead	U	C1:B		1	32	-	566	1900	1045	54.2%	-	-	-	1.5	9.4	5.2
3/2+3/3	Circ @ A10 Right	U	C1:B		1	32	-	911	1900:1900	572+725	70.2 : 70.2%	-	-	-	2.3	9.1	16.4
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	16	-	666	2057:1910	583+541	57.3 : 61.3%	-	-	-	4.2	22.4	5.5
4/3	A10 Ahead	U	C1:A		1	16	-	332	2029	575	57.8%	-	-	-	2.4	25.8	5.4
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	711	1900	1900	37.4%	-	-	-	0.3	1.5	0.3
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	668	1900	1900	35.2%	-	-	-	0.3	1.5	1.4
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	507	1900	1900	26.7%	-	-	-	0.2	1.3	0.7
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	399	1828:1986	307+435	53.8 : 53.8%	798	0	0	0.8	7.2	1.7

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	30	-	669	1900	982	68.1%	-	-	-	2.4	13.0	7.4
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	30	-	901	1900	982	91.8%	-	-	-	7.5	30.2	18.3
10/3	Circ @ WB Off Slip Right	U	C1:D		1	30	-	111	1900	982	11.3%	-	-	-	0.3	8.8	1.2
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	18	-	983	2029:1871	637+536	83.8 : 83.8%	-	-	-	7.6	28.0	10.7
11/3	A14 WB Off Slip Ahead	U	C1:C		1	18	-	535	2044	647	82.7%	-	-	-	5.1	34.4	10.5
12/1	Circ @ Milton Road Ahead	U	C1:F		1	22	-	268	1900	728	36.8%	-	-	-	1.2	16.4	2.6
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	22	-	593	1900:1900	660+212	68.1 : 68.1%	-	-	-	2.6	15.5	9.4
14/1	Milton Road S Ahead	U	C1:E		1	34	-	443	1894	1105	40.1%	-	-	-	1.2	9.5	4.3
14/2	Milton Road S Ahead	U	C1:E		1	34	-	510	2037	1188	42.9%	-	-	-	1.4	9.6	5.1
15/1	Milton Road S LT Slip Left	U	-		-	-	-	340	1946	1946	17.5%	-	-	-	0.1	1.1	0.1
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.3%**	**0**	**0**	**0**	**25.1**	**-**	**-**
1/2+1/1	Milton Road N Left Ahead	U	C2:B C2:E		1	73:98	-	1118	1965:1965	822+520	83.3 : 83.3%	-	-	-	6.2	20.0	25.6
1/3	Milton Road N Ahead	U	C2:B		1	73	-	612	1965	1212	50.5%	-	-	-	2.7	15.8	11.7
1/4	Milton Road N Ahead	U	C2:B		1	73	-	608	1940	1196	50.8%	-	-	-	2.7	15.9	11.7
2/2+2/1	Cowley Road Right Left	U	C2:D		1	24	-	328	1940:1830	401+27	76.5 : 76.5%	-	-	-	5.5	60.1	11.2
2/3	Cowley Road Right	U	C2:D		1	24	-	273	1764	367	74.3%	-	-	-	4.7	62.2	9.9
3/1	Milton Road S Ahead	U	C2:A		1	86	-	356	1965	1425	25.0%	-	-	-	0.2	2.4	0.7
3/2	Milton Road S Ahead	U	C2:A		1	86	-	357	1965	1425	25.1%	-	-	-	0.2	2.4	0.8

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	8	-	105	1915	144	73.1%	-	-	-	2.9	97.8	4.8
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**	**0**	**0**	**0**	**21.0**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	73	-	706	1925	1187	59.5%	-	-	-	2.4	12.1	6.4
1/2	Milton Road N Right	U	C3:C		1	54	-	612	1791	821	74.6%	-	-	-	4.0	23.4	18.5
1/3	Milton Road N Right	U	C3:C		1	54	-	608	1791	821	74.1%	-	-	-	3.9	23.1	18.2
2/1	Cowley Road Link Left	U	C3:H		1	95	-	200	1747	1398	14.3%	-	-	-	0.2	3.1	0.9
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	18:94	-	373	1828:1687	195+365	66.6 : 66.6%	-	-	-	2.8	27.4	4.9
7/1	Milton Road S Ahead Left	U	C3:A		1	37	-	475	1965	622	76.3%	-	-	-	4.0	30.4	15.3
7/2+7/3	Milton Road S Ahead	U	C3:A		1	37	-	409	1965:1940	513+177	59.2 : 59.2%	-	-	-	2.4	21.3	8.3
8/1	Science Park Left	U	C3:D		1	66	-	105	1741	972	10.8%	-	-	-	0.4	14.5	1.7
8/2	Science Park Right	U	C3:E		1	7	-	41	1741	116	35.3%	-	-	-	0.9	77.4	1.6
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.6%**	**0**	**0**	**0**	**3.9**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	79	-	121	1832	1221	9.9%	-	-	-	0.3	7.9	0.8
1/2	Milton Road N Ahead	U	C3:N		1	83	-	756	2015	1410	53.6%	-	-	-	1.8	8.5	6.9
2/1	Cowley Park Right Left	U	C3:Q		1	7	-	18	1687	112	16.0%	-	-	-	0.4	71.9	0.7
3/1	Milton Road S Ahead	U	C3:M		1	101	-	471	1965	1670	28.2%	-	-	-	0.5	3.5	4.2
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	101:9	-	448	1965:1709	1341+142	30.2 : 30.2%	-	-	-	1.0	8.3	3.3
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.2%**	**0**	**0**	**0**	**2.9**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	96	-	766	1965	1588	48.2%	-	-	-	1.1	5.1	9.7
2/1	Milton Road S Ahead Left	U	C4:B		1	96	-	481	2011	1626	29.6%	-	-	-	0.7	5.3	4.5
2/2	Milton Road S Ahead	U	C4:B		1	96	-	448	1965	1588	28.2%	-	-	-	0.7	5.4	4.3
3/1	Guided Busway Right Ahead	U	C4:C		1	11	-	24	2015	201	11.9%	-	-	-	0.4	59.4	0.8
7/1	Guided Busway Ahead	U	C4:D		1	13	-	0	2015	235	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.5%**	**0**	**0**	**0**	**1.5**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	790	1965	1736	45.5%	-	-	-	0.4	2.0	0.7
2/1	Milton Road S Ahead	U	-		-	-	-	929	1965	1965	47.3%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	929	1965	1736	53.5%	-	-	-	0.6	2.3	0.7
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.2%**	**20**	**0**	**0**	**39.7**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	49	-	661	1915:1717	588+320	72.8 : 72.8%	-	-	-	3.7	20.3	7.8
1/3	Milton Road N Right	U	C6:C		1	9	-	129	1718	143	90.1%	-	-	-	4.7	131.0	7.4
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	19	-	363	1929:1709	141+258	91.1 : 91.1%	-	-	-	8.9	88.2	12.0
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	36	-	572	1929:1724	567+40	94.2 : 94.2%	20	0	0	12.4	78.3	24.1
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	13	-	367	1894:1762	203+195	92.3 : 92.3%	-	-	-	9.9	97.4	10.8

