Broxbourne Transport Strategy Phase 2

Interim Evidence Report

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Interim Evidence Report

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Contents

1. Introduction

Transport and the economy are intrinsically linked. For the economy and wealth of the Borough of Broxbourne to grow a viable transport system is a necessity. This chapter introduces the challenges facing the borough and the need for a forward-thinking approach to transport.

1.1. Introduction

1.1.1. Transport is fundamental to the success of the United Kingdom (UK) and its economy. Throughout history, the transport network has helped to facilitate the movement of both people and goods. Innovations in transport have helped to drive the development of the economy, through mass industrialisation to the modern-day. The UK would not have experienced the economic prosperity and progress it has were it not for advancements in the transportation sector, and the access to local, national and international opportunities these have provided[1].

1.1.2. Consequently, transport is fundamental to the continuing success of local economies throughout the UK. Good transport networks help to connect communities with jobs, industry and services at the local, regional and national levels and can act as both a catalyst and facilitator of growth in local markets.

1.2. The Borough of Broxbourne

1.2.1. As with the national economy transport is essential to the continuing daily productivity of the Borough of Broxbourne providing its residents with a means to travel to work and access to goods and services. Regional links such as the A10 and the West Anglia mainline in particular are instrumental in the day-to-day life of both residents and non-residents, providing regional connectivity through Hertfordshire and onwards to London and Cambridge.

Key characteristics:

1.2.2. Travel to Work (TTW) data from the 2011 Census shows a net outflow in workers for the Borough of Broxbourne (i.e. a greater number of people leave the borough for work on a daily basis at their usual workplace than people who have their workplace within the borough). Figure 1.1 shows the key inflow origins (locations of people travelling into Broxbourne for work from other Local Authorities) and the key outflow destinations (where people travel to from Broxbourne for work). It is clear that the link and proximity with London is critical to the economic prosperity of the borough but so too are the linkages with neighbouring districts in Hertfordshire and Essex, in particular East Hertfordshire.

1.2.3. These data are backed-up by the underlying Travel to Work dataset, which shows both car and rail usage for trips originating with the Borough of Broxbourne being higher than the national averages for England; rail usage is also higher than the average for the East of England region, reflecting the proximity of the borough to London. These data are summarised in Table 1.1, which presents data for the Borough of Broxbourne against that of its parent county, Hertfordshire, the East of England region and the whole of England.

[1] Memorandum from the London Chamber of Commerce and Industry (LCCI). Response to the Transport Select Committee's call for evidence in regards to 'Transport and the Economy', 2010-2011. http://www.publications.parliament.uk/pa/cm201011/cmselect/cmtran/writev/economy/te77.htm

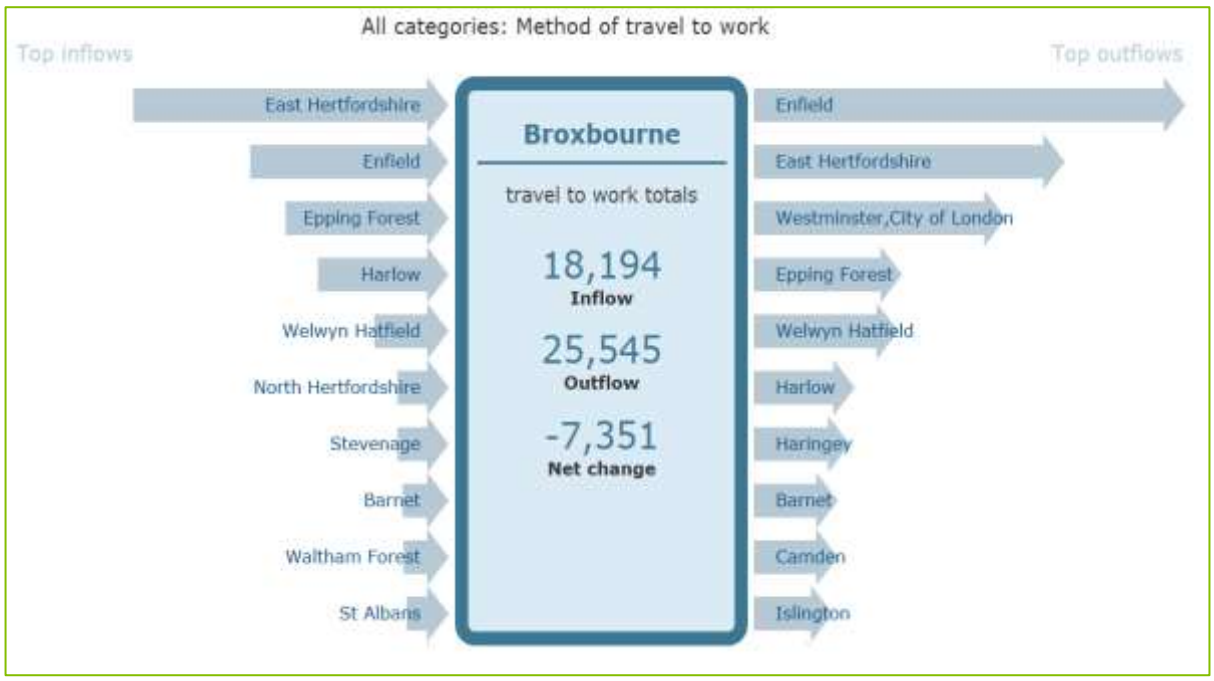
Table 1.1 – Travel to work statistics for Borough of Broxbourne and key comparators

Mode of Travel	Borough of Broxbourne	Hertfordshire	East of England	England
Walking	6.6%	8.5% ▲	9.1% ▲	9.8% ▲
Cycling	1.3%	1.6% ▲	3.4% ▲	2.9% ▲
Car: Driver	59.8%	56.7% ▼	58.4%	54.0% ▼
Car: Passenger	4.4%	4.0% ▲	4.9% ▲	4.9% ▲
Motorcycle, scooter or moped	0.8%	0.7% ▼	0.8% ◄►	0.8% ◄►
Taxi	1.0%	0.4% ▼	0.4% ▼	0.5% ▼
Bus, Minibus or Coach	2.9%	3.1% ▲	3.7% ▲	7.3% ▲
Train	11.8%	11.2% ▼	7.0% ▼	5.2% ▼
Other	2.5%	2.3% ▼	1.1% ▼	4.0% ▲

▲ indicates that the comparator has a higher mode share than Broxbourne

▼ indicates that the comparator has a lower mode share than Broxbourne

◄► indicates that Broxbourne and the comparator have the same mode share



Source: Nomis (https://www.nomisweb.co.uk/census/2011/wu03uk/chart)

Figure 1.1 – Key origins and destinations for work trips in Borough of Broxbourne

Key current and known issues:

1.2.4. The higher-than-average use of cars in the borough and the location and nature of the A10 as a route that bisects the area has been recognised as an issue affecting the local community[2]. High traffic volumes, wide roads and a lack of at-grade (surface level) crossing facilities can all contribute to the effects of community severance and thus impact the quality of life within the borough.

1.2.5. The A10 is recognised as having a significant severing effect on the local network. This severance affects not just the direct walking and cycling routes between the communities either side of the A10, but also impacts the accessibility to rail stations (all located east of the A10) and perceived feasibility of this as a mode of travel. The railway itself is also recognised as contributing to community severance: low quality crossings (either on the level or some footbridges which are unsuitable for those with impaired mobility) all impair movement along potential desire lines.

[2] Existing Conditions, Issues and Opportunities Report. AECOM. May 2016.

Community severance:

Community severance may be defined as:

"the separation of residents from facilities and services they use within their community, from friends and relations and, perhaps, from place of work as a result of changes in road patterns and traffic levels",

Or, more simply;

"the sum of the divisive effects a road has on those in the locality"

Source: The appraisal of community severance. Crowthorne, Berks.: Transport Research Laboratory; 1991

1.2.6. In addition to the severance issues noted, review of the borough's transport network undertaken to form part of the evidence base for the Local Plan has highlighted a number of different issues. These issues span all modes, covering walking, cycling, bus, rail and road. A summary of the key issues is given below.

Table 1.2 – Summary of key issues identified by mode of travel

Mode of travel	Summary of Issues
Walking	• Low quality, narrow footways and unappealing public realm in places , accompanies by poor connections to other modes discourages walking • A10 severs communities. Perception that there are many main and busy roads to cross • Poor access arrangements to shops at Brookfield – entrances to buildings on wrong side of pedestrian access from Halfhide Lane • Low desire to walk due to prevailing car use and car-focussed facilities. Health issues surrounding obesity.
Cycling	• High level of conflict with pedestrians – shared-use paths are signed but poorly executed (lack of supporting facilities) • Disconnected cycle network – leisure routes west of A10, but poor connections to the east • False sense of security afforded by low quality, worn painted lanes on A1170 and other routes – still a high level of conflict with road traffic • No coordinated strategy with neighbouring authorities – no plans for linking with London Borough of Enfield 'mini-Holland' funding / schemes • Lack of secure parking at workplaces, schools and other interchanges
Bus	• Poor intermodal accessibility / interchange between bus and train • Lack of consistent bus priority measures within borough • No express services, so long bus journeys to access facilities compared to car • Single central bus station in borough is located away from many facilities • Perceived poor quality of infrastructure and low standard vehicles
Rail	• Poor intermodal accessibility / interchange between bus and train • At-grade crossings of the railway create severance / delay for access to stations • Low frequency of trains on Seven Sister's branch line and lack of facilities near to major developments
Road	• Congestion on the A10 at at-grade junctions, particularly with College Road and Church Lane • Delays approaching M25 junction southbound in the AM peak • Strategic nature of A10 and M25 means that there is an element of delay caused by trips not related to Broxbourne • Congestion on the A121 in Waltham Cross as junctions block-back through other junctions • Road standards poor in the west of the borough (e.g. near Goff's Oak) – roads are evolution of local road network, not necessarily suitable for a growing population

1.2.7. All of these are covered in greater detail in the 'Existing Conditions, Issues and Opportunities Report' (ECIOR), AECOM, May 2016. As the ECIOR forms the initial evidence base to support the Transport Strategy, it is recommended that it is read in conjunction with this Interim Report.

Likely future issues:

1.2.8. The Borough of Broxbourne and Hertfordshire County Council (HCC) have previously undertaken a number of studies to examine the transport issues that the Borough is likely to face in the future. These studies have predominantly focussed on concerns on the highway (road) network. The key studies are:

- 'Delivering Strategies: Broxbourne transport modelling', MVA consultancy, July 2010;
- 'Cheshunt and Waltham Cross A10 Study', Mouchel, August 2011; and
- 'Broxbourne Transport Study', JMP, February 2014.

1.2.9. The age of the studies means that none of these is aligned with the latest Local Plan growth forecasts. Additionally, many of these have been produced under different planning policies that may not reflect current guidance and legislation. The varying complexity of the evidence base in these studies also places some uncertainty on the conclusions.

1.2.10. However, the studies have reached some consistent conclusions in that a number of junctions on the A10 are likely to be stressed and suffer high congestion in the future even without consideration of additional Local Plan growth. These include the junctions of:

- The A10 with the M25 (Junction 25);
- The A10 and College Road (B198), Cheshunt; and
- The A10 and Church Lane, Cheshunt.

1.2.11. The studies have also indicated that the following junctions are likely to suffer from high congestion as a result of planned growth:

- The junction of the B156 Goff's Lane and the B198 Lieutenant Ellis Way in Cheshunt; and
- The roundabout of the A121 Winston Churchill Way with High Street in Waltham Cross.

1.2.12. As part of this Local Plan process, the highway modelling evidence base has been updated to incorporate levels of growth that are consistent with the proposed Local Plan quantum and allocations. The models have also been updated to reflect latest guidance from the Department for Transport.

1.2.13. Forecasts using the model show significant growth in traffic. Table 1.3 shows the growth in traffic across the whole model area (just wider than the Broxbourne borough boundary) by vehicle type from 2013. Car growth in the borough is forecast to increase by 19% to 2023 and by 29% to 2033 as a result of solely changes in economic conditions and committed developments (i.e. those that already have planning consent). Adding in developments proposed in the Local Plan, these figures increase by a further 6% in 2023 and a further 9% in 2033, reflecting the fact that the Local Plan intends to bring development forward in earlier years of the plan to cater for a current unmet need.

1.2.14. Growth in Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) is based on government forecasts and show large growth in LGVs, which follows recent trends for smaller but more frequent freight and goods delivery[3]. The limitations of the model mean that no new HGV or LGV trips are associated with the proposed Local Plan growth.

1.2.15. In the 'Without Local Plan' models, new network infrastructure has only been included where it is 'near certain' or 'more than likely' to occur, in line with Department for Transport (DfT) guidance. In this case, this includes the M25 Junction 25 improvement scheme proposed by Highways England.

1.2.16. For the 'With Local Plan' models, no new infrastructure is included unless it is part of the stated planning conditions or Masterplan for the development. The Park Plaza West masterplan indicates

[3] Van travel trends in Great Britain. AECOM and RAC Foundation. April 2014. http://www.racfoundation.org/assets/rac_foundation/content/downloadables/van_report_aecom_100414.pdf

improvements to the A10 / Lieutenant Ellis Way roundabout in the form of a 'hamburger' junction – these have been included as the improvement will come forward with the development.

Table 1.3 – Percentage change in trips between 2013 and Future Years

Time Period	Vehicle Type	Without Local Plan		With Local Plan		Difference due to Local Plan	
		2023	2033	2023	2033	2023	2033
AM Peak Hour	Car	19%	29%	25%	38%	6%	9%
	LGV	26%	53%	26%	53%	-	-
	HGV	9%	20%	9%	20%	-	-
PM Peak Hour	Car	21%	31%	28%	43%	7%	12%
	LGV	26%	53%	26%	53%	-	-
	HGV	9%	20%	9%	20%	-	-

1.2.17. General statistics from the model show an increase in travel times of between 45% and 55% (AM and PM peak hours respectively) between 2013 and 2023, and between 75% and 102% (AM and PM peak respectively) to 2033 across the whole of Broxbourne. Across the same periods, distance travelled increases more in-line with that of the Local Plan growth, increasing by 22% to 2023 and 34% to 2033. This suggests that a significant amount of traffic is predicted to be queued on the highway network in the future years with the proposed Local Plan growth.

1.2.18. The traffic models have been interrogated to identify those junctions that are likely to be stressed in future years, both with and without Local Plan growth. Junctions under stress are defined by those that have both large delays and Volume-to-Capacity (V/C) ratios of greater than 90% (i.e. flow on the link approaching the junction is 90% of the theoretical capacity). These locations are highlighted in Table 1.4, which indicates a number of highly congested locations.

Table 1.4 – Junctions with high congestion and delay

Location	Without Local Plan				With Local Plan			
	2023		2033		2023		2033	
	AM	PM	AM	PM	AM	PM	AM	PM
M25 Junction 25*		✓		✓		✓		✓
A10/ Lieutenant Ellis Way**	✓	✓	✓	✓				
A10 / College Road	✓	✓	✓	✓	✓	✓	✓	✓
A10 / Church Lane	✓	✓	✓	✓	✓	✓	✓	✓
A10 / Theobalds Lane				✓		✓		✓
A10 / Great Eastern Road							✓	✓
A121 / High Street / Monarch's Way	✓		✓	✓	✓	✓	✓	✓
A121 / Monarch's Way / Abbey Road	✓		✓	✓	✓	✓	✓	✓
High Street / Lodge Crescent		✓	✓	✓		✓	✓	✓
B156 / Cheshunt Wash		✓	✓	✓	✓	✓	✓	✓
A1170 / B194 Station Road							✓	✓
B176 Turner's Hill / Windmill Lane					✓		✓	✓
Goff's Lane / Cuffley Hill / Newgatestreet Road							✓	✓

* M25 Junction 25 has different improvements coded in 2023 and 2033, reflecting the potential phasing of improvements at this junction by Highways England as part of the RIS.

** A10 / Lieutenant Ellis Way roundabout is upgraded to a 'hamburger' style junction and extended 'longabout' on the western arm in the Local Plan tests as part of the Park Plaza West proposals.

1.2.19. The latest modelling confirms previous studies in noting that the A10 junctions with College Road and Church Lane are likely to experience significant congestion issues irrespective of Local Plan growth coming forward. In addition to these two locations however, the A10 roundabout with Lieutenant Ellis Way and three locations within Waltham Cross (the A121 junctions with High Street and Abbey Road, and the High Street / Lodge Crescent junction) are shown to have large delays and V/Cs.

1.2.20. With the Local Plan developments in place, the additional junctions of the A1170 / B194 Station Road (Cheshunt), B176 Turner's Hill / Windmill Lane (Broxbourne) and Goff's Lane / Cuffley Hill / Newgatestreet Road (Goff's Oak) are all shown to come under pressure with higher delays and V/Cs forecast. This is due to their proximity to new proposed developments are the routeing of trips from these developments.

1.2.21. It is notable that the A10 / Lieutenant Ellis Way junction actually improves with the proposed Local Plan growth being added, despite large growth sites identified at the Park Plaza and Park Plaza West sites. This improvement is due to the improvements at the roundabout proposed by the Park Plaza West developer, which would see an extended 'longabout' on the western side and a 'hamburger' style junction giving greater priority to A10 movements. It should be noted that the Broxbourne SATURN model is not capable of assessing the detailed operational performance of the junction, but instead provides indications of likely performance. A set of detailed junction models or a corridor microsimulation model is required for a detailed operational assessment of the junction.

1.2.22. Forecasts show that the A10 comes under increasing pressure in the future, in part due to the proposed Local Plan developments, but also as a result of planned growth that already has planning consent. Modelling results show that, by 2023, there is a forecast increase in trips of upto 11% on the A10 solely as a result of Local Plan growth; by 2033, this increases to 14%. This increase in traffic is predominantly traffic associated with proposed developments in the Local Plan, although a small percentage is due to re-routeing of non-Local Plan trips from other roads in the network as they too start to become congested. Figure 1.2 shows Local Plan-related trips as a percentage of total trips on the A10 at various locations within the Borough of Broxbourne.

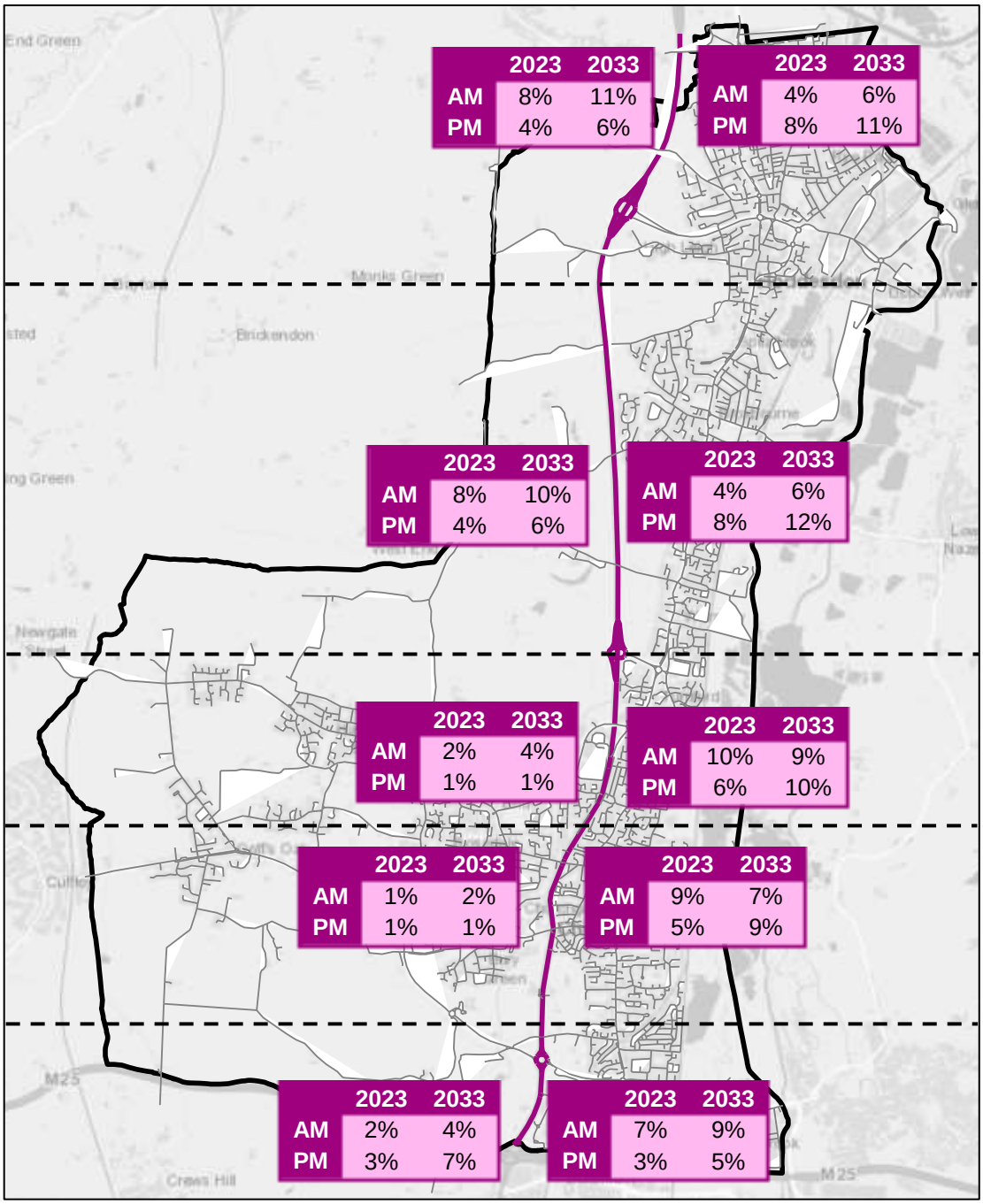


Figure 1.2 –Local Plan –related development flows on A10 as percentage of total flows

1.2.23. Journey times along the A10 have been assessed to ascertain the impacts in the future years; these are presented in Table 1.5. Timings from the model in 2013 are similar to other data sources. The times shows reasonable increases in travel times to 2023 with the proposed Local Plan developments, the Local Plan development trips tending to add between one and two additional minutes travel time. Increases are greatest in the peak flow directions, with AM southbound times increasing by 21% (2 minutes 19 seconds) and PM northbound times increasing by 16% (just under 2 minutes).

1.2.24. Increases in travel times to 2033 are more significant, the impacts of proposed Local Plan development traffic becoming more evident – particularly southbound in the AM peak and northbound in the PM peak, where travel times are forecast to be double that of current travel times on the corridor, without any mitigation in place.

1.2.25. Average speeds have been extracted from the same section of the A10. These are presented in Table 1.6 in kilometres per hour (km/h). As the speeds are averages, there are sections of the road and approaches to junctions where speeds are higher and lower than the route average presented.

1.2.26. Speeds northbound are generally slower than speeds southbound. Reflecting the increase in travel times, speeds on the A10 are reduced by up to half from 2013 to 2033. What the models do show, however, is that congestion at the junctions is resulting in average speeds as low as 25 km/h on a road that is suburban dual-carriageway standard, thus speeds are far below the design of the road. This indicates that the junctions are coming under significant pressure operationally.

Table 1.5 – Comparison of Journey Times (minutes:seconds) on A10

				Without Local Plan		With Local Plan	
Route	**Time Period**	**Direction**	**2013**	**2023**	**2033**	**2023**	**2033**
Between M25 Junction 25 and A1170 (Dinant Link Road, Hoddesdon)	AM Peak	NB	09:30	10:32	11:27	11:21	14:29
		SB	09:32	10:44	13:01	13:03	18:43
	PM Peak	NB	10:29	12:27	13:50	14:24	21:36
		SB	09:37	10:56	12:35	11:46	16:16

Table 1.6 – Comparison of average speeds (kilometres per hour) on A10

				Without Local Plan		With Local Plan	
Route	**Time Period**	**Direction**	**2013**	**2023**	**2033**	**2023**	**2033**
Between M25 Junction 25 and A1170 (Dinant Link Road, Hoddesdon)	AM Peak	NB	57	52	48	48	37
		SB	57	51	42	42	29
	PM Peak	NB	52	44	39	38	25
		SB	56	50	43	46	36

The need for a Transport Strategy for the Borough of Broxbourne:

1.2.27. Development within the borough is vital to the continuing and improved economic prosperity of the Borough of Broxbourne and its residents. This includes the provision of new dwellings and high-quality jobs. However, development – if left unchecked – is likely to further exacerbate any existing transport issues and potentially cause new problems in the absence of a viable strategy to mitigate its effects. This is highlighted by the additional junctions that are likely to come under pressure as a result of development and the large increases in travel time along the A10 corridor that are forecast.

1.2.28. A Transport Strategy is therefore required to provide a framework within which proposals may be considered and also where implementation may be monitored. The Transport Strategy will need to support and facilitate development within the Borough of Broxbourne, enabling growth by supporting the Local Plan for the period 2016-2031. The Transport Strategy will contribute to the evidence base to support the Local Plan through the planning process.

1.3. Aims and objectives of the Transport Strategy

1.3.1. At present the Local Plan for the Borough of Broxbourne is still being developed and will continue to do so following consultation in the summer of 2016 through to the point at which it is submitted to the Secretary of State (SoS) for approval.

1.3.2. The Local Plan will have to be mindful of national planning guidance as set out in the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG), both of which favour the presumption of sustainable development.

1.3.3. The aims and objectives for transport, previously set out in Broxbourne Borough Council's duty to cooperate document, support the national guidance. The overarching aims and objectives remain largely unchanged, although have been amended to identify the importance of ensuring safety in the transport network.

The Transport Strategy: Aims, Objectives and Vision

"Ensure that growth and regeneration can be safely accommodated by local roads, the A10 and the West Anglia mainline and that it encourages as many journeys as possible by bus, rail, walking and cycling so that people have a safe, viable and attractive alternative to driving"

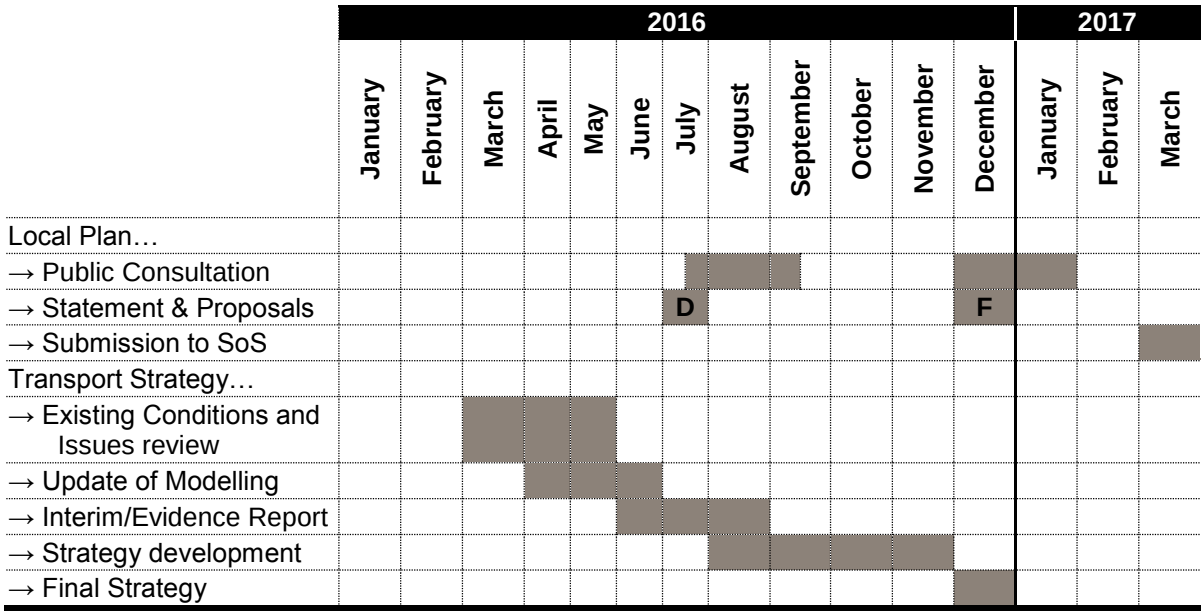
1.3.4. As the Local Plan is developed further, key sub-objectives from the council's overarching vision will be identified. These will build upon the vision, providing greater detail and focus across modes and across policy areas.

1.4. Purpose of this report

1.4.1. This Interim Report – also known as an Evidence Report – provides an update on the development of the Transport Strategy to support the development of the Local Plan. The report provides an update on the development of the evidence base that will ultimately underpin the Local Plan and sets out both the direction and requirements of work necessary to produce the final Transport Strategy.

It is important to note that this Interim Report does not constitute the final Transport Strategy. Instead, it is a record of the current development of the evidence base, or the current state of play. **D** = 'draft'; **F** = 'final'

1.4.2. Figure 1.3 shows the broad timeline and where the Interim Report fits with key submission stages of the Local Plan and the final Transport Strategy.



D = 'draft'; **F =** 'final'

Figure 1.3 – Timeline of Transport Strategy development and key Local Plan activities

1.4.3. As such, the objectives of this Interim Report are:

- To provide an update on the formation of the evidence base and work undertaken to-date;
- To build on previous studies and to update assumptions;
- To demonstrate that Borough of Broxbourne is fully committed to the development of a viable Transport Strategy that fully address the needs of the residents and other stakeholders within the borough;
- To provide direction for the development of the full Transport Strategy alongside the Local Plan through to final submission to the Secretary of State.

1.4.4. Much of this report has been put together through the update and use of existing tools to provide robust evidence. In this respect, much of the work is focussed on the highway network. It will be a requirement of the development of the full Transport Strategy to consider interventions across all modes of travel and to influence the sustainability of planned developments.

2. Approach to the Transport Strategy

The Borough of Broxbourne faces a number of challenges with regards to transport. The Transport Strategy will provide a framework to deal with these challenges and to enhance the transport network, facilitating growth and development.

2.1. Requirements of the strategy

2.1.1. The Transport Strategy will be vital in that it will not only support the proposed Local Plan through the period 2016-2031, but will actively enable its delivery. In this context, the Transport Strategy will need to have a broad base of support from residents and stakeholders, but will also need to have the support of both current and future political administrations. The strategy must therefore be sound, evidence-based and deliverable.

2.1.2. The strategy will also need to deal with the key issues that have been identified through work undertaken to-date (including the recently produced ECIOR and a supporting base of previous studies) and those which will be identified as part of the forthcoming consultation process. It is recognised that the inter-relationships between the existing and future land-uses, the condition of existing infrastructure and historical development of the transport network within Broxbourne are complex and the strategy will need to address this.

2.1.3. Furthermore, the Transport Strategy should not just provide for the proposed Local Plan period. Instead it must look forward beyond 2031. It should not prejudice the delivery of future improvements or developments and it should be supportive of likely forthcoming infrastructure and services – for example Crossrail 2, which may serve the borough from as early as 2033.

2.1.4. The strategy must also align with NPPF and the PPG. It must therefore:

- be planning-led, supporting the presumption in favour of sustainable developments;
- enhance and improve the characteristics of the borough of Broxbourne, so enhancing the lives of its residents and workers;
- encourage the effective use of land;
- support the transition to a low carbon future; and
- reduce pollution and actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, whilst ensuring that it supports development in locations that either are or can be made sustainable.

2.2. A structured approach to travel

2.2.1. In order to support and address all of the above, the Transport Strategy will need to follow a clear, logical and easy-to-understand process. The strategy must, therefore, adopt a set of rules against which objectives can be set – and importantly out-turn performance and can be monitored and measured – and against which infrastructure improvements can be assessed.

2.2.2. The best way to ensure this is to adopt a tiered or hierarchical approach to the development of the borough's transport system. An example of such an approach is set out in Figure 2.1. This embodies the principles of NPPF and PPG in favouring sustainable developments and means of travel. It also supports the view to ensuring that the Local Plan and Transport Strategy look beyond 2031: encouragement in the shift to sustainable modes of travel will, for example, help to link in the transport network with Crossrail 2 should the existing proposed route to Cheshunt and Broxbourne be adopted.