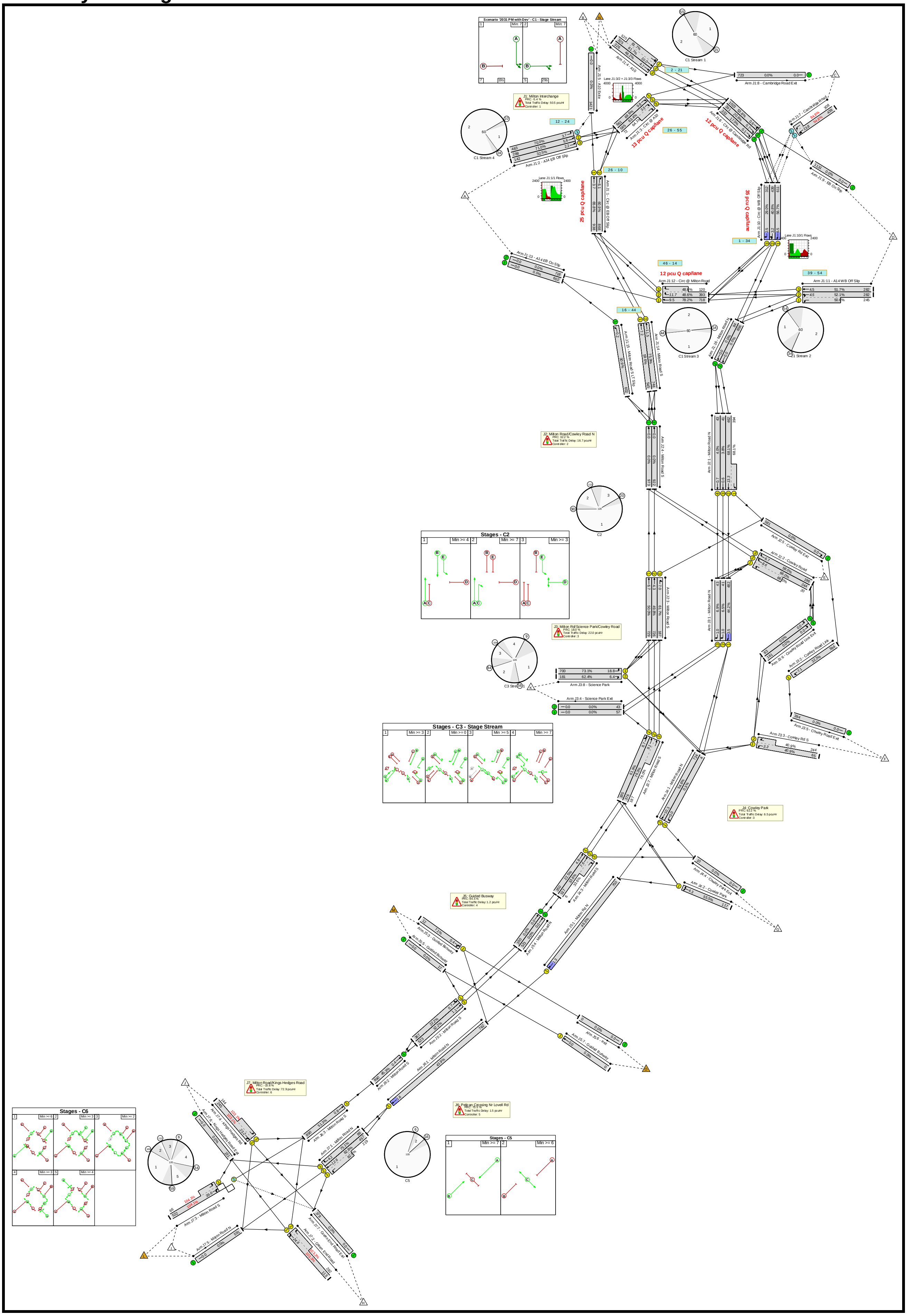
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	28.1	Total Delay for Signalled Lanes (pcuHr):	10.31	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-2.0	Total Delay for Signalled Lanes (pcuHr):	22.99	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	32.2	Total Delay for Signalled Lanes (pcuHr):	6.31	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	24.6	Total Delay for Signalled Lanes (pcuHr):	9.84	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	25.08	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	17.9	Total Delay for Signalled Lanes (pcuHr):	21.02	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	67.9	Total Delay for Signalled Lanes (pcuHr):	3.89	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	86.6	Total Delay for Signalled Lanes (pcuHr):	2.85	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	68.2	Total Delay for Signalled Lanes (pcuHr):	1.02	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-4.7	Total Delay for Signalled Lanes (pcuHr):	39.68	Cycle Time (s):	120
		PRC Over All Lanes (%):	-4.7	Total Delay Over All Lanes(pcuHr):	148.56		

Basic Results Summary

Scenario 2: '2031 S4 DS PM'

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: 2031 CCC Option 4 DS	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.1%**	**1879**	**121**	**1**	**171.3**	**-**	**-**
J1: Milton Interchange	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.8%**	**1856**	**121**	**0**	**50.5**	**-**	**-**
1/1	Circ @ EB Off Slip Ahead	U	C1:H		1	44	-	946	1900	1425	65.8%	-	-	-	1.3	4.8	3.7
1/2	Circ @ EB Off Slip Right	U	C1:H		1	44	-	877	1900	1425	60.9%	-	-	-	0.9	3.6	6.1
2/1	A14 EB Off Slip Left	O	-		-	-	-	483	1894	690	70.0%	362	121	0	1.2	9.0	3.7
2/2	A14 EB Off Slip Ahead	U	C1:G		1	12	-	288	1871	405	71.0%	-	-	-	2.9	36.8	5.6
2/3	A14 EB Off Slip Ahead	U	C1:G		1	12	-	142	2018	437	32.5%	-	-	-	1.0	25.9	2.2
3/1	Circ @ A10 Ahead	U	C1:B		1	29	-	664	1900	950	69.6%	-	-	-	2.9	15.9	9.8
3/2+3/3	Circ @ A10 Right	U	C1:B		1	29	-	643	1900:1900	891+112	63.4 : 64.1%	-	-	-	1.8	10.1	3.5
4/2+4/1	A10 Ahead Ahead2	U	C1:A		1	19	-	845	2057:1910	398+637	81.7 : 81.7%	-	-	-	6.3	26.7	10.0
4/3	A10 Ahead	U	C1:A		1	19	-	326	2029	676	48.2%	-	-	-	1.9	21.0	4.7
6/1	Circ @ Cambridge Rd Ahead Right	U	-		-	-	-	1029	1900	1900	53.8%	-	-	-	0.6	2.0	0.6
6/2	Circ @ Cambridge Rd Right	U	-		-	-	-	391	1900	1900	20.6%	-	-	-	0.1	1.2	0.7
6/3	Circ @ Cambridge Rd Right	U	-		-	-	-	332	1900	1900	17.5%	-	-	-	0.1	1.1	0.1
7/1+7/2	Cambridge Road Left Left2	O	-		-	-	-	747	1828:1986	463+325	94.8 : 94.8%	1494	0	0	8.1	39.1	13.8

Basic Results Summary

10/1	Circ @ WB Off Slip Ahead	U	C1:D		1	33	-	611	1900	1077	56.7%	-	-	-	2.1	12.5	6.5
10/2	Circ @ WB Off Slip Right Ahead	U	C1:D		1	33	-	439	1900	1077	40.8%	-	-	-	1.1	9.2	3.2
10/3	Circ @ WB Off Slip Right	U	C1:D		1	33	-	312	1900	1077	29.0%	-	-	-	0.8	8.9	2.5
11/2+11/1	A14 WB Off Slip Ahead Left	U	C1:C		1	15	-	527	2029:1871	541+484	52.1 : 50.6%	-	-	-	3.3	22.3	4.5
11/3	A14 WB Off Slip Ahead	U	C1:C		1	15	-	282	2044	545	51.7%	-	-	-	2.0	25.5	4.5
12/1	Circ @ Milton Road Ahead	U	C1:F		1	28	-	718	1900	918	78.2%	-	-	-	4.3	21.7	9.5
12/2+12/3	Circ @ Milton Road Right	U	C1:F		1	28	-	513	1900:1900	808+247	48.6 : 48.6%	-	-	-	0.9	6.6	11.7
14/1	Milton Road S Ahead	U	C1:E		1	28	-	553	1894	915	59.6%	-	-	-	2.4	16.1	7.2
14/2	Milton Road S Ahead	U	C1:E		1	28	-	757	2037	985	75.9%	-	-	-	4.2	20.2	11.5
15/1	Milton Road S LT Slip Left	U	-		-	-	-	609	1946	1946	30.9%	-	-	-	0.2	1.3	0.2
J2: Milton Road/Cowley Road N	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.1%**	**0**	**0**	**0**	**16.7**	**-**	**-**
1/2+1/1	Milton Road N Left Ahead	U	C2:B C2:E		1	65:88	-	856	1965:1965	678+579	68.1 : 68.1%	-	-	-	3.8	16.1	13.3
1/3	Milton Road N Ahead	U	C2:B		1	65	-	41	1965	1081	3.8%	-	-	-	0.2	14.2	0.6
1/4	Milton Road N Ahead	U	C2:B		1	65	-	43	1940	1067	4.0%	-	-	-	0.2	14.2	0.7
2/2+2/1	Cowley Road Right Left	U	C2:D		1	22	-	264	1940:1830	370+30	66.0 : 66.0%	-	-	-	4.0	54.8	8.6
2/3	Cowley Road Right	U	C2:D		1	22	-	196	1764	338	58.0%	-	-	-	3.0	55.4	6.7
3/1	Milton Road S Ahead	U	C2:A		1	88	-	741	1965	1457	50.0%	-	-	-	1.5	7.6	6.7
3/2	Milton Road S Ahead	U	C2:A		1	88	-	738	1965	1457	49.8%	-	-	-	1.0	5.1	4.3

Basic Results Summary

3/3	Milton Road S Right	U	C2:C		1	18	-	194	1915	303	61.7%	-	-	-	2.9	56.4	7.0
J3: Milton Rd/Science Park/Cowley Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**	**0**	**0**	**0**	**22.0**	**-**	**-**
1/1	Milton Road N Ahead	U	C3:B		1	67	-	482	1925	1091	44.2%	-	-	-	1.4	10.2	3.5
1/2	Milton Road N Right	U	C3:C		1	41	-	41	1791	627	6.5%	-	-	-	0.2	17.8	1.0
1/3	Milton Road N Right	U	C3:C		1	41	-	43	1791	627	6.9%	-	-	-	0.2	17.8	1.0
2/1	Cowley Road Link Left	U	C3:H		1	83	-	400	1747	1223	32.2%	-	-	-	0.9	8.5	7.1
3/1+3/2	Cowley Rd S Right Left	U	C3:F C3:G		1	12:82	-	309	1828:1687	159+597	40.9 : 40.9%	-	-	-	1.7	19.7	3.3
7/1	Milton Road S Ahead Left	U	C3:A		1	38	-	408	1965	639	61.9%	-	-	-	3.6	32.7	8.7
7/2+7/3	Milton Road S Ahead	U	C3:A		1	38	-	582	1965:1940	493+246	76.3 : 76.0%	-	-	-	5.6	35.8	9.1
8/1	Science Park Left	U	C3:D		1	65	-	700	1741	958	73.1%	-	-	-	5.3	27.2	18.8
8/2	Science Park Right	U	C3:E		1	19	-	181	1741	290	62.4%	-	-	-	3.2	62.8	6.4
J4: Cowley Park	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**55.5%**	**0**	**0**	**0**	**6.5**	**-**	**-**
1/1	Milton Road N Left	U	C3:P		1	81	-	4	1832	1252	0.3%	-	-	-	0.0	2.4	0.0
1/2	Milton Road N Ahead	U	C3:N		1	78	-	724	2015	1327	54.6%	-	-	-	2.4	12.0	10.3
2/1	Cowley Park Right Left	U	C3:Q		1	14	-	117	1687	211	55.5%	-	-	-	2.2	68.3	4.3
3/1	Milton Road S Ahead	U	C3:M		1	94	-	363	1965	1556	22.5%	-	-	-	0.7	6.7	4.8
3/2+3/3	Milton Road S Ahead Right	U	C3:M C3:O		1	94:7	-	542	1965:1709	1540+17	33.6 : 33.6%	-	-	-	1.2	8.5	7.6
J5: Guided Busway	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**46.3%**	**0**	**0**	**0**	**1.2**	**-**	**-**