2.2.3. It is important to note that, whilst favouring reductions in travel and encouraging shifts to more sustainable transport modes, the hierarchical structure that should be adopted by the Transport Strategy would not preclude the delivery of significant improvements to the Borough of Broxbourne's road networks. Instead the hierarchy ensures that, only after sufficient investigation of the alternatives and evidence to prove that these cannot accommodate the full travel requirements of the borough, schemes may be developed. The likely result of this is that more appropriate highway schemes are developed and implemented.

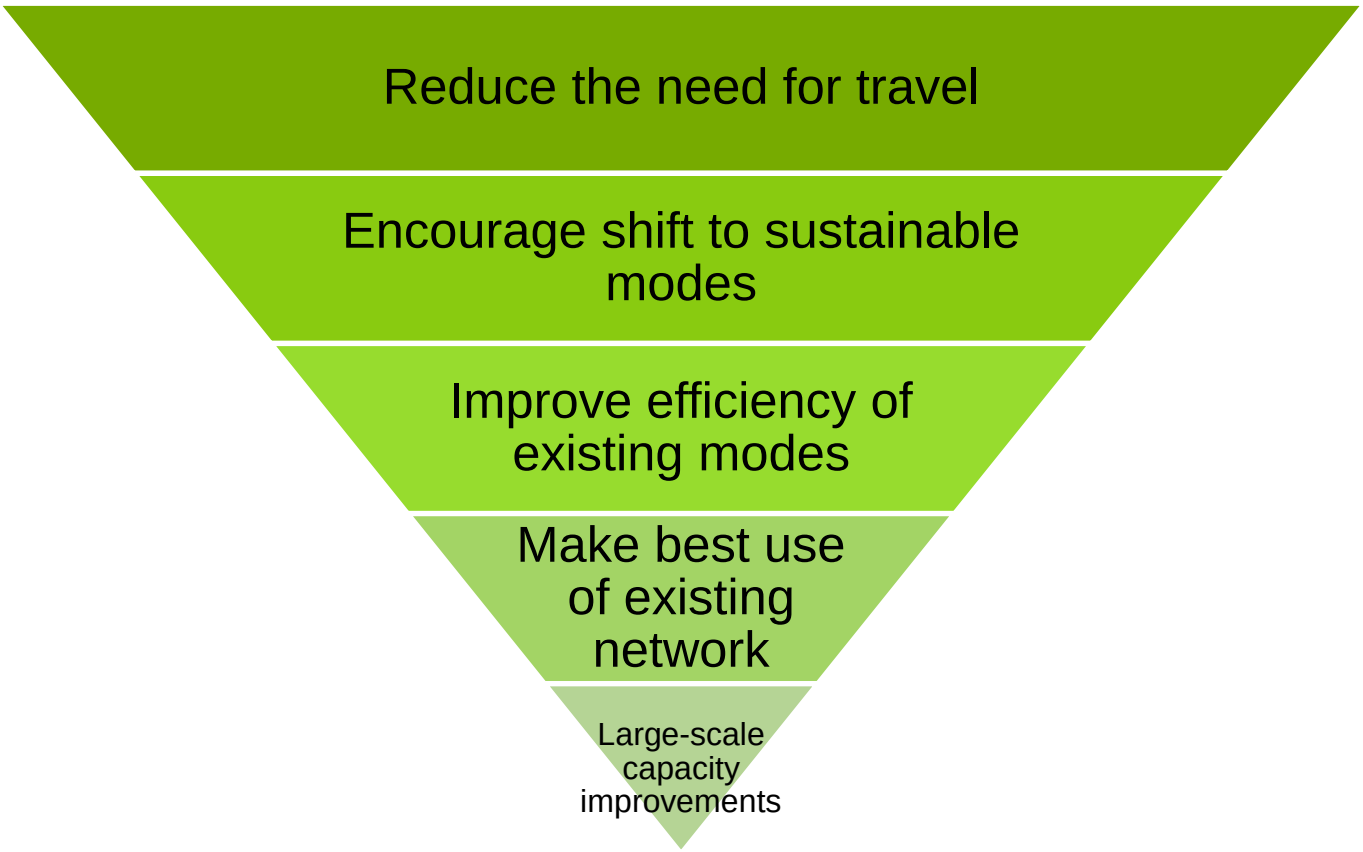


Figure 2.1 – Example of a structured, tiered approach to development of a Transport Strategy

2.2.4. Figure 2.2 provides examples as to the types of measures that should be explored and could potentially be adopted in order to ensure delivery of a Transport Strategy that meets the above requirements.

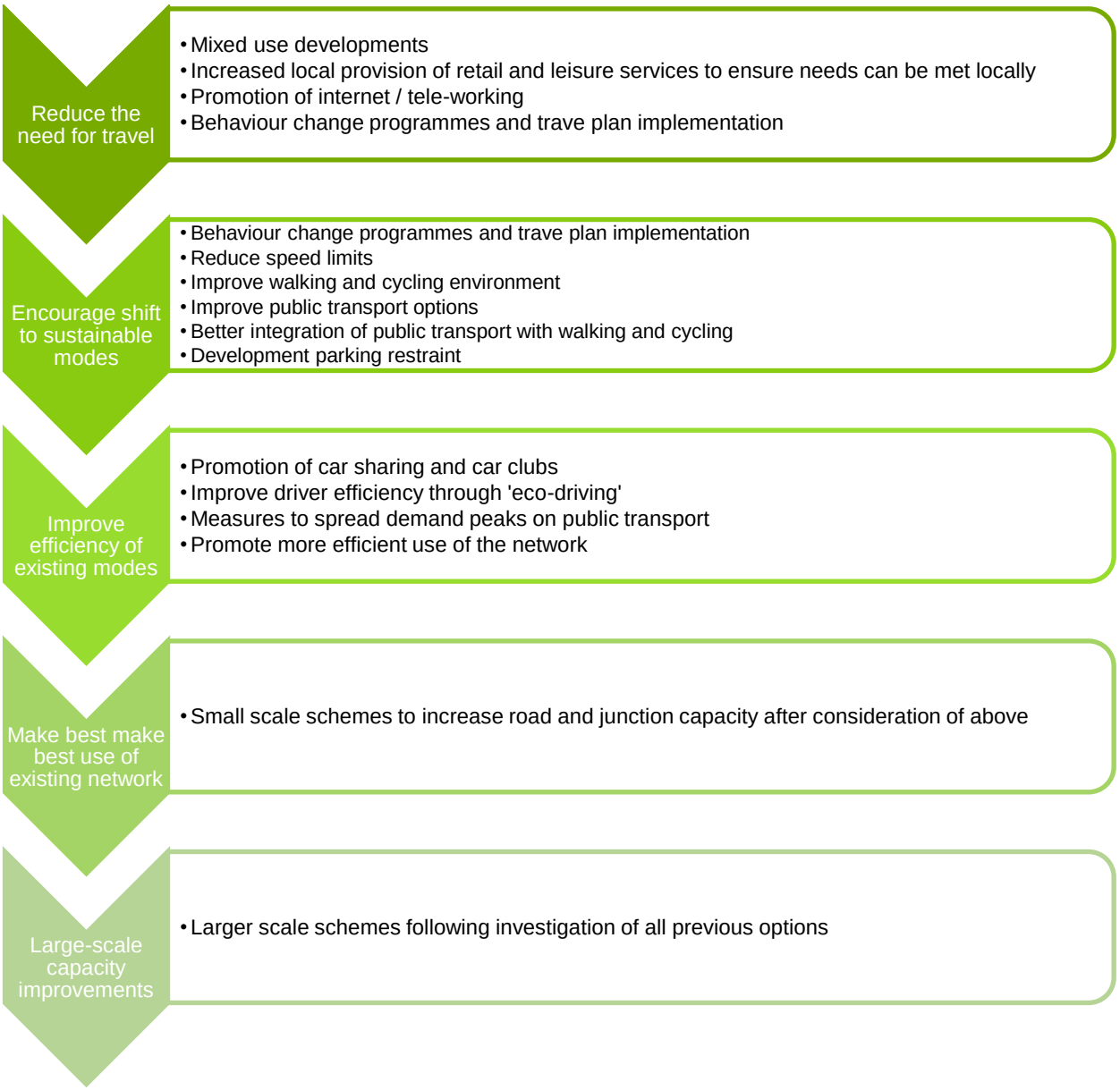


Figure 2.2 – Examples of potential interventions at each tier of the strategy

2.2.5. As previously noted, the work undertaken in preparation of this Interim Report has primarily made use of existing tools, updating assumptions in-line with government guidance and with respect to the emerging Local Plan proposals where relevant. As such, the focus of the work has been largely on the highway elements – the bottom two tiers of the hierarchical approach outlined above. As a result, the work has only considered potential interventions as part the last two tiers outlined in Figure 2.2.

2.2.6. It is vital that in moving towards the production of the final Local Plan (and Transport Strategy) a full consideration of all issues is undertaken. Such an approach will be required for the Broxbourne Local Plan to be aligned with planning guidance at the national level, providing the robust evidence base that is needed. The initial work undertaken in preparation of this report will provide a good, sound basis from which the full Transport Strategy can be developed.

3. Stakeholder Engagement

The views of local people and other stakeholders are vital in shaping the development of the Local Plan. This includes the shaping of the evidence base that will support the Local Plan; in this case, the Transport Strategy.

3.1. Engagement and Consultation

3.1.1. The NPPF provides guidance on engagement in the local planning process. An overarching theme of the guidance is ensuring that strategic priorities across local boundaries are properly coordinated and that authorities work collaboratively together. This is set out in the 'Duty to Cooperate' framework, part of the PPG.

3.1.2. The guidance for an area such as the Borough of Broxbourne is clear in setting out the need for cooperation between the county (Hertfordshire County Council) and district. Transport in particular is an area where Broxbourne has, and will continue to, worked closely with the county. This will be clearly reflected in the final Transport Strategy to be submitted in support of the final Local Plan. Such an approach has also been adopted with the Hertfordshire Local Enterprise Partnership (LEP).

3.1.3. The Broxbourne Local Plan is being produced in full accordance with the 'Town and Country Planning (Local Planning) (England) Regulations 2012'. In accordance with Regulation 18, relevant stakeholders will be invited to make comments on the Local Plan proposals and relevant supporting documentation. In anticipation of this, and in the spirit of joint and collaborative working, the Borough of Broxbourne has engaged with relevant stakeholders in advance of formal consultation.

3.2. Stakeholder workshop

3.2.1. As part of the formalisation of the evidence base for the Transport Strategy, a report has been produced that sets out the condition of the borough's existing transport infrastructure; existing known issues pertaining to this infrastructure; and potential opportunities that could improve the infrastructure in the future. The report is the 'Existing Conditions, Issues and Opportunities Report', AECOM, May 2016; or the 'ECIOR'.

3.2.2. During the preparation of the ECIOR, local stakeholders were invited to share their knowledge, concerns and ideas for the transport network within the borough. This knowledge was captured in a workshop held on 20th May 2016 which also involved planning officers from the borough.

3.2.3. Representatives of the following neighbouring authorities and other key stakeholders were invited to the workshop:

Table 3.1 – Invited stakeholders

Stakeholder	Type of Stakeholder
Broxbourne Borough Council	The Planning Authority
East Hertfordshire District Council	Neighbouring Local Authority
London Borough of Enfield	Neighbouring Local Authority
Epping Forest District Council	Neighbouring Local Authority
Harlow District Council	Neighbouring Local Authority
Welwyn-Hatfield Borough Council	Neighbouring Local Authority
Essex County Council	Neighbouring County Council
Hertfordshire County Council	County Council (Tier 1 'parent')

Stakeholder	Type of Stakeholder
Hertfordshire LEP	Local Enterprise Partnership
Highways England	Transport Authority
Transport for London	Transport Authority
Lee Valley Regional Park Authority	Relevant Stakeholder
Thames Water	Relevant Stakeholder

3.2.4. Representatives of the following organisations were able to attend the workshop and provided input into the ECIOR. This has helped to shape the initial evidence base of the Transport Strategy.

Table 3.2 – Stakeholder feeding into ECIOR

Stakeholder	Type of Stakeholder
Broxbourne Borough Council	The Planning Authority
East Hertfordshire District Council	Neighbouring Local Authority
Welwyn-Hatfield Borough Council	Neighbouring Local Authority
Hertfordshire County Council	County Council (Tier 1 'parent')

3.2.5. The resultant ECIOR report is therefore a compilation of views held by Broxbourne Borough Council, neighbouring local authorities and the county council. Whilst the key issues identified have been summarised in the introduction to this report, the ECIOR should be read in conjunction as it forms the initial evidence base.

3.2.6. The production of the ECIOR is a key first step in identifying issues. However, there are numerous other stakeholders that need to be consulted (under Planning Regulations) and those who should be engaged with in order to ensure that all views are captured and form the Transport Strategy. Ongoing engagement with neighbours and other key stakeholders should therefore remain a key priority for the development of the Local Plan and Transport Strategy over the next six months.

3.3. Council Members' Workshop

3.3.1. At present, elected members of both the district and county council have been presented with an initial update on the progress of the Transport Strategy. A workshop session was held on the evening of 29th June 2016 to ensure that members' views helped to shape the strategy going forward.

3.3.2. Capturing the views of elected members is vitally important to the development of the Transport Strategy: councillors are in a unique position to hear feedback from those they represent. This is particularly important for residents who contact their councillor but may not respond to, or be aware of, public consultation events where they can make their views known directly.

3.3.3. A summary of the findings from the Council Members' workshop is given in Appendix A, at the end of this document. Any potential intervention schemes from this workshop that have not previously been captured have also been incorporated into the scheme 'long-list' and sifting exercise.

3.4. Ongoing Engagement

3.4.1. Broxbourne Borough Council will continue to engage with its neighbours and other relevant stakeholders as both the Local Plan and the Transport Strategy progress. This will ensure the best possible outcome for the Transport Strategy.

3.4.2. A public consultation on the Local Plan is to take place in July 2016. This will provide a forum and feedback mechanism for residents of the Borough of Broxbourne and other stakeholders to comment on and influence the future direction of the Local Plan and supporting documents including the Transport Strategy.

Continued engagement: residents and local stakeholders

Broxbourne Borough Council will ensure that the views of residents and local stakeholders are recognised. Responses made through the public consultation will be collated and analysed and a set of **key findings** will be produced. The key findings will be used in the development of the full Transport Strategy.

3.4.3. Hertfordshire County Council (HCC) is responsible for the management and maintenance of the county's road assets. This includes all non-private roads within the Borough of Broxbourne, with the exception of the M25, which is managed by Highways England. The objective of HCC's Highways Service is to "*deliver safe, reliable journeys, sustainably*"[4]; the vision and objectives set out by the Borough of Broxbourne for its Transport Strategy and Local Plan are wholly aligned with and complement the county's objectives.

3.4.4. The Transport Planning and Strategy group at HCC has a key role in developing the Highways strategy service, developing policy and is responsible for the identification of key infrastructure requirements on the network. These plans are developed, along with the LEP, alongside the district and borough councils. HCC has stated that a key challenge for future development of its network is the need to ensure links to economic development and growth agendas are made[5]. Hertfordshire's Highways and Transport Panel also agrees to and endorses spatial plans as they are developed.

3.4.5. It is essential therefore that Broxbourne Borough Council continues to engage with the HCC as the local highway authority ensuring that its needs are raised at the earliest opportunity. To-date HCC has been a key participant in technical stakeholder workshops and is part of the Transport Strategy steering group committee. This approach should be continued.

3.4.6. Highways England is a government-owned company and has a responsibility for managing the Strategic Road Network (SRN) in England. Its management of the SRN includes the operation of information services, liaison with other government agencies, delivery of infrastructure and provides day-to-day management of the SRN.

3.4.7. The M25 motorway forms the only SRN in the vicinity of the Borough of Broxbourne running along the borough's southern boundary. The M25 provides a critical role in providing connections from the borough onwards to the national network. Between 55% (just north of M25 Junction 25) and 20% (between College Road and Church Lane junctions) of traffic using the A10 within Broxbourne either comes from, or is routed to, the M25[6].

3.4.8. Highways England is currently exploring options to improve the operational performance of junction 25 of the M25. Both the study and improvement scheme have funding from the DfT's Roads Investment Strategy period 1 (RIS1), subject to a deliverable option being identified and value for money assessment. RIS1 schemes have to be progressed in the period 2015 to 2020. Highways England is also currently seeking input to a 'long list' of scheme options for funding period 2 (RIS2) which will look to deliver schemes on the SRN between 2020 and 2025, within the planning period of the Broxbourne Local Plan.