Basic Results Summary

1/1	Milton Rd N Ahead	U	C4:A		1	98	-	750	1965	1621	46.3%	-	-	-	0.5	2.5	1.3
2/1	Milton Road S Ahead Left	U	C4:B		1	98	-	381	2006	1655	22.2%	-	-	-	0.2	1.8	0.7
2/2	Milton Road S Ahead	U	C4:B		1	98	-	542	1965	1621	32.2%	-	-	-	0.3	2.1	1.1
3/1	Guided Busway Right Ahead	U	C4:C		1	9	-	12	2015	168	7.1%	-	-	-	0.2	62.4	0.4
7/1	Guided Busway Ahead	U	C4:D		1	11	-	0	2015	201	0.0%	-	-	-	0.0	0.0	0.0
J6: Pelican Crossing Nr Lovell Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.3%**	**0**	**0**	**0**	**1.5**	**-**	**-**
1/1	Milton Road N Ahead	U	C5:A		1	105	-	762	1965	1736	43.9%	-	-	-	0.5	2.3	1.6
2/1	Milton Road S Ahead	U	-		-	-	-	923	1965	1965	45.3%	-	-	-	0.4	1.7	0.4
3/1	Milton Road S Ahead	U	C5:B		1	105	-	923	1965	1736	51.3%	-	-	-	0.6	2.2	0.8
J7: Milton Road/Kings Hedges Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.1%**	**23**	**0**	**1**	**72.9**	**-**	**-**
1/2+1/1	Milton Road N Ahead Left	U	C6:B		1	44	-	676	1915:1717	552+265	82.8 : 82.8%	-	-	-	4.6	24.5	12.6
1/3	Milton Road N Right	U	C6:C		1	7	-	86	1718	115	75.1%	-	-	-	2.5	103.0	4.2
2/1+2/2	Green End Road Right Left Ahead	U	C6:D		1	20	-	395	1913:1709	109+273	103.3 : 103.3%	-	-	-	19.4	177.1	24.6
3/2+3/1	Milton Road S Ahead Left Right	O+U	C6:A		1	33	-	588	1926:1724	502+63	104.1 : 104.1%	23	0	1	27.2	166.7	39.6
4/2+4/1	Kings Hedges Rd Left Right Ahead	U	C6:E		1	17	-	389	1872:1762	238+140	103.1 : 103.1%	-	-	-	19.2	177.4	23.2

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	10.2	Total Delay for Signalled Lanes (pcuHr):	12.87	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	58.6	Total Delay for Signalled Lanes (pcuHr):	9.28	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	15.1	Total Delay for Signalled Lanes (pcuHr):	11.88	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	26.7	Total Delay for Signalled Lanes (pcuHr):	6.08	Cycle Time (s):	60
C2		PRC for Signalled Lanes (%):	32.2	Total Delay for Signalled Lanes (pcuHr):	16.69	Cycle Time (s):	120
C3	Stream: 1	PRC for Signalled Lanes (%):	18.0	Total Delay for Signalled Lanes (pcuHr):	22.04	Cycle Time (s):	120
C3	Stream: 2	PRC for Signalled Lanes (%):	62.2	Total Delay for Signalled Lanes (pcuHr):	6.52	Cycle Time (s):	120
C4		PRC for Signalled Lanes (%):	94.5	Total Delay for Signalled Lanes (pcuHr):	1.22	Cycle Time (s):	120
C5		PRC for Signalled Lanes (%):	75.5	Total Delay for Signalled Lanes (pcuHr):	1.04	Cycle Time (s):	120
C6		PRC for Signalled Lanes (%):	-15.6	Total Delay for Signalled Lanes (pcuHr):	72.89	Cycle Time (s):	120
		PRC Over All Lanes (%):	-15.6	Total Delay Over All Lanes(pcuHr):	171.29		

D. Internalisation calculations

D.1 TEMPRO-NTS Summary

TEMPRO DATA SELECTION

Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2018
Future Year:	2031
Trip Purpose Group:	All purposes - individually
Time Period:	Weekday AM peak period (0700 - 0959)
Trip End Type:	Origin/Destination
Alternative Assumptions applied:	No
Area:	Combined Cambridge 001-004 & South Cambridgeshire 007

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Raw TEMPRO Home-Based Data Summary - AM Peak

	Area Description		HB Work		HB Employers Business		HB Education		HB Shopping		HB Personal Business		HB Recreation/Social		HB Visiting Friends and Relatives		HB Holiday/Day Trip	
	Level	Name	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	10311	9972	999	1061	8872	6243	3093	2524	1817	1643	748	698	391	414	349	361
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	544	370	71	46	56	31	11	11	10	10	5	4	0	0	7	7
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	711	311	31	13	836	516	264	178	121	75	56	32	17	14	14	10
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	1225	646	94	46	2716	2050	564	453	641	571	197	174	144	146	95	97
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	6262	7456	729	909	1247	1114	1337	1195	646	683	342	381	162	179	207	216
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	395	575	16	20	223	189	54	46	24	22	21	16	8	9	26	25
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	1174	614	56	30	3795	2345	864	639	375	282	130	88	61	65	1	4

TEMPRO Data (OD Combined) - AM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	20283	2060	15115	5617	3460	1446	805	710	49496
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	914	117	87	22	20	9	0	14	1183
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	1022	44	1352	442	196	88	31	24	3199
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	1871	140	4766	1017	1212	371	290	192	9859
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	13718	1638	2361	2532	1329	723	341	423	23065
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	970	36	412	100	46	37	17	51	1669
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	1788	86	6140	1503	657	218	126	5	10523

TEMPRO Data (OD Combined) Percentage Breakdown - AM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	41%	4%	31%	11%	7%	3%	2%	1%	100%
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	2%	0%	0%	0%	0%	0%	0%	0%	2%
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	2%	0%	3%	1%	0%	0%	0%	0%	6%
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	4%	0%	10%	2%	2%	1%	1%	0%	20%
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	28%	3%	5%	5%	3%	1%	1%	1%	47%
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	2%	0%	1%	0%	0%	0%	0%	0%	3%
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	4%	0%	12%	3%	1%	0%	0%	0%	21%

TEMPRO Data (OD Combined) Percentage Breakdown by Journey Purpose - AM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	100%	100%	100%	100%	100%	100%	100%	100%	100%
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	5%	6%	1%	0%	1%	1%	0%	2%	2%
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	5%	2%	9%	8%	6%	6%	4%	3%	6%
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	9%	7%	32%	18%	35%	26%	36%	27%	20%
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	68%	79%	16%	45%	38%	50%	42%	60%	47%
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	5%	2%	3%	2%	1%	3%	2%	7%	3%
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	9%	4%	41%	27%	19%	15%	16%	1%	21%

TEMPRO Data (OD Combined) Percentage Breakdown by Mode - AM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**41%**	**4%**	**31%**	**11%**	**7%**	**3%**	**2%**	**1%**	**100%**
RailUnderground	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**77%**	**10%**	**7%**	**2%**	**2%**	**1%**	**0%**	**1%**	**100%**
BusCoach	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**32%**	**1%**	**42%**	**14%**	**6%**	**3%**	**1%**	**1%**	**100%**
Car Passenger	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**19%**	**1%**	**48%**	**10%**	**12%**	**4%**	**3%**	**2%**	**100%**
Car Driver	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**59%**	**7%**	**10%**	**11%**	**6%**	**3%**	**1%**	**2%**	**100%**
Cycle	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**58%**	**2%**	**25%**	**6%**	**3%**	**2%**	**1%**	**3%**	**100%**
Walk	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**17%**	**1%**	**58%**	**14%**	**6%**	**2%**	**1%**	**0%**	**100%**

TEMPRO DATA SELECTION

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Dataset Version:	72	
Result Type:	Trip ends by time period	
Base Year:	2018	
Future Year:	2031	
Trip Purpose Group:	All purposes - individually	
Time Period:	Weekday PM peak period (1600 - 1859)	
Trip End Type:	Origin/Destination	
Alternative Assumptions applied:	No	
Area:	Combined	Cambridge 001-004 & South Cambridgeshire 007

Raw TEMPRO Home-Based Data Summary - PM Peak

	Area Description		HB Work		HB Employers Business		HB Education		HB Shopping		HB Personal Business		HB Recreation/Social		HB Visiting Friends and Relatives		HB Holiday/Day Trip	
	Level	Name	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	8236	8641	1011	990	1601	2421	4036	4462	1965	2100	2876	2811	3003	3127	905	956
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	238	348	41	57	9	17	24	36	10	14	30	31	26	27	23	27
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	260	551	19	40	93	191	146	264	71	109	102	130	120	150	36	44
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	670	1125	66	104	447	644	955	1071	499	539	1127	1083	898	947	339	364
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	5963	5179	812	688	503	552	1994	1994	942	923	1080	1041	1272	1268	391	390
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	480	344	26	22	45	54	76	74	33	34	62	61	82	79	104	107
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	623	1093	48	79	506	962	841	1023	409	480	473	465	606	654	14	26

TEMPRO Data (OD Combined) - PM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	16877	2001	4022	8498	4065	5687	6130	1861	49141
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	586	98	26	60	24	61	53	50	958
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	811	59	284	410	180	232	270	80	2326
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	1795	170	1091	2026	1038	2210	1845	703	10878
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	11142	1500	1055	3988	1865	2121	2540	781	24992
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	824	48	99	150	67	123	161	211	1683
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	1716	127	1468	1864	889	938	1260	40	8302

TEMPRO Data (OD Combined) Percentage Breakdown - PM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	34%	4%	8%	17%	8%	12%	12%	4%	100%
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	1%	0%	0%	0%	0%	0%	0%	0%	2%
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	2%	0%	1%	1%	0%	0%	1%	0%	5%
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	4%	0%	2%	4%	2%	4%	4%	1%	22%
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	23%	3%	2%	8%	4%	4%	5%	2%	51%
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	2%	0%	0%	0%	0%	0%	0%	0%	3%
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	3%	0%	3%	4%	2%	2%	3%	0%	17%

TEMPRO Data (OD Combined) Percentage Breakdown by Journey Purpose - PM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	Combined	Cambridge 001-004 & South Cambridgeshire 007	100%	100%	100%	100%	100%	100%	100%	100%	100%
RailUnderground	Combined	Cambridge 001-004 & South Cambridgeshire 007	3%	5%	1%	1%	1%	1%	1%	3%	2%
BusCoach	Combined	Cambridge 001-004 & South Cambridgeshire 007	5%	3%	7%	5%	4%	4%	4%	4%	5%
Car Passenger	Combined	Cambridge 001-004 & South Cambridgeshire 007	11%	8%	27%	24%	26%	39%	30%	38%	22%
Car Driver	Combined	Cambridge 001-004 & South Cambridgeshire 007	66%	75%	26%	47%	46%	37%	41%	42%	51%
Cycle	Combined	Cambridge 001-004 & South Cambridgeshire 007	5%	2%	2%	2%	2%	2%	3%	11%	3%
Walk	Combined	Cambridge 001-004 & South Cambridgeshire 007	10%	6%	36%	22%	22%	16%	21%	2%	17%

TEMPRO Data (OD Combined) Percentage Breakdown by Mode - PM Peak

			HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**34%**	**4%**	**8%**	**17%**	**8%**	**12%**	**12%**	**4%**	**100%**
RailUnderground	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**61%**	**10%**	**3%**	**6%**	**3%**	**6%**	**6%**	**5%**	**100%**
BusCoach	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**35%**	**3%**	**12%**	**18%**	**8%**	**10%**	**12%**	**3%**	**100%**
Car Passenger	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**17%**	**2%**	**10%**	**19%**	**10%**	**20%**	**17%**	**6%**	**100%**
Car Driver	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**45%**	**6%**	**4%**	**16%**	**7%**	**8%**	**10%**	**3%**	**100%**
Cycle	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**49%**	**3%**	**6%**	**9%**	**4%**	**7%**	**10%**	**13%**	**100%**
Walk	**Combined**	**Cambridge 001-004 & South Cambridgeshire 007**	**21%**	**2%**	**18%**	**22%**	**11%**	**11%**	**15%**	**0%**	**100%**

NTS JOURNEY PURPOSE BY TIME

MOTT MACDONALD

Table NTS0502 Trip start time by trip purpose (Monday to Friday only): England, 2013/17

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other	All purposes	Unweighted sample size (trips '000s)
00:00-01:00	41	4	0	0	3	11	35	6	100	1
01:00-02:00	49	3	1	0	2	9	32	4	100	1
02:00-03:00	63	4	0	0	1	8	15	10	100	0
03:00-04:00	64	6	1	0	2	6	12	9	100	1
04:00-05:00	70	8	1	0	1	7	3	10	100	2
05:00-06:00	76	7	0	0	1	6	3	7	100	7
06:00-07:00	68	7	1	0	2	9	4	9	100	20
07:00-08:00	50	6	14	5	3	14	4	5	100	58
08:00-09:00	21	3	29	22	4	14	3	3	100	122
09:00-10:00	11	5	3	8	22	26	14	10	100	60
10:00-11:00	5	4	2	1	34	25	16	13	100	62
11:00-12:00	5	4	2	2	36	24	18	10	100	63
12:00-13:00	7	5	3	2	31	24	20	8	100	60
13:00-14:00	10	5	2	1	29	24	19	9	100	57
14:00-15:00	10	4	4	10	25	21	18	9	100	64
15:00-16:00	7	2	26	21	12	14	12	6	100	116
16:00-17:00	22	4	7	4	15	21	18	9	100	78
17:00-18:00	33	4	3	2	12	20	19	7	100	79
18:00-19:00	22	3	1	1	14	18	32	9	100	58
19:00-20:00	12	2	1	0	15	19	42	9	100	39
20:00-20:00	13	2	1	0	13	16	44	9	100	24
21:00-22:00	15	3	1	0	8	16	50	8	100	17
22:00-23:00	21	3	0	0	4	12	53	6	100	12
23:00-00:00	22	2	1	0	3	12	55	5	100	6
All day	18	4	9	7	17	19	18	8	100	1005