[4] Highways Service Guide. Hertfordshire County Council. December 2015. http://www.hertsdirect.org/docs/pdf/h/hiservguide15.pdf

[5] Chapter 16, Transport Policy and Strategy. Highways Service Guide. Hertfordshire County Council. December 2015. http://www.hertsdirect.org/docs/pdf/h/hiservguide15.pdf

[6] Average of northbound and southbound traffic on the A10 across both morning and evening peak hours. *Source: Broxbourne SATURN traffic model, 2013 Base Year.*

3.4.9. Broxbourne Borough Council is currently engaged with Highways England about the interaction between the SRN and the borough's local roads. Performance of the two is implicitly linked, with so much of the borough's traffic passing through junction 25.

Continued engagement: highways authorities

Broxbourne Borough Council will continue to raise local transport issues with Hertfordshire County Council as early as practically possible. Continued engagement with the county, including a place on the Transport Strategy steering group, is essential to ensure that the needs of the borough are raised and communicated in a quick, efficient and practical way.

Broxbourne Borough Council will continue to engage with Highways England with the view to ensuring that any scheme that is delivered for M25 junction 25 is consistent with the aims and objectives of the borough, improves operation of the junction and is of benefit to traffic using the A10.

The council will also continue to engage with Highways England to determine the extent of funding that may be available in RIS2 to further improve traffic flows within the borough and for any other funding streams that might be available for other works.

4. Highway Opportunities and Sifting

There is a long history of consideration of infrastructure opportunities for the A10. However, many of the studies that have looked at potential improvements are outdated and are not aligned with Local Plan current growth forecasts. Updated opportunity identification and sifting is therefore required.

4.1. Opportunities Summary

4.1.1. A number of potential improvement schemes and opportunities were discussed at the stakeholder workshop, as noted in the previous section. The intention of the exercise was, following discussion around the current and likely future issues concerning transport in the borough, to generate input for a 'long-list' of schemes that may help to provide better transport options for the residents of Broxbourne.

4.1.2. Due to the existing issues on the network, the main focus of the workshop ended up being interventions primarily on the highway network, mostly focused on car and freight trips. Whilst this I not aligned with the transport hierarchy previously noted, it is aligned with the existing tools available at the current stage of the study. Further work, including options generation and sifting will be required across all modes in preparation of the final strategy.

4.1.3. It should be noted that the workshop did not sift any schemes based on any criteria. Instead the workshop was focussed solely on generation of potential interventions with no ideas considered 'off-the-table'. There is an element of 'blue-sky thinking' in some of the options generated.

4.1.4. All options generated were subsequently fed into a sifting exercise, with a view to determining which options should be considered for modelling as part of the initial highways evidence base. The locations of the options discussed in the stakeholder workshop are shown in Figure 4.1.

4.2. High-level sifting

4.2.1. All of the scheme options generated at the workshop are listed in Table 4.1. A more detailed description of the reason for the option being generated and the potential impacts that it may have on different travel modes is given in chapter 4 of the 'Existing Conditions, Issues and Opportunities Report'[7].

4.2.2. In addition to the scheme options generated at the stakeholder workshop a further set of potential mitigation schemes has also been added to the 'long list'. These schemes are set out in Table 4.2. These schemes are those which are already known to Broxbourne Borough Council, either through previous discussions, scheme generation exercises or that are associated with existing or future planning applications (e.g. Greater Brookfield).

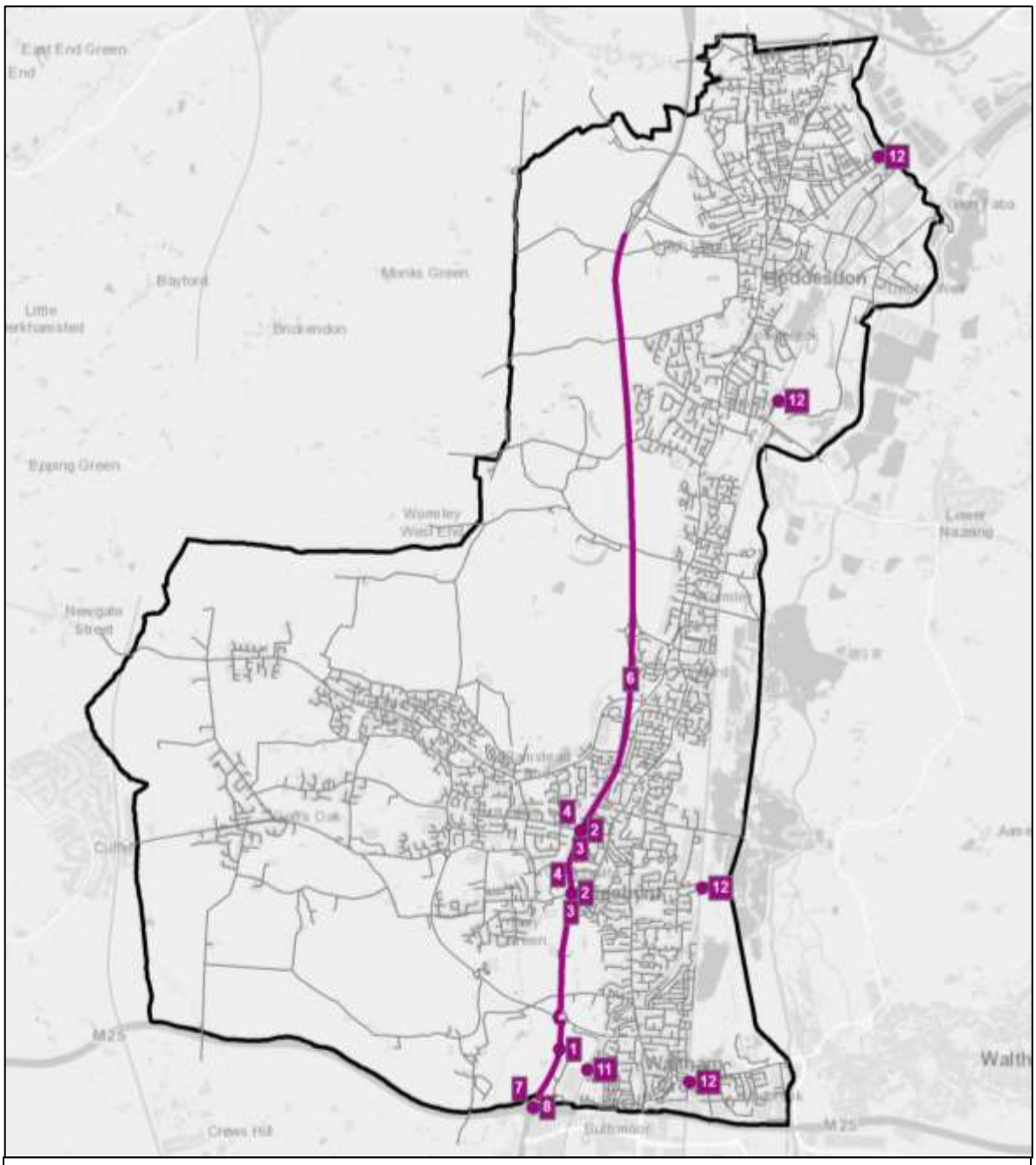
4.2.3. Further to Table 4.1 and Table 4.2, Table 4.3 lists those potential mitigation measures that were mooted in the Council Members' workshop and have not previously been picked-up in a similar guise through either the Stakeholder Workshop or previous options generation exercises. This is not a complete list of issues generated at the Members' workshop, but potential 'new' solutions; a full list of solutions raised is given in Appendix A.

4.2.4. An initial 'high-level' sift of all schemes has been undertaken in advance of progressing the schemes through to a more detailed sifting exercise using the DfT's Early Assessment Sifting Tool (EAST) spreadsheet.

[7] Existing Conditions, Issues and Opportunities Report. AECOM. May 2016.

4.2.5. The purpose of this initial sift is to remove schemes that are either so unfeasible as to not be possible to construct within the Local Plan period, would be unlikely to provide any benefit to the residents or other stakeholders within the borough, or are simply superseded by other works that are likely to occur.

4.2.6. Some non-highway schemes have been identified and included in the full scheme list. Whilst these have been included in the sifting process, it is not possible to assess their relative merit beyond the EAST process. The current modelling platform available to the Borough of Broxbourne is only capable of assessing the relative performance of highway schemes and cannot predict the likely impacts of predominantly public transport or walking and cycling interventions. These schemes instead should be noted and considered during the production of the evidence base for the full Transport Strategy later in the year.



Note: Opportunity locations are indicative and for information only
Scheme ID numbers match those in Table 4.1
Schemes 9, 10, 13 and 14 not shown, as these are 'high-level' concepts and likely routes are not known at present

Figure 4.1 – Location of opportunities / schemes discussed at workshop

Table 4.1 – Schemes from Stakeholder Workshop included in initial 'high-level', qualitative sifting exercise

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
	Highway schemes					
1	**A10:** Park Plaza (Great Eastern Road) Signal operation	Linkage of the signalised junction south of the A10 / Lieutenant Ellis Way / Winston Churchill Way roundabout with M25 Junction 25 under the Split Cycle Offset and Optimisation Technique (SCOOT) to improve operational efficiency.	Highway	-	Yes	Highways England is currently working with TfL to link the M25 Junction 25 with the A10 / Bullsmoor Lane junction under SCOOT. Linking the A10 / Great Eastern Road junction could provide further operational efficiencies.
2	**A10:** Underpasses at at-grade junctions	Construction of underpasses at the existing at-grade junctions on the A10 to facilitate direct and un-interrupted movement of the A10 traffic and so remove conflicting movements from the local traffic at the junction. This would also improve the urban environment, facilitating at-grade crossings of the junctions along east-west desire lines for pedestrians and cyclists.	Highway	Walking, Cycling, Bus	Yes	This scheme is likely to perform similarly to the 'flyover' option.
3	**A10:** Flyovers at at-grade junctions	Construction of flyovers at the existing at-grade junctions on the A10 to facilitate direct and un-interrupted movement of the A10 traffic and so remove conflicting movements from the local traffic at the junction. This would also improve the urban environment, facilitating at-grade crossings of the junctions along east-west desire lines for pedestrians and cyclists.	Highway	Walking, Cycling, Bus	Yes	This scheme is likely to perform similarly to the 'underpass' option.
4	**A10:** Banning right-turns at at-grade junctions	Banning right-turns at the at-grade junctions of the A10 with College Road and/or Church Lane, to facilitate A10 movements	Highway	-	Yes	Right-turn movements are catered for through individual signal stages. Removing these would allow more time for the A10 mainline movement.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
5	**A10:** Closure of minor road accesses	Closure of the College Road and/or Church Lane junctions to facilitate A10 movements.	Highway	Walking, Cycling, Bus	Yes	Minor arms could be repurposed for bus expressways or for better pedestrian / cyclist crossings.
6	**A10:** Widening of A10 to three lanes	Widening of the A10 to three lanes throughout the borough – principally between the M25 and the A1170 Dinant Link junctions.	Highway	-	Yes	Dependent on link performance, widening north of Church Lane or Turnford Interchange may not be required, which could reduce scale and cost of intervention.
7	**M25:** Junction 25 redesign (A10 Study options)	The A10 Study undertaken in 2011 undertook an assessment of options for improvements at M25 Junction 25, comprising: • Dedicated filter lanes from M25 (Eastbound) to A10 and from A10 to M25 (Westbound); • Increasing circulatory capacity of gyratory and widening approaches at stop-lines; and • Providing grade separation for A10 through-movements	Highway		No	Highways England is currently pursuing options to improve M25 Junction 25 as part of the Roads Investment Strategy (RIS). These schemes will be delivered in the period 2015-2020, subject to appropriate designs and value for money assessment. These schemes will supersede those options presented in the A10 Study. The scheme is also likely to be delivered irrespective of proposed Local Plan developments in Broxbourne.
8	**M25:** Junction 25 additional grade separation	Provision of a new 'flyover' to grade-separate through movements on the A10 (north to south) from those accessing the M25, reducing congestion at M25 Junction 25.	Highway	-	Yes	A 'high-level' assessment of this was undertaken in the previous A10 Study.
9	**M25:** Better access to alternative junctions	Re-purposing the existing local highway to facilitate a signed alternative route to the M25 via Junction 22 (London Colney).	Highway	-	Yes	Anecdotally, this route is already used by local traffic, but the capacity is low and the route unsigned.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
10	**Highway:** New link road east of railway line	Provision of a new link road east of the railway, providing a connection from the A121 as an alternative to the A10. This would be routed through Lee Valley Regional Park.	Highway	-	No	A new route connecting the A121 to the Nazeing Road at Broxbourne and Dobb's Weir Road at Hoddesdon would be around 8 kilometres long and require significant construction. The Lee Valley Park was created by the Lee Valley Regional Park Act (1966) to create a 'green lung' for Greater London; the park is protected by a number of statutes and there is unlikely to be any appetite for building a road through it. Likewise, there is likely to be significant opposition to such a scheme.
	Non-Highway schemes					
11	**Rail:** New Seven Sister's line halt at Park Plaza	Provision of a new local service via a new 'halt' (a small station, generally unstaffed and with no goods facilities) on the established line, providing access to the Park Plaza development.	Rail	-	Yes	Potential to alleviate pressure on existing stations and to abstract trips from the road network. *Not possible to test in current analysis tools, beyond EAST.*
12	**Rail:** Cycle hire hubs at stations	Investigate working with Brompton (or similar provider) to bring one cycle hire facilities to existing stations, to enable commuters to select cycling as a valid mode choice to get to/from workplaces and meetings from the station.	Rail	Cycling	Yes	Potential to raise the profile of cycling as an access choice and to instigate switch in mode share. *Not possible to test in current analysis tools, beyond EAST.*
13	**Cycling:** New signed cycle routes	Provision of improved and clearly signed and/or high quality segregated offline cycle routes from stations to key development locations to facilitate the east-to-west desire lines.	Cycling	-	Yes	*Not possible to test in current analysis tools, beyond EAST.*
14	**Bus:** A new express bus service	A high quality bus service using the A10 (currently unused by buses)	Bus	Highway	Yes	*Not possible to test in current analysis tools, beyond EAST.*

Table 4.2 – Previously defined schemes included in initial 'high-level', qualitative sifting exercise