Weighted Data

Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Social/ entertain- ment	Holiday/ Day trip/ Other	All purposes
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	2
5	0	0	0	0	0	0	0	7
13	1	0	0	0	2	1	2	20
29	3	8	3	2	8	2	3	58
25	4	35	27	5	17	4	4	122
7	3	2	5	13	16	9	6	60
3	3	1	0	21	15	10	8	62
3	3	1	1	23	15	11	6	63
4	3	2	1	19	15	12	5	60
6	3	1	1	17	14	11	5	57
6	3	2	6	16	13	11	6	64
8	3	30	24	14	16	14	7	116
17	3	5	3	12	17	14	7	78
26	3	2	2	10	16	15	5	79
13	2	1	0	8	11	18	5	58
4	1	0	0	6	7	16	4	39
3	1	0	0	3	4	11	2	24
2	0	0	0	1	3	8	1	17
2	0	0	0	0	1	6	1	12
1	0	0	0	0	1	3	0	6
185	39	91	72	169	191	179	79	1005

Table NTS0503 Trip purpose by trip start time (Monday to Friday only): England, 2013/17

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other	All purposes
00:00-01:00	0	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0	0
04:00-05:00	1	0	0	0	0	0	0	0	0
05:00-06:00	3	1	0	0	0	0	0	1	1
06:00-07:00	8	4	0	0	0	1	1	2	2
07:00-08:00	16	8	9	4	1	4	1	4	6
08:00-09:00	14	10	38	36	3	9	2	5	12
09:00-10:00	3	8	2	6	8	8	5	7	6
10:00-11:00	2	7	1	0	12	8	5	10	6
11:00-12:00	2	7	1	1	13	8	6	8	6
12:00-13:00	2	7	2	2	11	8	7	6	6
13:00-14:00	3	7	1	1	10	7	6	7	6
14:00-15:00	3	6	2	9	9	7	6	7	6
15:00-16:00	4	7	32	33	8	8	7	8	11
16:00-17:00	9	9	6	4	7	9	8	9	8
17:00-18:00	15	8	2	2	6	9	9	7	8
18:00-19:00	7	4	1	0	5	6	10	7	6
19:00-20:00	3	2	0	0	4	4	9	5	4
20:00-20:00	2	2	0	0	2	2	6	3	3
21:00-22:00	1	1	0	0	1	1	5	2	2
22:00-23:00	1	1	0	0	0	1	4	1	1
23:00-00:00	1	0	0	0	0	0	2	0	1
All day	100	100	100	100	100	100	100	100	100
Unweighted sample size (trips, :000's)	172	39	93	77	163	190	187	83	1005

Weighted Data

Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Social/ entertain- ment	Holiday/ Day trip/ Other	All purposes
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	2
5	0	0	0	0	0	0	1	7
13	1	0	0	0	2	1	2	21
28	3	9	3	2	8	2	3	59
23	4	36	28	5	17	4	4	120
6	3	2	5	12	15	9	6	58
3	3	1	0	20	15	10	8	60
3	3	1	1	21	15	12	6	62
4	3	2	1	18	15	12	5	60
5	3	1	1	16	14	11	6	57
6	3	2	7	15	13	11	6	63
8	3	30	25	13	16	14	7	113
16	3	5	3	12	17	15	7	79
25	3	2	2	9	16	16	6	81
12	2	1	0	8	11	20	6	60
4	1	0	0	6	7	17	4	40
3	1	0	0	3	4	12	3	25
2	0	0	0	1	3	9	1	17
2	0	0	0	0	1	7	1	12
1	0	0	0	0	1	4	0	7
172	39	93	77	163	190	187	83	1005

NTS Calculated trip purpose by trip start time (Monday to Friday only): England, 2:009/13 - Based on tables NTS0502 and NTS0503

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other	All purposes
00:00-01:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
01:00-02:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
02:00-03:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
03:00-04:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
04:00-05:00	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
05:00-06:00	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
06:00-07:00	1.3	0.1	0.0	0.0	0.0	0.2	0.1	0.2	2
07:00-08:00	2.8	0.3	0.8	0.3	0.2	0.8	0.2	0.3	6
08:00-09:00	2.4	0.4	3.5	2.7	0.5	1.7	0.4	0.4	12
09:00-10:00	0.6	0.3	0.2	0.5	1.3	1.5	0.9	0.6	6
10:00-11:00	0.3	0.3	0.1	0.0	2.0	1.5	1.0	0.8	6
11:00-12:00	0.3	0.3	0.1	0.1	2.2	1.5	1.1	0.6	6
12:00-13:00	0.4	0.3	0.2	0.1	1.8	1.5	1.2	0.5	6
13:00-14:00	0.5	0.3	0.1	0.1	1.6	1.4	1.1	0.5	6
14:00-15:00	0.6	0.2	0.2	0.7	1.5	1.3	1.1	0.6	6
15:00-16:00	0.8	0.3	3.0	2.5	1.3	1.6	1.4	0.7	12
16:00-17:00	1.6	0.3	0.5	0.3	1.2	1.7	1.4	0.7	8
17:00-18:00	2.6	0.3	0.2	0.2	0.9	1.6	1.6	0.6	8
18:00-19:00	1.2	0.2	0.1	0.0	0.8	1.1	1.9	0.6	6
19:00-20:00	0.4	0.1	0.0	0.0	0.6	0.7	1.7	0.4	4
20:00-20:00	0.3	0.1	0.0	0.0	0.3	0.4	1.1	0.2	2
21:00-22:00	0.2	0.0	0.0	0.0	0.1	0.3	0.9	0.1	2
22:00-23:00	0.2	0.0	0.0	0.0	0.0	0.1	0.6	0.1	1
23:00-00:00	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.0	1
All day	18	4	9	7	17	19	18	8	100

Weighted Data - Derived from weighted data extracted from tables NTS0502 and NTS0503

Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Social/ entertain- ment	Holiday/ Day trip/ Other	All purposes
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	2
5	0	0	0	0	0	0	0	7
13	1	0	0	0	2	1	2	20
28	3	8	3	2	8	2	3	58
24	4	36	27	5	17	4	4	121
6	3	2	5	13	15	9	6	59
3	3	1	0	21	15	10	8	61
3	3	1	1	22	15	12	6	63
4	3	2	1	18	15	12	5	60
5	3	1	1	16	14	11	5	57
6	3	2	7	15	13	11	6	63
8	3	30	25	13	16	14	7	116
16	3	5	3	12	17	14	7	78
26	3	2	2	10	16	16	6	79
12	2	1	0	8	11	19	6	59
4	1	0	0	6	7	17	4	40
3	1	0	0	3	4	11	2	25
2	0	0	0	1	3	9	1	17
2	0	0	0	0	1	6	1	12
1	0	0	0	0	1	4	0	7
177	39	92	75	167	190	182	81	1005

TEMPRO / NTS JOURNEY PURPOSE BY TIME - RATIONALISATION AND COMPARISON - AM Peak

MOTT MACDONALD

Weekday AM peak period (0700 - 0959)

08:00-09:00 Peak Period

NTS Calculated trip purpose by trip start time (Monday to Friday only): England, 2:009/13 - Based on tables NTS0502 and NTS0503

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other	All purposes
00:00-01:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
01:00-02:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
02:00-03:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
03:00-04:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
04:00-05:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
05:00-06:00	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1%
06:00-07:00	1.3%	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%	0.2%	2%
07:00-08:00	2.8%	0.3%	0.8%	0.3%	0.2%	0.8%	0.2%	0.3%	6%
08:00-09:00	2.4%	0.4%	3.5%	2.7%	0.5%	1.7%	0.4%	0.4%	12%
09:00-10:00	0.6%	0.3%	0.2%	0.5%	1.3%	1.5%	0.9%	0.6%	6%
10:00-11:00	0.3%	0.3%	0.1%	0.0%	2.0%	1.5%	1.0%	0.8%	6%
11:00-12:00	0.3%	0.3%	0.1%	0.1%	2.2%	1.5%	1.1%	0.6%	6%
12:00-13:00	0.4%	0.3%	0.2%	0.1%	1.8%	1.5%	1.2%	0.5%	6%
13:00-14:00	0.5%	0.3%	0.1%	0.1%	1.6%	1.4%	1.1%	0.5%	6%
14:00-15:00	0.6%	0.2%	0.2%	0.7%	1.5%	1.3%	1.1%	0.6%	6%
15:00-16:00	0.8%	0.3%	3.0%	2.5%	1.3%	1.6%	1.4%	0.7%	12%
16:00-17:00	1.6%	0.3%	0.5%	0.3%	1.2%	1.7%	1.4%	0.7%	8%
17:00-18:00	2.6%	0.3%	0.2%	0.2%	0.9%	1.6%	1.6%	0.6%	8%
18:00-19:00	1.2%	0.2%	0.1%	0.0%	0.8%	1.1%	1.9%	0.6%	6%
19:00-20:00	0.4%	0.1%	0.0%	0.0%	0.6%	0.7%	1.7%	0.4%	4%
20:00-20:00	0.3%	0.1%	0.0%	0.0%	0.3%	0.4%	1.1%	0.2%	2%
21:00-22:00	0.2%	0.0%	0.0%	0.0%	0.1%	0.3%	0.9%	0.1%	2%
22:00-23:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.6%	0.1%	1%
23:00-00:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	1%
All day	18%	4%	9%	7%	17%	19%	18%	8%	100%

NTS Data by Hour in AM peak

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other	All purposes
07:00-08:00	11.9%	1.4%	3.5%	1.2%	0.8%	3.4%	0.9%	1.3%	24%
08:00-09:00	10.2%	1.7%	14.9%	11.5%	2.0%	7.0%	1.7%	1.8%	51%
09:00-10:00	2.7%	1.3%	0.8%	2.0%	5.4%	6.5%	3.7%	2.6%	25%
07:00-10:00	24.7%	4.4%	19.3%	14.7%	8.1%	16.9%	6.3%	5.6%	100%

TEMPRO Data (OD Combined) Percentage Breakdown - AM Peak

	HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	41.0%	4.2%	30.5%	11.3%	7.0%	2.9%	1.6%	1.4%	100%

TEMPRO Data, Total Adjusted to Peak Hour

	HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes (Relative)	16.9%	1.6%	23.8%	2.8%	2.9%	0.8%	0.4%	0.5%	49.7%
Combined Modes - Adjusted Tempro Peak Data to Peak Hour Using NTS	**34.1%**	**3.2%**	**47.9%**	**5.6%**	**5.8%**	**1.6%**	**0.9%**	**0.9%**	**100.0%**

TEMPRO / NTS JOURNEY PURPOSE BY TIME - RATIONALISATION AND COMPARISON - PM Peak

Weekday PM peak period (1600 - 1859)

17:00-18:00 Peak Period

NTS Trip purpose by trip start time (Monday to Friday only): England, 2:009/13

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment / sport	Holiday/ Day trip/ Other	All purposes
00:00-01:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
01:00-02:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
02:00-03:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
03:00-04:00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
04:00-05:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
05:00-06:00	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1%
06:00-07:00	1.3%	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%	0.2%	2%
07:00-08:00	2.8%	0.3%	0.8%	0.3%	0.2%	0.8%	0.2%	0.3%	6%
08:00-09:00	2.4%	0.4%	3.5%	2.7%	0.5%	1.7%	0.4%	0.4%	12%
09:00-10:00	0.6%	0.3%	0.2%	0.5%	1.3%	1.5%	0.9%	0.6%	6%
10:00-11:00	0.3%	0.3%	0.1%	0.0%	2.0%	1.5%	1.0%	0.8%	6%
11:00-12:00	0.3%	0.3%	0.1%	0.1%	2.2%	1.5%	1.1%	0.6%	6%
12:00-13:00	0.4%	0.3%	0.2%	0.1%	1.8%	1.5%	1.2%	0.5%	6%
13:00-14:00	0.5%	0.3%	0.1%	0.1%	1.6%	1.4%	1.1%	0.5%	6%
14:00-15:00	0.6%	0.2%	0.2%	0.7%	1.5%	1.3%	1.1%	0.6%	6%
15:00-16:00	0.8%	0.3%	3.0%	2.5%	1.3%	1.6%	1.4%	0.7%	12%
16:00-17:00	1.6%	0.3%	0.5%	0.3%	1.2%	1.7%	1.4%	0.7%	8%
17:00-18:00	2.6%	0.3%	0.2%	0.2%	0.9%	1.6%	1.6%	0.6%	8%
18:00-19:00	1.2%	0.2%	0.1%	0.0%	0.8%	1.1%	1.9%	0.6%	6%
19:00-20:00	0.4%	0.1%	0.0%	0.0%	0.6%	0.7%	1.7%	0.4%	4%
20:00-20:00	0.3%	0.1%	0.0%	0.0%	0.3%	0.4%	1.1%	0.2%	2%
21:00-22:00	0.2%	0.0%	0.0%	0.0%	0.1%	0.3%	0.9%	0.1%	2%
22:00-23:00	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.6%	0.1%	1%
23:00-00:00	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	1%
All day	18%	4%	9%	7%	17%	19%	18%	8%	100%