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
	Highway schemes					
15	**A10:** Brookfield Link Road	Extension of Brookfield Lane West to Turnford roundabout on the A10	Highway		No (but not discounted)	Not assessed as part of this exercise. Link Road has already been previously approved by Council (2013) and is part of Greater Brookfield submission.
16	**A10:** Park Plaza (Great Cambridge Road/ Lieutenant Ellis Way / Winston Churchill Way) Roundabout	Roundabout improvements. Possible designs include: -grade separation; -longabout and hamburger; or - just hamburger at Lieutenant Ellis Way	Highway		Yes	Would be a necessary prerequisite for the permission for the development to proceed. Longabout option proposed by Park Plaza West developers. Potential for scheme to facilitate access to safeguarded site above (Maxwells Farm site).
17	**A10:** News UK Signalised junction	Possible linkage into existing signalised junction from the east side of the development (west side of A10)	Highway		Yes	Option proposed by Park Plaza West developers
18	**A10:** Localised widening	Widening of A10 a certain points.	Highway		No (but not discounted)	Widening to three lanes at certain points between the M25 and Turnford roundabout EAST sifting covered by whole widening scheme identified in Table 4.1.
19	**A10:** Widening – Contraflow lane	Dynamic widening of the A10 using a contraflow lane to alleviate peak time congestion issues (e.g. Southbound in the AM peak and Northbound in the PM peak).	Highway		Yes	Scheme would still be subject to feasibility of widening A10 and then have
20	**A10:** New slip road to the A10 at Turnford junction	New slip road on to the A10 southbound at Turnford junction. This would alleviate traffic routeing via the A1170 and improve the environment for local residents along the route.	Highway		Yes	It is understood that HCC has previously been opposed to such a scheme. Detailed evidence of improvement (beyond EAST – if EAST is favourable) likely to be required.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
21	**A10:** Changes to traffic light phasing at at-grade junctions.	Changes to traffic light phasing at at-grade signalised junctions within the Borough, principally being College Road and Church Lane	Highway	Walking/Cycling	Yes	Assumed to be a highways scheme, but phasing could impact pedestrian and cyclist movements. Highway benefits through signal optimization likely to be small.
22	**A10:** Hoddesdon Slip Road (Dinant Link Road form A10 roundabout to Sun roundabout)	To allow access off the Dinant Link Road and on to the A10 for residents of High Leigh Garden Village. Double roundabout (Dumbbell design)	Highway		No	These improvements have already been approved as part of mitigation associated with the High Leigh development and agreed by both BBC and HCC. Already committed as part of an approved scheme and therefore not subject to further assessment as part of Local Plan.
23	**Highway:** Improvements to the Sun Roundabout	Additional left turn lane.	Highway		No	
24	**Highway:** Improvements to Hertford Road roundabouts	To allow access to the highway network for High Leigh Garden Village. Additional left turn lane.	Highway		No	
25	**Highway:** Improvements along the A1170 (old A10)/Cambridge Road	Improvements to the A1170/B176 through Waltham Cross, Cheshunt Old Pond and Turnford.	Highway		No (but not discounted)	No firm detail on what improvements would comprise at this point in time. Schemes potentially to be developed as part of further mitigation development.
26	**Highway:** Essex Road improvements	To alleviate congestion into the Hoddesdon Business Park	Highway		No	Already committed as part of an approved scheme, with highways improvements agreed by both BBC and HCC.
27	**Highway:** Improvements to local roads between Goffs Oak and Brookfield	Scope out potential for further improvements to local roads between Goffs Oak and Brookfield	Highway		No (but not discounted)	No firm detail on what improvements would comprise at this point in time. Schemes potentially to be developed as part of further mitigation development.
28	**Highway:** Closure of Halfhide Lane access into Brookfield development	Closure of Halfhide Lane access into Brookfield development, except for buses, cyclists and pedestrians	Highway	Bus Walking/Cycling	Yes	To be considered along with Brookfield Link Road scheme, which is a complementary access proposal.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
29	**Highway:** Old A10**/**Bell Lane Improvements	As part of the Broxbourne School development, the mini-roundabout at Bell Lane/Broxbourne High Road will be signalised	Highway		No (but not discounted)	Developer led scheme with no firm road proposals at present. To be considered as part of development submissions and in-light of likely Local Plan impacts.
30	**Highway:** Improvements to junction of Station Approach and Station Road Broxbourne	Introduction of traffic lights at junction of Station Road and Station Approach with no right turn into Station Approach form Station Road	Highway		No (but not discounted)	
31	**Highway:** Redesign of Old Pond (Cheshunt Town Centre) roundabout	Potential redesign of 'Old Pond' junction to provide a better urban environment and to encourage more walking and cycling within Cheshunt town centre.	Highway	Walking/Cycling	No (but not discounted)	Taken forward as part of town centre study
32	**Highways:** Fishpools roundabout	Accident remediation measures and traffic light phasing	Highway		No (but not discounted)	
33	**Highways:** Waltham Cross	Open up High Street for traffic and parking with access onto northbound carriageway of Monarch's Way. New pedestrian crossing to improve pedestrian access into the town centre from residential areas to east	Highway		Yes	Some initial evidence from transport modelling suggesting congestion issues on A121 that may require further remediation / mitigation as part of Local Plan work.
34	**Highways:** Funding improvements through user charging	Funding of improvements of road network through financial tariffs	Highways		Yes	To be considered in EAST as combined Congestion Charging Zone (CCZ) scheme. Likely to require significant initial capital costs to implement and ongoing maintenance and data collection / monitoring costs.
35	**Highways:** Road/Congestion pricing	Demand management of road network through financial tariffs	Highways		Yes	

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
	Non-Highway schemes					
36	**Rail:** Supporting Crossrail 2	The Council is supportive of the Crossrail 2 development.	Rail		No (but not discounted)	Crossrail 2 is outside of the Local Plan period and promoted by TfL and Network Rail. However, an overarching strategic aim of the Transport Strategy should be to facilitate movements to rail stations and BBC is supportive of Crossrail 2.
37	**Rail:** Four tracking of West Anglia mainline	Four tracking West Anglia mainline between Coppermill Junction and Broxbourne Junction	Rail		No (but not discounted)	Whilst timescales are within the Local Plan period, four tracking is promoted by Network Rail. Four tracking would fit with BBC aims of more sustainable travel however and supports economic growth of Borough. BBC should continue to support.
38	**Rail:** Northern terminus of Crossrail 2	Improvements to Broxbourne station in-line with its role as the northern terminus of Crossrail 2.	Rail		No (but not discounted)	Crossrail 2 is outside of the Local Plan period and promoted by TfL and Network Rail. However, an overarching strategic aim of the Transport Strategy should be to facilitate movements to rail stations and BBC is supportive of Crossrail 2. Scheme also leads to potential for development to the east of the current site within the Lee Valley Regional Park.
39	**Rail:** New rail station at Turnford	New station promoted for Turnford, potentially as part of Crossrail 2, but with opportunity to deliver within Local Plan period.	Rail		Yes	New station at Turnford is in-line with Policy INF4 of Local Plan and would provide growing residential population and Hertford Regional College area with walkable access to the railway.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
40	**Rail:** Rye House Station Improvements	Provide a new commuter car park as part of Turnford Surfacing redevelopment. Provide pedestrian access to northbound platform from Rye Road	Rail		Yes	Identified in Turnford Surfacing site development brief
41	**Rail:** Theobalds Grove Station Improvements	Draft brief for site promotes redevelopment of station car park retaining some commuter car parking improving access from High Street and enhancing appearance of industrial uses New bus stop for better interchanges between modes	Rail	Bus	Yes	Identified in Theobalds Grove West site development brief
42	**Cycling:** New off road cycle route along A1170	New off road cycle route along A1170 between North Hoddesdon, Hoddesdon Town Centre and Broxbourne	Cycling		Yes	Possible route identified in Policy INF8 in draft Local Plan document
43	**Cycling:** Improved cycle links along the New River	Broxbourne Borough Council has joined the County Council and Thames Water in a pilot project to improve the New River Path for cyclists	Cycling	Walking	Yes	Identified in Policy INF8 in draft Local Plan document
44	**Bus:** New service for Park Plaza	New/reinstated bus service to be provided. Service from Waltham Cross town centre to News UK has been temporarily discontinued pending the wider Park Plaza development.	Bus		Yes	Identified in Policy INF6 in draft Local Plan.
45	**Bus:** New service between High Leigh and Broxbourne Station	New service provided as part of the approved development	Bus		No (but not discounted)	Development has already been approved by council and discussions should have taken place with developer.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
46	**Bus:** Existing services strengthened and extended	Existing services throughout the Borough will be strengthened and extended e.g. into the Rosedale Park development	Bus		No (but not discounted)	Improvements to existing services would support the aspirations and objectives of the Local Plan. However, no specific detail is currently available and it would thus be difficult to appraise at present in EAST. BBC to continue to explore this through further firming up of Transport Strategy and Local Plan.
47	**Bus:** New bus terminus and additional services for Greater Brookfield	New bus terminus serving the Great Brookfield development. This would enable better bus provision and better passenger facilities at the new development, promoting bus use as a more valid mode choice. Additional services will be explored to ensure more sustainable travel mode choices to/from Greater Brookfield.	Bus	Walking	Yes	Identified in Policy INF6 in draft Local Plan.
48	**Bus:** Expansion of Waltham Cross bus station	Potential expansion of the existing bus station at Waltham Cross to better serve passengers and provide improved facilities for operators/	Bus		Yes	Identified in Policy INF6 in draft Local Plan.
49	**Bus:** Extend Oyster card to cover all of the Borough	Oyster card could potentially enable cheaper and easier access to bus services for residents, making bus a more viable mode choice.	Bus		No (but not discounted)	BBC should engage with TfL, bus operators and HCC regarding extension of Oyster card scheme to cover bus services in the Borough. Difficult to appraise the potential impacts of Oyster card use throughout Broxbourne Borough in EAST.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
50	**Bus:** Real Time Passenger Information	Real Time Passenger Information (RTPI) service to be introduced at all main bus stops	Bus		No (but not discounted)	Likely to be beneficial to passengers and bus users and may promote further use of services. However, not suitable for testing in EAST. Recommended that BBC pursue as part of its bus interchange standards, potentially as part of Transport Strategy.
51	**Bus:** S106/CIL funding to improve services	Use of Section 106 and/or Community Infrastructure Levy (CIL) funding to improve existing services and create new services.	Bus		No (but not discounted)	Potential for use of S106 and/or CIL funds to improve bus services. However, not suitable for testing in EAST as no specific schemes / routes currently identified.
52	**Walking:** Improved routes borough-wide	Improved network throughout the Borough, including: • Improved routes to Park Plaza West and throughout the Rags Valley; • Improvements to existing network of paths and tracks along eastern side of A10; and • Improvements to existing network of paths and tracks along eastern side of West Anglian railway	Walking	Cycling	Yes	

Table 4.3 – Schemes from Council Member's Workshop not previously captured, qualitative sifting exercise

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
	Highway schemes					
53	Expansion of London LEZ into southern half of Borough	Consider expansion of the London Low Emissions Zone (LEZ) into the southern half of the Borough, to improve air quality in Waltham Cross and in congested locations on the A10.	Highway		Yes	Would need careful consideration as to where to draw the boundaries of the LEZ. Discussion with TfL would be critical to ensuring scheme could run. Likely to have ongoing costs for maintenance and data collection.
54	**A10:** HOV lanes	Explore the use of High Occupancy Vehicle (HOV) lanes on the A10 as a means to promote car-sharing and reduce total number of cars on the road in the peak hours.	Highway		Yes	Successfully implemented in other urban areas across the UK. It was raised by a council member that there may be legal issues for people sharing cars when a transaction (e.g. for fuel) is involved, but we are not aware that this has affected similar HOV schemes elsewhere.
55	**A10:** One-way 'gyratory' system around at-grade junctions	The junction of College Road and Church Lane are busy because of the number of right-turners. It may be possible to reduce signal stages at these locations, giving more green-time to the A10, by instigating a one-way gyratory system around the area.	Highway		Yes	Unlikely to have a significant impact on the A10 and may cause worse queuing issues on arms of College Road / Church Lane.
56	**Technology:** Traffic Information signing	Provision of strategically located Variable Messaging Signs at points around the network to inform drivers of travel times and congestion on key routes in the Borough and key connecting routes (e.g. M25)	Highway		No (but not discounted)	Mentioned by some councillors that this may become outdated quickly as road users turn to mobile phone apps. Potentially worth considering outside of EAST as not easy to test.

ID	Scheme	Description	Primary mode	Other modes	Progress to EAST?	Comment
57	**HGVs:** HGV travel policy for area	Council to design a strategy to deal with HGVs. The perception is that there are many HGVs on the roads and at key locations – e.g. Essex Road, Hoddesdon. A policy on permitted travel times would help to control numbers.	Highway		No	This is a policy issue and can be addressed through the Transport Strategy. Not possible to test easily within EAST.

4.3. Early Appraisal Sifting Tool (EAST) analysis

4.3.1. EAST has been designed by the DfT to aid with the decision making process, particularly when dealing with 'high level' information. The tool provides information to help decision makers' form an early view of how each of the proposed schemes is likely to perform. This allows early elimination of any schemes deemed an inappropriate fit in respect to the mitigation that they are likely to offer, how they are likely to meet stated objectives and how they perform against the likely stated financial, management and commercial criteria.

4.3.2. The EAST tool allows the user to enter a score for a number of different criteria. This in turn allows for an overall score to be produced which can be used to compare the various proposed options. The key criteria in question are the Strategic, Economic, Managerial, Financial and Commercial cases for the scheme, which are aligned with the DfT's 'Transport Business Case' (January 2013) process[8], itself aligned with Her Majesty's Treasury (HM Treasury) Green Book[9]. These in turn are composed of a number of different sub-criteria. If sufficient data are not available, then it is possible to not provide a score. The qualitative nature of EAST allows for valid relative comparisons to be made even when some data are absent or not wholly quantitative.

4.3.3. EAST is a useful tool as it allows the decision maker to compare a number of schemes based on the same criteria. The tool is however highly qualitative and relies on the interpretation of the individual entering the information into the system. The level of confidence that can be applied to the comparisons entered into the tool is dependent on the detail of the evidence provided to aid with the decision making. It is also important to note that the tool does not make any recommendations and is not a substitute for a comprehensive evidence base.

4.3.4. All schemes that have passed through the high-level sifting exercise noted above have been input into EAST for further assessment. Information have been completed as best as is currently possible; however, due to lack of information available relating to a number of the input categories and the 'high-level' concept nature of some of the schemes, the 'Don't Know' rating has had to be used in some cases. There is a particular amount of uncertainty surrounding the financial and commercial cases for the schemes, where very little information is available as to likely funds that will be available, either from Broxbourne or supporting organisations such as the county council or LEP. It would be possible to update the EAST analysis during latter stages of the Transport Strategy in order to 'firm up' the evidence base as more information becomes available.

4.3.5. Full outputs from EAST for each of the schemes that have been taken forward are given in Appendix A of this report. These contain all of the information that have been input and are available for each of the cases specified by DfT.

4.3.6. Table 4.2 presents summarised results for the EAST analysis. Given the uncertainties surrounding funding and fees, the Financial and Commercial Case information are excluded from this summary. Strategic and Economic Case data are presented as a score out of five, where one is a poor performing score and five is high performing. Highway and non-highway schemes are separated in the table.

4.3.7. The non-highway schemes tend to perform well on the Strategic Case, as their promotion of sustainable transport modes provides a good fit with government and local objectives to promote the use of sustainable transport, reduce Carbon emissions and to encourage a shift from low occupancy to high occupancy vehicles, away from the car. This latter point, the removal of car trips from the network, fits with the Borough of Broxbourne's overarching transport vision of creating a '*safe, viable and attractive alternative to driving*'.