NTS Data by Hour and Hour Group

	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment / sport	Holiday/ Day trip/ Other	All purposes
16:00-17:00	7.6%	1.5%	2.5%	1.5%	5.4%	7.7%	6.6%	3.3%	36%
17:00-18:00	11.9%	1.4%	1.0%	0.7%	4.4%	7.4%	7.3%	2.6%	37%
18:00-19:00	5.7%	0.8%	0.3%	0.2%	3.9%	5.0%	8.8%	2.6%	27%
16:00-19:00	25.2%	3.7%	3.8%	2.4%	13.7%	20.1%	22.7%	8.4%	100%

TEMPRO Data (OD Combined) Percentage Breakdown - PM Peak

	HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes	34.3%	4.1%	8.2%	17.3%	8.3%	11.6%	12.5%	3.8%	100%

TEMPRO Data, Total Adjusted to Peak Hour

	HB Work	HB Employers Business	HB Education	HB Shopping	HB Personal Business	HB Recreation/Social	HB Visiting Friends and Relatives	HB Holiday/Day Trip	Total
Combined Modes (Relative)	16.2%	1.5%	2.3%	5.6%	3.0%	3.7%	4.0%	1.2%	37.5%
Combined Modes - Adjusted Tempro Peak Data to Peak Hour Using NTS	**43.2%**	**4.0%**	**6.1%**	**14.8%**	**8.1%**	**9.9%**	**10.7%**	**3.1%**	**100.0%**

D.2 Resident to Work Related Trips - 2011 Census Data Analysis

Resident to Work Related Trips - 2011 Census Data Analysis

MOTT MACDONALD

QS702EW - Distance travelled to work

population	All usual residents aged 16 to 74 in employment the week before the census
units	Persons
date	2011
rural urban	Total

Distance travelled to work	E02003719 : Cambridge 001	E02003720 : Cambridge 002	E02003721 : Cambridge 003	E02003722 : Cambridge 004	E02003723 : Cambridge 005	E02003724 : Cambridge 006	E02003725 : Cambridge 007	E02003726 : Cambridge 008	E02003727 : Cambridge 009	E02003728 : Cambridge 010	E02003729 : Cambridge 011	E02003730 : Cambridge 012	E02003731 : Cambridge 013	Total
All categories: Distance travelled to w	4,822	4,528	4,969	4,809	2,817	5,241	4,359	4,532	5,589	4,890	4,578	3,938	4,365	59437
Total working	4,486	4,070	4,523	4,206	2,311	4,874	3,457	3,966	5,142	4,472	4,196	3,453	3,864	53020
Travelling less than 2km to work	1,006	1,152	1,224	1,398	753	1,042	1,522	1,853	1,661	1,319	596	1,043	1,394	15963
% <2km	22%	28%	27%	33%	33%	21%	44%	47%	32%	29%	14%	30%	36%	**30%**

WP702EW - Distance travelled to work (Workplace population)

date 2011

Distance travelled to work	E02003719 : Cambridge 001	E02003720 : Cambridge 002	E02003721 : Cambridge 003	E02003722 : Cambridge 004	E02003723 : Cambridge 005	E02003724 : Cambridge 006	E02003725 : Cambridge 007	E02003726 : Cambridge 008	E02003727 : Cambridge 009	E02003728 : Cambridge 010	E02003729 : Cambridge 011	E02003730 : Cambridge 012	E02003731 : Cambridge 013	Total
All categories: Distance travelled to w	1,680	1,583	8,002	3,284	7,100	4,511	26,445	5,187	2,712	3,840	3,112	11,648	15,086	94,190
Total working	1,344	1,125	7,556	2,681	6,594	4,144	25,543	4,621	2,265	3,422	2,730	11,163	14,585	87,773
Less than 2km	364	232	1,179	686	1,060	770	4,888	1,087	506	662	464	1,731	1,877	15,506
% <2km	27%	21%	16%	26%	16%	19%	19%	24%	22%	19%	17%	16%	13%	**18%**

D.3 Age by single year - 2011 Census Data and Calculations

Age by single year - 2011 Census Data Analysis

QS103EW - Age by single year

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population	All usual residents
units	Persons
date	2011
rural urban	Total

Age	msoa2011:E02003719 : Cambridge 001	msoa2011:E02003720 : Cambridge 002	msoa2011:E02003721 : Cambridge 003	msoa2011:E02003722 : Cambridge 004	E01018272 : South Cambridgeshire 007A	E01018273 : South Cambridgeshire 007B	E01018274 : South Cambridgeshire 007C	SOA Selection (including CSP and Milton)
All categories: Age	9,142	9,070	9,405	8,629	1,332	1,607	1,740	100.0%
Age under 1	166	135	136	94	14	19	33	1.5%
Age 1	133	125	124	86	19	25	34	1.3%
Age 2	132	121	134	91	19	22	26	1.3%
Age 3	118	95	100	89	17	10	15	1.1%
Age 4	101	100	120	83	18	12	19	1.1%
Age 5	119	75	90	82	17	14	13	1.0%
Age 6	97	91	89	83	22	21	28	1.1%
Age 7	97	76	92	84	10	21	16	1.0%
Age 8	77	70	78	68	12	17	21	0.8%
Age 9	71	81	85	71	22	11	22	0.9%
Age 10	109	92	93	68	18	18	19	1.0%
Age 11	83	85	88	63	20	16	19	0.9%
Age 12	76	57	103	69	13	24	18	0.9%
Age 13	90	74	92	75	20	18	14	0.9%
Age 14	79	78	106	65	29	21	15	1.0%
Age 15	87	86	79	79	25	13	24	1.0%
Age 16	79	85	93	73	13	17	20	0.9%
Age 17	105	89	105	94	15	15	23	1.1%
Age 18	105	127	103	89	20	25	15	1.2%
Ages 19 and over	7,218	7,328	7,495	7,123	989	1,268	1,346	80.1%

Summary Calculations		
Ages Range	Totall Childer	% of total people
Under 4	5.2%	26.1%
Aged 4 -11	7.8%	39.1%
Aged 12-18	6.9%	34.8%
Total	19.9%	100.0%

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