[8] The Transport Business Case. Department for Transport. January 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf

[9] The Green Book: Appraisal and Evaluation in Central Government. HM Treasury. July 2011. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

Table 4.4 – Summary of EAST analysis

ID	Scheme	Strategic Case				Economic Case						Managerial Case			
		Scale of Impact	Fit with wider transport & government objectives	Fit with other objectives	Consensus	Economic Growth	Carbon emissions	SDIs	Local environment	Well-being	Expected VfM	Implementation Timetable	Public Acceptability	Practical Feasibility	Quality of Supporting Evidence
Highway schemes															
1	**A10:** Park Plaza (Great Eastern Road) Signal operation	2	3	3	4	5	4	-	-	4	High	6-12 months	High	High	Low
2	**A10:** Underpasses at at-grade junctions	4	4	4	?	4	3	-	4	5	?	5-10 years	Med-High	?	Low
3	**A10:** Flyovers at at-grade junctions	4	4	4	?	4	3	-	3	4	?	5-10 years	Medium	?	Low
4	**A10:** Banning right-turns at at-grade junctions	3	3	3	?	4	-	4	-	4	Medium	6-12 months	?	High	Low
5	**A10:** Closure of minor road accesses	4	3	3	4	4	3	3	2	3	?	1-2 years	Medium	Med-High	Low
6	**A10:** Widening of A10 to three lanes	4	2	3	4	4	3	-	2	3	Medium	5-10 years	Medium	Medium	Low
8	**M25:** Junction 25 additional grade separation (A10)	5	2	3	4	4	2	3	2	3	?	5-10 years	?	Medium	Low
9	**M25:** Better access to alternative junctions	3	1	3	?	3	2	1	1	2	Low	2-5 years	Low	?	Low
16	**A10:** Park Plaza roundabout	3	2	4	4	4	2	4	3	-	Medium	5-10 years	Med-High	Med-High	Low
17	**A10:** News UK signalised junction	4	3	2	3	4	-	4	3	4	High	2-5 years	High	Med-High	Low
19	**A10:** Contra-flow lane widening	4	2	3	4	4	3	-	2	3	?	5-10 years	Medium	Medium	Low
20	**A10:** New slip road at Turnford junction	3	2	2	4	-	3	-	3	4	Low	5-10 years	Medium	?	Low
21	**A10:** Traffic light phase changes	3	4	4	1	2	4	-	5	5	High	6-12 months	High	High	Low
28	**Loc:** Closure of Halfhide Lane	4	4	3	?	3	3	3	4	4	?	5-10 years	?	High	Low

ID	Scheme	Strategic Case				Economic Case						Managerial Case			
		Scale of Impact	Fit with wider transport & government objectives	Fit with other objectives	Consensus	Economic Growth	Carbon emissions	SDIs	Local environment	Well-being	Expected VfM	Implementation Timetable	Public Acceptability	Practical Feasibility	Quality of Supporting Evidence
33	**Loc:** Opening of Waltham Cross High Street to traffic	2	2	2	?	4	2	4	2	1	?	2-5 years	Low	High	Low
35	**Area:** Congestion Charging	4	4	2	?	2	4	2	4	4	?	2-5 years	Low	Low-Med	Low
53	**Area:** Expansion of London LEZ	3	4	4	?	2	4	-	5	-	?	2-5 years	High	?	High*
54	**A10:** HOV lanes along the A10	4	4	3	?	5	4	-	3	3	?	5-10 yeas	High	?	Low
Non-Highway schemes															
11	**Rail:** New Seven Sister's line halt	3	4	4	3	4	4	-	4	4	?	2-5 years	High	Med-High	Low
12	**Rail:** Cycle hire hubs at stations	2	4	3	?	-	-	-	-	-	-	6-12 months	High	High	Medium
13	**Cycling:** New signed cycle routes	3	5	4	3	4	4	4	4	4	?	2-5 years	Med-High	Med-High	Low
14	**Bus:** A new express bus service	4	4	4	4	4	4	4	4	4	?	2-5 years	Med-High	?	Low
39	**Rail:** New rail station at Turnford	3	4	3	4	4	4	4	4	4	Medium	5-10 years	Med-High	Medium	Low
40	**Rail:** Rye House station improvements	1	2	2	?	-	-	-	2	4	?	6-12 months	Med-High	Med-High	Low
41	**Rail:** Theobald's Grove station improvements	1	4	3	?	-	-	-	-	-	?	6-12 months	High	High	Low
42	**Cycling:** New cycle routes along A1170	3	4	5	3	4	4	-	5	5	High	2-5 years	High	Medium	Low
43	**Cycling:** Improved cycle links by New River	2	4	5	3	3	4	-	5	5	Medium	2-5 years	Med-High	Medium	Low
44	**Bus:** New bus service for Park Plaza	3	4	3	4	4	4	4	4	5	?	2-5 years	High	Med-High	Low
47	**Bus:** Greater Brookfield bus station and services	3	4	3	4	4	3	4	4	4	Medium	2-5 years	High	High	Low

ID	Scheme	Strategic Case				Economic Case						Managerial Case			
		Scale of Impact	Fit with wider transport & government objectives	Fit with other objectives	Consensus	Economic Growth	Carbon emissions	SDIs	Local environment	Well-being	Expected VfM	Implementation Timetable	Public Acceptability	Practical Feasibility	Quality of Supporting Evidence
48	**Bus:** Expanding Waltham Cross bus station	3	4	3	3	4	4	4	4	5	?	5-10 years	High	Medium	Low
52	**Walking:** Improved walking routes	2	3	3	?	-	-	4	4	5	?	6-12 months	High	High	Low

* Evidence from London, not for scheme in Broxbourne

Note: Financial Case and Commercial Case categories of EAST analysis excluded.
No supporting cost or breakdown information available to inform Commercial Cases at present.
Financial Case information is largely the same between schemes due to early concept nature. Thus likely funding sources are the same. None of the schemes are forecast to generate income, with the exception of the Congestion Charging Zone schemes, although it is not clear what maintenance, data collection and storage and other associated costs would exist with this. .

4.3.8. The lack of information available for some of the proposals and their high-level concept nature can mean that it is difficult to distinguish between the proposals. For instance, the lack of developed scheme costs at present means that expected Value for Money (VfM) is often difficult to predict. Further work is required to develop costs along with Concept Designs as part of the development of the full Transport Strategy.

4.3.9. The majority of the schemes would support the economic growth of the borough; this is unsurprising as the opportunities discussed at the stakeholder and council member's workshops were primarily to improve traffic movements and access to facilities in Broxbourne. Other schemes support potential new developments in the Borough, which will contribute to the economy of Broxbourne. The exception to this is the provision of an alternative route to the M25, which – whilst having a benefit for traffic movements on the A10 in the south of the borough - could affect local communities negatively through increased traffic volumes on local roads increasing congestion, worsening severance increasing travel times.

4.3.10. Some schemes are forecast to have predominantly negative impacts across the Economic Case. These are the provision of an alternative route for traffic to/from the west to access the M25 and for grade separation of the A10 through movements at M25 Junction 25. These score negatively in terms of their impacts on Carbon emissions (greater traffic volumes, increased emissions, significant construction), impact on the local environment (likely to have negative impacts in terms of noise, air quality, but also through visible infrastructure) and well-being (particularly the former scheme, which could negatively impact on the lives of residents in affected local communities). These two schemes also tend to perform poorly against government and wider objectives, as they promote high carbon, low occupancy private travel and do nothing for more sustainable modes of travel. They are unaligned with the principles of sustainability in the transport system outlined in planning guidance.

5. Transport modelling evidence

Scheme evidence needs to be based on a set of assumptions about the future, both network and demand based. Quantifiable impacts are usually forecasted using a suitable transport model[10].

A transport model of the Borough of Broxbourne has been used to assess the likely impacts of potential interventions on the borough's road network. The model allows for comparisons of the performance of different schemes to be undertaken and provides quantitative information for a number of different metrics such as travel times and delays.

5.1. Overview

5.1.1. The EAST process has identified a number of schemes from the original stakeholder workshop that are suitable to progress for further assessment. Further assessment has made use of the Broxbourne highway model as a basis for testing. The model has been developed in SATURN (Simulation and Assignment of Traffic in Urban Road Networks), a UK-industry standard software for strategic traffic assessment.

5.1.2. The Broxbourne SATURN model is a highway assignment model that covers the key road network in Broxbourne. Its extents are broadly the borough boundary (with some network links extending just beyond), although the M25 motorway to Junction 24 (Potters Bar) in the east and to Junction 26 (Waltham Abbey) in the west and the northern portion of London Borough of Enfield are included. The model has two time periods – the AM peak hour (08:00-09:00) and the PM peak hour (17:00-18:00). The model has been produced in accordance with the DfT's Web-based Transport Analysis Guidance (WebTAG) and follows its guiding principles for forecasting.

5.1.3. The model does not include any public transport component or any representation of active modes (walking and cycling). It is therefore not possible to test schemes that are purely related to these modes and have no impact on the highway infrastructure or operation.

5.1.4. As a highway assignment model only, the tool is also not able to model a reduction in trip generation due to the increase in provision of services locally. However, the county's strategic modelling tool – the County Model of Transport (COMET) – does have a variable demand model component and can model such impacts. It is proposed that linkage with COMET is made for future assessments and it is understood that the model will be available in the timelines of the Transport Strategy development.

5.1.5. Forecast assessment years of 2023 and 2033 have been selected. Whilst the Local Plan period is 2016 to 2031, the forecast year of 2033 has been selected to align with work being undertaken by the county and other districts within Hertfordshire. This will provide consistency in interpretation of results at a later date. An interim year of 2023 has been selected for similar reasons; the interim year is important to model due to much of the proposed Local Plan development coming forward in the earlier period of the plan.

5.2. Selecting the scheme packages

5.2.1. Four separate intervention tests have been undertaken, modelling mitigation schemes that were noted as opportunities at the stakeholder workshop and have since passed through qualitative and EAST sifting. It should be noted that the options from the extended 'long list' and council members workshop have not been modelled at present, as the timescales meant that modelling was undertaken in advance of the council members workshop being held.

[10] §1.1.2 TAG Unit M1.1 Principles of Modelling and Forecasting. Department for Transport. January 2014.

5.2.2. The highway schemes taken forward for modelling from the EAST analysis are:

- 2) A10: Underpasses at at-grade junctions;
- 3) A10: Flyovers at at-grade junctions;
- 4) A10: Banning right-turns at at-grade junctions;
- 5) A10: Closure of minor road accesses; and
- 6 A10: Widening of A10 to three lanes.

5.2.3. Both schemes 2) and 3) (underpasses and overpasses at at-grade junctions) can be considered in the model as a single scheme, as the impact that they have in the strategic Broxbourne SATURN model will be the same.

5.2.4. Scheme 1) A10 Park Plaza (Great Eastern Road) Signal operation under SCOOT has not been modelled despite its likely beneficial impact and relatively high VfM. The SATURN model is strategic in nature and is not an appropriate tool for testing detailed signal operational impacts. Whilst basic signal optimisation is possible in the model, it is unlikely to provide a robust result. Should the scheme be investigated further as part of the Transport Strategy – which the EAST results suggest it should, due to likely favourable impacts – then a detailed junction or microsimulation model / analysis tool will be required to provide a reliable assessment.

5.2.5. Scheme 9) M25: Better access to alternative junctions has not been taken forward for modelling for two reasons. Firstly, the scheme performs poorly under EAST appraisal due to the negative Economic Case impacts such as higher carbon emissions, increased severance of affected local communities on the route and reduced quality of the affected local environment, amongst other reasons. Secondly, the existing transport model only models roads just beyond the border and is therefore not capable of assessing the likely re-routeing impacts that would be caused by such a scheme. If this scheme were to be assessed further, a wider transport model – such as the countywide strategic model – would be required.

5.2.6. Additional grade separation at M25 Junction 25 (A10 through movement, scheme 8) has also not been taken forward. The scheme shows primarily neutral to negative impacts in the Economic Case, whilst not being well aligned with government objectives. It is also understood, from previous exploration of such a scheme in 2011, that Highways England is unlikely to be supportive of a proposal of this nature.

5.2.7. The schemes have been considered in terms of package groupings where possible. The packaging of schemes is important: previous experience has shown that simply implementing a single scheme is not necessarily a viable method of mitigation and can simply solve the issue and one location and move it to the next point of constraint on the network. As many of the schemes discussed at the workshop are focussed on the A10, the opportunity to package these with schemes elsewhere in the borough has not arisen. However, the packages have been designed around a focus on solving issues at the at-grade junctions on the A10 together, rather than individually. Table 5.1 sets out the four intervention tests and their scheme composition.

Table 5.1 – Packages of schemes modelled

Package	Package Focus	Schemes
1	A10 ‘through movement’ priority Minimal construction costs	5) A10: Closure of minor road accesses
2	A10 ‘through movement’ prioritisation Local road connections retained	4) A10: Banning right-turns at at-grade junctions
3	A10 capacity focus	6) A10: Widening of A10 to three lanes
4	A10 capacity focus Improve east-west movements	2) & 3) A10: Underpass / Flyover at at-grade junctions

5.3. Summary of key performance metrics

5.3.1. This section sets out the impacts of the four mitigation packages on the operation of the road network within the borough. Three key indicators have been used to support the analysis, these comprise:

- Journey times and average speeds – both along the A10, which is the key north-south route within the borough and has been identified in the unmitigated scenarios as suffering from large delays and extended journey times in the future years; and for the key routes connecting significant proposed Local Plan developments to the main rail stations;
- Delay times on roads at the junctions within the vicinity of the mitigation measures; and
- Volume-to-Capacity (V/C) ratios which indicate, as a percentage, how close the key junctions are to theoretical capacity.

Journey Times and average speeds

5.3.2. Table 5.2 and Table 5.3 show the journey times for northbound and southbound movements along the A10 for both the modelled future years. Table 5.4 and Table 5.5 show the average speeds in kilometres per hour (km/h) across the same route sections.

Table 5.2 – Comparison of Journey Times (minutes:seconds) on A10- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	11:21	7:32	10:44	10:20	8:53
		SB	13:03	7:51	11:40	11:41	10:12
	PM Peak	NB	14:24	9:31	14:19	11:10	9:22
		SB	11:46	9:01	10:39	11:09	10:13

Table 5.3 – Comparison of Journey Times (minutes:seconds) on A10- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	14:29	11:27	13:37	12:46	11:23
		SB	18:43	11:53	15:35	14:46	14:42
	PM Peak	NB	21:36	13:44	21:11	17:07	14:55
		SB	16:16	9:24	13:44	13:15	13:34

Table 5.4 – Comparison of average speeds (kilometres per hour) on A10- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	48	72	51	53	59
		SB	42	70	47	47	52
	PM Peak	NB	38	57	38	49	56
		SB	46	61	51	49	52

Table 5.5 – Comparison of average speeds (kilometres per hour) on A10- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	38	44	40	43	46
		SB	29	46	35	37	36
	PM Peak	NB	25	40	26	32	35
		SB	33	58	40	41	39

SUMMARY: A10 Journey Times

- Each of the proposed packages of schemes results in a decrease in journey times and a general increase in average speeds on the A10 between the M25 Junction 25 and the A1170 Dinant Link road at Hoddesdon.
- The largest travel time savings are realised in Package 1, followed by Package 4. These are the scheme options that completely remove general traffic interaction at the at-grade level.
- Package 2 offers the least travel time savings. The additional capacity afforded by the removal of the right- turn stages is modest and results in significantly lower travel time savings along the corridor than the other packages.

5.3.3. Table 5.6 and Table 5.7 show the journey times for trips between the main rail stations in the area and the larger proposed Local Plan developments. The most likely station that would be used to access these developments has been selected. Rail stations have been selected as a result of their role on transport in the borough and also due to their location.

5.3.4. The Borough of Broxbourne, as noted, has higher rail mode share than the surrounding districts and the county and region as a whole. The importance of the West Anglia mainline is also highlighted in the borough's Transport Strategy vision; this is likely to become more important in the future with Crossrail 2 likely to service Waltham Cross, Cheshunt and Broxbourne stations and the final strategy will need to ensure that development and transport infrastructure does not preclude access to Crossrail.

5.3.5. In terms of location, all rail infrastructure is located east of the A10. A significant amount of the development proposed in the Local Plan is located west of the A10. The severance impact of the A10 has already been noted, so journey times from key developments to the stations also provide a good proxy for the general impacts on east-west movements.

5.3.6. In the analysis, the main Greater Anglia stations have been selected; Theobald's Grove station on the Southbury Loop of the Lea Valley Line has not been selected despite is proximity to Park Plaza, for instance, as data published by Office of Rail and Road (ORR) and noted in the ECIOR notes that this station has significantly lower passenger use compared to nearby Cheshunt or Waltham Cross stations.

Table 5.6 – Comparison of Journey Times (minutes:seconds) to and from stations- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between Brookfield development and Cheshunt Station	AM Peak	To station	10:36	10:11	10:14	10:15	8:54
		From station	9:03	19:11	8:26	8:31	7:31
	PM Peak	To station	7:34	8:53	7:34	7:37	7:38
		From station	14:53	24:33	14:43	13:13	9:30
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	6:58	10:32	7:10	7:11	7:02
		From station	10:33	15:57	9:47	9:56	8:49
	PM Peak	To station	11:47	17:22	11:48	11:79	9:56
		From station	12:43	18:19	12:46	13.03	11:50
Between Park Plaza development and Cheshunt Station	AM Peak	To station	9:00	11:54	8:57	8:49	8:01
		From station	9:33	24:42	8:05	8:38	6:43
	PM Peak	To station	11:23	14:49	11:23	10:11	8:30
		From station	15:21	29:56	14:14	14:46	9:11
Between Goffs Oak and Cheshunt Station	AM Peak	To station	9:59	22:17	9:57	9:48	9:01
		From station	12:11	35:12	10:46	11:16	9:30
	PM Peak	To station	12:20	20:39	12:39	11:10	9:29
		From station	15:41	39:41	14:47	14:46	10:15
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	11:39	24:44	11:19	11:13	9:13
		From station	11:02	37:29	9:37	10:06	8:20
	PM Peak	To station	12:04	23:01	12:01	10:30	8:34
		From station	14:54	42:02	14:00	13:59	9:22

Table 5.7 – Comparison of Journey Times (minutes:seconds) to and from stations- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between Brookfield development and Cheshunt Station	AM Peak	To station	11:11	11:21	10:51	10:46	9:55
		From station	11:59	30:35	11:28	11:27	8:10
	PM Peak	To station	7:43	9:11	7:49	7:49	7:49
		From station	23:27	41:41	23:23	18:38	14:58
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	9:37	9:27	11:27	11:12	10:57
		From station	12:21	18:42	11:57	12:40	11:54
	PM Peak	To station	15:03	18:02	15:19	16:04	16:47
		From station	17:16	27:57	18:20	19:12	19:14
Between Park Plaza development and Cheshunt Station	AM Peak	To station	9:56	12:21	10:09	9:17	8:11
		From station	13:40	37:34	11:30	12:47	7:09
	PM Peak	To station	11:48	13:34	11:30	10:32	8:37
		From station	21:12	51:45	21:34	18:44	12:43
Between Goffs Oak and Cheshunt Station	AM Peak	To station	10:58	23:39	11:11	10:20	9:13
		From station	15:51	48:09	13:43	14:47	9:56
	PM Peak	To station	12:43	20:43	12:24	11:32	9:38
		From station	23:19	61:35	24:33	20:56	16:15
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	14:36	26:10	12:42	12:30	9:22
		From station	14:42	40:32	12:27	13:31	8:33
	PM Peak	To station	14:41	23:06	14:02	10:50	8:49
		From station	22:25	63:58	11:41	20:04	15:16

SUMMARY: Journey times between key Local Plan developments and rail stations

- Only Package 4 results in substantial reductions in journey time savings. These reductions in travel times to Cheshunt station are the result of the removal of interaction of Church Lane and College Road with the A10, which allows for more uninterrupted movement both along the A10 itself, but also across the A10 at these locations. Travel times between Park Plaza and Waltham Cross station are however slightly increased in this scenario.
- Packages 2 and 3 results in small changes in travel time between the selected Local Plan developments and the key rail stations. The reason for small increases in travel times in some cases is due to re-routeing of traffic in the scenarios. In package 2, the banning of right-turns at the junctions results in trips being re-routed on the local road network to join the A10 at either Turnford or Lieutenant Ellis Way. This is a longer distance and travel time. In package 3, the widening of the A10 results in the A10 being more attractive due to increased capacity and reduced journey times. Whilst capacity for the minor arms at College Road and Church Lane is not altered in this scenario, the increased attractiveness of the route results in more traffic wanting to access the A10 and thus using approach routes.
- Package 1 results in significant detriment to the local highway network, with travel times increasing significantly as a result of the closure of both College Road and Church Lane to local traffic. This is due to all traffic that would use these junctions being re-routed via Turnford or Lieutenant Ellis Way, significantly impacting operation of those junctions, impacting the local road network and displacing existing traffic. It is clear that closing both College Road and Church Lane is not feasible and would significantly impact operation of the road network to the detriment of non-A10 road users.

Delays and Volume-to-Capacity (V/C) ratios

5.3.7. Tables including data from the traffic modelling exercise have been produced that highlight the changes in delays and V/C ratios at key affected locations as a result of the packages being introduced. These are presented in full in Appendix B. The key points are summarised below.

SUMMARY: Delays and V/C ratios at key affected locations

- Only Package 1 and Package 4 are successful in significantly reducing V/C ratios at the key junctions. Package 1 drastically reduces the choice of turning movements that can be made through the junctions, causing a significant number of trips to reroute along local roads. Package 4 increases the capacity of all arms, but parts of the A10 network in the vicinity of Church Lane and College Road will still experience volumes of traffic at capacity level.
- The mitigation afforded by Package 2 and Package 3 has minimal effect on the V/C ratios, as they neither induce significant rerouting of traffic away from the pinch points, nor provide a big enough capacity increase to alleviate congestion.

5.4. Summary by Scheme Package

Package 1

5.4.1. Package 1 represents a low-cost intervention option. The interventions prioritise through-movements on the A10 by restricting the minor roads of Church Lane and College Road to bus-only access in both directions.

5.4.2. This option virtually removes all traffic on these minor approaches. The resultant reduction of traffic along Church Lane and College Road means the signal stages at the junctions can be altered to give fewer stages and thus longer total green times for the A10 across the cycle. In reality, were this option to be implemented, results are likely to be even more pronounced as signals allowing bus movement from the east or west would be demand dependent resulting in a higher-than-modelled capacity on the A10.

5.4.3. Journey times along the A10, shown in Table 5.2 and Table 5.3 show a reduction of 31% on average for trips along the A10 under Package 1, compared with a no-mitigation Local Plan scenario.

5.4.4. Delay analysis at the junctions is consistent with this. There is a reduction on almost all links at the key areas of College Road and Church Lane and on nearby sections of the A10. Sections of the A10 in proximity show reduction in delay of between 12 seconds and 3.5 minutes, depending on direction and time period. Other areas of the network show very little change, which is unsurprising as they are not in the vicinity of the areas affected by this package.

5.4.5. There is also a reduction in V/C ratios at key junction arms around Church Lane and College Road. In the no-mitigation Local Plan scenario, multiple arms at these junctions experience traffic flow nearing, or at, capacity (several operate beyond capacity in 2033). Implementing Package 1 has a positive effect on this, causing these busiest arms to reduce their V/C percentage.

5.4.6. Whilst Package 1 offers a low-cost solution to congestion along the A10, it has a major downside which is the significant increase in journey times between proposed Local Plan sites and the key rail infrastructure (a proxy for east-west movements, as all rail stations are sited east of the A10). Journey times are doubled (or, in some cases, trebled) by the implementation of this package. For example, the route between Cheshunt train station and the Tudor Nurseries housing development in the 2023 AM peak hour increases from 11:02 to 37:29.

5.4.7. This is due to the unavoidable re-routing resulting from the closure of Church Lane and College Road to non-bus traffic. To travel between the east and west of the borough, across the A10, therefore requires a diversion either to Theobalds Lane or Winston Churchill Way in the south, or to the B156 roundabout in the north. This significantly increases travel times and distances for a large number of trips.

5.4.8. Implementing closures to the minor roads at both these key junctions on the A10 is therefore unfeasible as an option. It would vastly increase the severance experienced by the communities based either side of the A10, and would negatively impact on the local environment.

Package 1 Alternative

5.4.9. The natural progression from this package is to investigate the effects of restricting just one of Church Lane or College Road to bus-only traffic to ascertain if the impacts on the local road network can be reduced whilst still benefitting the A10. Further modelling has been undertaken to demonstrate the effect of closing Church Lane only, which has been identified as having significant issues with right-turners blocking ahead movements.

5.4.10. This option will result in the rerouting of many trips between the east and the west, with traffic expected to use College Road as an alternative. It also removes one of the main conflict points between eastbound-westbound traffic and A10 through-traffic.

5.4.11. Implementing this alternative package has no positive effect on any of the journey time routes. Travel times along the A10, detailed in Appendix B, all show a marginal increase compared with the no-mitigation Local Plan scenario. Journey times to and from the rail stations though perform significantly better than those in Package 1, are still worse than if no mitigation measures are put in place. The Package 1 Alternative does not cause the same degree of severance between east and west, due to College Road remaining as a connection, but the increase in traffic flow through this junction generates more delay.

5.4.12. Shutting Church Lane has a direct effect on the delay times at College Road, which are increased due to the volume of traffic which uses this junction to re-route from Church Lane. This is mirrored by the V/C ratios, which show all inbound junction arms at College Road operating at, or beyond, capacity.

5.4.13. This alternative package, whilst avoiding the severance to the network caused by Package 1, offers none of its benefits and performs worse in every key performance metric than the no-mitigation Local Plan scenario.

Package 2

5.4.14. Package 2 represents a further low-cost intervention: the banning of right-turns from the northbound and southbound A10 approaches at Church Lane and College Road. Restricting the right hand turns at the at-grade junction should contribute to a reduction in congestion on the A10 by allowing for a higher capacity of straight-ahead movement through removal of the right-turn signal stage.

5.4.15. Package 2 results in a small reduction of journey times both northbound and southbound on the A10 compared to the no-mitigation Local Plan scenario. Journey times decrease by between 2% and 16% dependent on direction of travel, time period and forecast year.

5.4.16. Travel times between key stations and major residential developments show minimal change. Unlike Package 1, Package 2 does not result in the same east-west segregation issues, with much smaller levels of traffic rerouted to account for the banned right turns from the A10. The small decreases in journey times across the routes can, in part, be attributed to the decreased travel times along the A10.

5.4.17. The restriction on right-hand turns generates a large reduction in delay at the College Road junction for which all arms were previously congested. The exception to this is the outbound northern arm,

where delay is increased by 39 seconds, on average. Effects at Church Lane are less pronounced than those at College Road.

5.4.18. Changes in delay along the whole of the A10 corridor in the borough are minor, with the effects of the package being concentrated around the College Road and Church Lane junctions. In 2023, the southbound A10 sees delay between the junctions decreased by up to two minutes. Northbound, delay on the approach to Church Lane is decreased by around one minute. Results in the 2033 model are, again, similar but more pronounced, with delays on the approaches to the junction being reduced by up to five minutes.

5.4.19. Volume/capacity ratios remain almost completely unchanged across all locations, modelled time periods and years, suggesting that traffic has not rerouted away from the Church Lane and College Road junctions. Delays have been reduced, therefore, by the changes made to how traffic interacts when passing through these junctions.

Package 3

5.4.20. Package 3 is a high-cost scheme requiring new infrastructure to widen the A10 to at least three lanes in both directions between the M25 and the A1170 junction. This represents a potential full extent of widening; it is possible that widening could be implemented along a shorter length of the A10 between the M25 and A1170, dependent upon outturn V/Cs. It should be noted that further work is required in order to assess the potential deliverability of this option and likely cost of the package.

5.4.21. This package would increase capacity along the A10. At the key pinch-points of Church Lane and College Road it would provide greater capacity for traffic making the through-movements along the A10, by having an increased number of lanes at the stop-line.

5.4.22. Journey times along the A10 show improvement under this scheme compared to the no-mitigation Local Plan scenario, with a reduction in travel time for all routes. The reduction in travel times is less than Packages 1 and 4 as interaction is still required with the minor roads at the at-grade junctions (signal staging remains the same as at present), although the travel times for the A10 are greater than Package 2, suggesting that widening provides greater capacity benefits than the removal of the right-turn signal stages.

5.4.23. Journey times to and from the key stations again show improvement over the no-mitigation scenario. The small decreases are attributable to time spent on the A10 for a number of the routes in question.

5.4.24. Package 3 reduces delay from the network at both the Church Lane and College Road junctions. College Road sees improvements of up to three minutes for the 2023 period, with delay on some arms reduced by over four minutes in 2033. There are similar reductions in delay at Church Lane, in particular in 2033.

5.4.25. Though reductions in delay are shown, the volume/capacity ratios of the junctions do not change significantly under Package 3. Those arms that were under pressure from high traffic volumes in the no-mitigation scenario remain close to capacity, with only small relief afforded by the scheme. This suggests that further improvements in the operation of the junctions may be required in order to ensure that the scheme is more than a temporary congestion relieving measure.

Package 4

5.4.26. Package 4 assesses the implementation of two fully grade-separated junctions at Church Lane and College Road allowing movement in all directions without the need for interaction between all movements. This test is a proxy for both an underpass and a flyover option of the A10. This is in all likelihood a high-cost option, although further work is necessary in order to assess the potential deliverability of the scheme and its likely costs. .

5.4.27. The package increases the capacity at all movements through the junctions. This is reflected in travel time reductions both along the A10 and between the stations and Local Plan developments (east-west movements). Package 4 performs best out of all the packages when considering the predominantly east-west movements.

5.4.28. This package is also the most effective at reducing delays at the junctions. The removal of signalised control and conflicting / interacting movements results in negligible delays in 2023, with the 2033 forecasts showing a marginally higher level of remaining delay, but still considerably lower than forecast in any of the other packages.

5.4.29. This package also most successfully reduces V/C ratios for all approaches to the at-grade junctions. However, it should be noted that the new southbound off-slip at Church Lane is forecast as being close to capacity in both 2023 and 2033. This suggests that the volume of traffic approaching from the north and trying to access either the east or west of the network is forecast to be high. Whilst the high V/C for this movement may be the result of standardised design in the modelling it does indicate that further measures to reduce travel are still likely to be required.

Summary of results

5.4.30. A summary of the package analysis is given below, providing a high level overview of the results. Table 5.8 provides a quick appraisal summary style table that provides relative indicative impacts of the schemes, land requirements and likely costs.

Table 5.8 – High level comparison of scheme package options

Scheme Package	Journey Times (A10)	Journey Times (East-West)	Land Requirement?	Indicative Cost
Package 1	✓✓✓	✗✗✗	No	**£**
Package 1 (Alternative)	✗	✗	No	**£**
Package 2	✓	-	No	**£**
Package 3	✓	-	Yes*	**£££**
Package 4	✓✓	✓✓	Yes**	**£££**

* Along route of A10 between M25 and A1170 at Hoddesdon to facilitate widening

** At affected junctions – land-take dependent on scheme design

Scale of Impact (relative)

✓✓✓	✓✓	✓	-	✗	✗✗	✗✗✗
Largely Beneficial	Moderately Beneficial	Slightly Beneficial	No impact	Slightly negative	Moderately Negative	Largely Negative

Likely cost (relative)

£	££	£££
Low	Medium	High

SUMMARY: Mitigation scheme analysis

- In terms of improving travel times along the A10, options that remove the interaction with minor arm traffic at the at-grade junctions (Packages 1 and 4) are most beneficial, providing greater reductions in travel time for the corridor and more greatly reducing delays and V/Cs than those options that provide more link capacity (package 3) or remove only some of the movements (package 4).
- Ultimately, across each of the modelled mitigation scenarios, the evidence from the model suggests that there remain residual queues and delays that are likely to be unacceptably high in the future years. In the case of packages 2 and 3, delays and high V/Cs remain at the minor arm approaches for College Road and Church Lane. In Package 1, if both junctions are closed completely to general traffic, significant congestion results across the rest of the network which is unlikely to be palatable or practical as a solution. The Alternative Package 1, whilst not causing the same need for rerouting to the local road network, offers no observable improvements to delay and congestion. Only Package 4 adequately resolves congestion issues at the two junctions.
- The evidence from the package 1 alternative scenario suggests that an improvement to just one of the at-grade signalised junctions on the A10 is also not feasible as, whilst this has less impact on the local road network, it also offers no benefit to the A10, with traffic simply being delayed at the remaining un-changed at-grade junction.
- None of the options or opportunities to date have dealt with the key congestion points away from the A10, such as the A121 in Waltham Cross. Further work is required to understand the interactions at these locations and to develop mitigation. Whilst there is understandable focus on the A10, the highway considerations of the Transport Strategy will have to seek a more comprehensive view of the borough's road network as a whole.
- The evidence from the models suggests that, in the absence of any other measures to reduce demand or to encourage transfer of trips to more sustainable modes, the borough's road network will continue to be severely congested. This reinforces the need for a comprehensive Transport Strategy that first seeks to reduce travel demand and subsequently optimise use of the transport system by encouraging modal shift.

Recommendations

5.4.31. Further consideration of highway mitigation needs to be considered, in the context of a sustainable Transport Strategy that adequately considers all modes. This is discussed in the next chapter.

5.4.32. In terms of the highway assessment, further analysis and assessment is required that considers the other pinch-points that are likely to manifest and which are located away from the A10 corridor as outlined in Chapter 1. This includes the A121 in Waltham Cross.

5.4.33. In terms of the options tested, it is recommended that no further work is undertaken that considers Package 1 or its alternative. The impacts of the full option on the local network are largely negative and would cause significant issues in terms of access to services and general travel round the borough; the alternative scheme reduces the impacts on local roads, but has none of the benefit for the A10, so resulting in a scenario that is no better than the unmitigated Local Plan scenario.

5.4.34. Moving forward, package 4 provides the best option for reducing travel times and delays in the vicinity of the A10 and on the local approach roads. However, this is an expensive scenario and evidence from package 1 (alternative) suggests that an improvement to just one of the two junctions is unlikely to have a significant enough impact on reducing travel times and congestion.

5.4.35. Package 2 may be able to be pursued as a low cost option, although the impacts of this by itself are limited. The package would require a series of complementary measures in order to fully realise benefits and have a lasting impact on the highway network.

6. Summary

The Borough of Broxbourne has set ambitious growth targets to meet forecast need in housing and employment for the period between 2016 and 2031. Initial update of the evidence base suggests that significant transport challenges will need to be met to enable this growth and ensure continuing economic prosperity of the borough.

It is clear that a comprehensive Transport Strategy is required and will need to be developed in parallel to the Local Plan.

6.1. Work Completed

6.1.1. A comprehensive Transport Strategy is necessary to ensure that the transport network in Broxbourne can continue to meet the needs of its residents and businesses in the future, ensuring that transport is not a constraint on economic growth or prosperity of the borough. Work undertaken to-date provides an initial starting point and evidence base for the future Transport Strategy.

6.1.2. The Existing Conditions, Issues and Opportunities Report (ECIOR) has identified known issues on the transport network that may act as a constraint to growth. These issues are based on existing knowledge held by planning officers for Broxbourne, the county and neighbouring local authorities. A full assessment of existing issues and likely future issues will also need to understand the views of elected members, the public and other relevant stakeholders.

6.1.3. Transport modelling has shown that a number of roads and junctions are likely to come under significant stress as a result of proposed future development. Many of these, such as locations on the A10 and junctions on the A121 in Waltham Cross are likely to experience additional pressures irrespective of proposed growth contained in the Local Plan.

6.1.4. Transport modelling of some initial emerging highway scheme packages has been undertaken. These are currently high-level concepts in need of further refinement. Their focus has been on the A10, and further focus needs to be given to locations away from this in the urban areas, such as the pinch-points highlighted on the A121 in Waltham Cross.

6.1.5. Analysis of the mitigation measures has shown that increasing capacity on the A10 can have only limited benefit, and instead it is more effective to minimise the interaction between east-west and north-south traffic. This is most successfully achieved by full grade-separation of the key junctions, however this is likely to be costly, and parts of the network will still be stretched in terms of capacity.

6.2. Next Steps

6.2.1. The work to-date, forming the initial evidence base, is a good first-step at identifying the key issues that currently affect movement within the borough and are likely to affect the transport network over the planning period. The work has not, however, been fully aligned with the suggested transport hierarchy, due to the availability of evidence and reliance on existing tools at present.

6.2.2. The work has provided a good basis for the identification of issues and highway options, collating ideas from stakeholder workshops and previous studies. Initial assessment of these has been undertaken using a WebTAG aligned transport model. However, for the sustainable – initial assessment tiers, only limited options for encouraging modal shift to more sustainable modes and improving the efficiency of existing modes have been identified. Likewise, only generic concepts have been mentioned in respect of reducing the need to travel and these need to be made more specific.

6.2.3. Broxbourne Borough Council will look to develop the full Transport Strategy that will support the Local Plan. This work will need to take on board the outcome of consultation and discussion with other stakeholders, including elected council members. The final Transport Strategy will be a comprehensive and aligned with the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) so as to best demonstrate the need for any infrastructure improvements and to show how these are set within the context of a sustainable transport network. Figure 6.1 sets out the recommendations for further work to develop a comprehensive Transport Strategy.

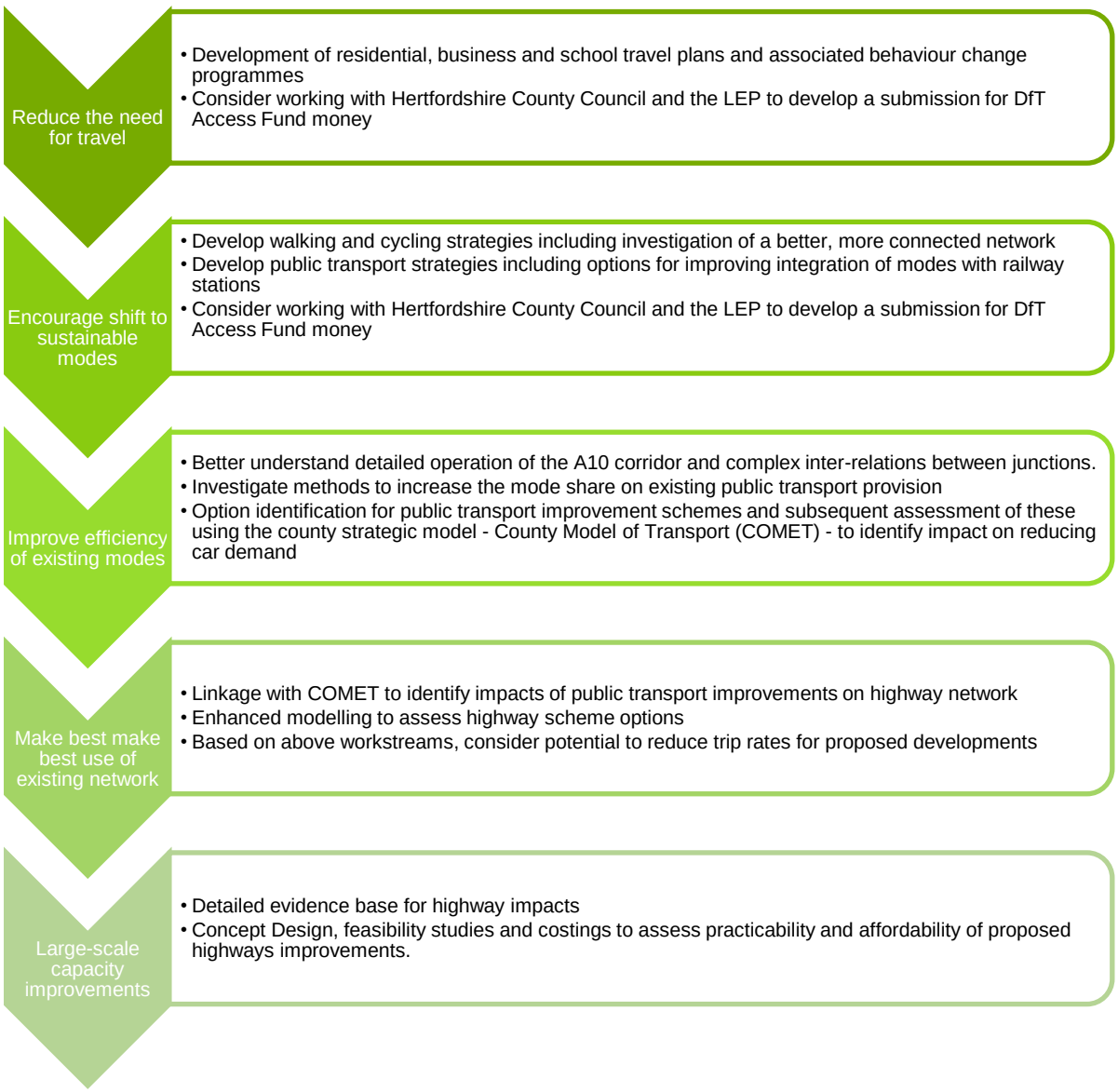


Figure 6.1 – Recommended tasks that the Borough of Broxbourne should pursue to develop a comprehensive Transport Strategy

6.2.4. It is important that the borough also considers developing an evidence base that can support the application for funds from central government and other organisations. The borough will need to work with Hertfordshire County Council and the LEP to develop and submit applications. Potential funding sources could include the DfT's Access Fund, Highways England's cycling ambition fund and RIS2.

6.2.5. The DfT's Access Fund represents the first funding opportunity that will be available to Broxbourne Borough Council. The fund is worth £580 million (£80m revenue and £500m capital) for sustainable travel measures. This allocation, named the "Access Fund" will formally launch later in 2016, to start in 2017/18. The capital part of this is expected to be announced in the Local Growth Fund guidance

due at the end of June, with a 28th July submission deadline. The DfT has indicated that guidance on the revenue component of the Access Fund will also be made available during June, with the bid submission date to be advised. The quick turnaround necessitates close working with the county and LEP. The objectives of the scheme are closely aligned with those of Broxbourne's Local Plan and transport strategy vision and so a good case should be demonstrated. The objectives are:

- to support the local economy by supporting access to new and existing employment, education and training; and
- To actively promote increased levels of physical activity through walking and cycling.

6.2.6. Above all, the Borough Council will need to be proactive in developing the Transport Strategy, work closely with – and seek feedback from – all relevant local stakeholders. The Transport Strategy will need to reflect Broxbourne's vision for a more sustainable, efficient and safe transport network that better connects its communities and thus needs to reflect the needs of local residents, businesses and other transport users.

Appendices

A Appendix A – Council Members' workshop notes

A.1. A workshop with Council Members was held on 29th June 2016. The aim of the workshop was to updated members on the status of the Local Plan and the thinking behind the evolution of various workstreams towards a final Transport Strategy.

A.2. In addition, the workshop also allowed for discussion around the issues affecting transport within the Borough of Broxbourne and potential solutions to these; in the same vein as the stakeholder workshop with officers that had previously been held.

A.3. Two separate sessions were run. The first session covered softer measures and way to influence travel behaviour, walking and cycling, bus, rail and public transport. The second session covered issues on the highway network and potential solutions to these.

A.4. Table A.1 presents the issues raised during the first session whilst Table A.2 sets out the potential solutions discussed. Issues and suggestions have been grouped by broad subject area and by category.

A.5. Table A.3 presents the results of the second session, which was focussed on potential solutions as issues were either thought to be longstanding or covered in the previous session. Where new solutions were suggested that had not previously been raised these have been added to a 'long-list' of options contained in the main document.

Table A.1 – Issues raised during workshop session 1

Issue and description	Categories
General	
Development • The council is being asked to build too many new houses. Perhaps the council should consider not promoting any new developments until existing issues have been resolved.	Policy
Travel patterns • There is a heavy north-south emphasis on existing transport provision, but key east-west movements are poorly catered for despite being important. • Desire lines (housing areas to services) and transport provision do not match up, making it difficult for people not to use their cars.	Policy Sustainable Development
Walking and cycling	
Safety and conflict: • Cycling is not a valid mode choice in many parts of the Borough as there are not enough off-road facilities and people therefore feel unsafe taking their bikes out • There is a general perception that cycling is unsafe due to the large roads and poor crossing facilities • Existing cycle routes are poor quality. Paint is worn away and the majority of routes that are on road are narrow (e.g. A1170) • The lack of segregated infrastructure means that cyclists get frustrated by having to 'weave' around pedestrians, whilst pedestrians feel less safe when cyclists come towards them	Policy Walking Cycling Infrastructure
Health • Air pollution (traffic fumes) caused by number of cars on the	Environmental

Issue and description	Categories
roads discourages walking and cycling as it isn't a pleasant environment in which to do so.	
Integration • Walking and cycling routes to bus and train facilities are poor and discourage use	Walking Cycling Infrastructure
Public Transport	
Routes and services • There is a lack of east-west bus services within the Borough, which means people have to use their cars • Services are too infrequent meaning that people can't just turn-up and catch the bus. Planning ahead is difficult for some. • The public has a lack of control over bus services and routes, which disenfranchises them from using the service.	Policy
Interchange standards • Bus interchanges need to be improved. Bus stations and stops are generally low quality – electronic boards do not work where they exist. • There are few opportunities to change modes as bus stations are poorly located with other non-bus services. In particular, there are very poor bus services to the station. • There is not enough car parking at train stations, discouraging people from using the train.	Infrastructure Technology Parking
Economic disincentives • Train ticket prices are too expensive and deter people from using the train. • Car parking at train stations is too expensive and people can't walk, cycle or take the bus to the train. People therefore drive instead.	
Causes of congestion:	
School run traffic • Can be the primary cause of congestion on the roads • School traffic makes it difficult for commuters and residents to go about their business easily. • Parking outside of schools should be prevented and this prevention should be enforced to improve residents lives and to reduce congestion	Highways Influencing Travel Behaviour
Cycle lanes • Cycle lanes remove capacity from the road network and make it more difficult for roads users to travel • There are fewer cyclists than car drivers – why should they dictate priority?	Highways Cycling
Public transport • Public transport is expensive to use. Only when bus and rail services are cost competitive will a reduction in car travel happen.	Public Transport Highways
Infrastructure • Much of the road infrastructure is poor: potholes aren't dealt with by the council and junctions are sub-standard. There isn't enough road capacity on the busiest routes. • Roads should serve the local users and residents of Broxbourne. One of the largest causes of congestion is wider Hertfordshire travellers using the roads.	Highways

Table A.2 – Solutions suggested during workshop session 1

Potential solutions and description	Categories
General	
General • A wholly punitive approach to reducing car travel should not be adopted; neither should a wholly promotional approach to active modes. Instead a 'blended' approach is required.	Policy
Development • Consider a requirement for large new employment developments to provide shuttle services between site and train and bus stations.	Policy Public Transport
Reducing the need to travel	
Home Working • People should be encouraged to work from home and only to travel to work when they need to (e.g. for meetings) • All new housing should be built with super-fast broadband to enable people to work from home and have suitable video-conferencing facilities: e.g. Old Hatfield development is a showcase of high quality design.	Influencing Travel Behaviour Technology
Development standards • New developments that are proposed should be mixed-use, ensuring that people don't need to get the car to travel to work.	Policy Sustainable Development
Walking and cycling	
Safety and conflict • More segregated infrastructure would make cyclists and pedestrians respect each other more and make people more likely to do both • More off-road cycling facilities required • Cycle route provision, even if poor, is north-south aligned. New east-west aligned routes are required to better connect urban areas.	Cycling
Health • General promotion of the health benefits of walking alongside better walking routes would encourage more people to do so.	Walking
Promotion • Introduce some form of cycle hire scheme, like 'Boris Bikes' in London (Santander cycle hire) or Nextbike to promote cycling for shorter-distance journeys within the Borough.	Cycling
Public Transport	
Technology • Introduce Real Time Passenger Information (RTPI) at all bus stops so that users are informed of any delays to their journeys to reduce frustration • Introduce better ticketing facilities. E.g. Pay-by-phone to allow people to pay for the bus via an app, so that they aren't turned away for having large notes. • Expand 'Oyster' payment service or allow contactless card payment to allow for payment on all bus and train services in the Borough. • Make the bus companies develop mobile apps so that the public have more information about their services available.	Technology
Routes and services • Introduce east-west bus services to serve residential and urban areas, rather than the predominantly north-south favoured at the moment. • Routes to be improved to connect buses to train stations • Introduce an express bus service which would make use of the A10 via a bus priority lane.	Public Transport Policy
• The council should note that it still has a voice and influence over forthcoming Crossrail 2 and should continue	Policy

Potential solutions and description	Categories
to engage and ensure project is developed in best interests of Broxbourne residents.	
Facilities • The re-done car park at Broxbourne station is a good example of improving the experience of rail users. This type of improvement should also be made at Cheshunt station which would encourage more people to use the train and provide more parking capacity. • The council should continue to support four-tracking to Broxbourne, but should ensure this also comes with improve station facilities such as more ticketing machines, better platform furniture etc.	Public Transport Parking Technology
Causes of congestion:	
School run traffic • Subsidise school bus services across the Borough between schools and their catchment areas to get cars off of the road	Policy Influencing Travel Behaviour
Economic incentives • The council should consider introducing road charging / congestion charging to reduce the number of cars on the network • The council should consider increasing parking charges to deter driving and promote public transport. However, this would need to be balanced to ensure that services aren't negatively affected. • Discuss extending the London Low Emission Zone (LEZ) to cover the southern half of Broxbourne to reduce heavily polluting vehicles and discourage car journeys.	Policy Influencing Travel Behaviour Parking Environmental

Table A.3 – Solutions suggested during workshop session 2

Potential solutions and description
General
• Technological advances to 2031 may solve some of the existing issues. The council should look to allow for electronic and autonomous vehicles on roads in the Borough.
• Solutions to particular road junction are not all that is needed. A package of measures is required across all modes and developments.
M25 solutions
• The M25 is the greatest problem. Junction 25 operates poorly and causes significant back-up of traffic in the AM heading south out of the Borough. This should be the priority to solve.
A10 solutions
• Grade separation of the at-grade junctions in the Borough should be prioritised if feasible and affordable. As we have been shown *[referring to presentation]* other options don't work as well.
• Flyovers impact on the local population and have too significant a visual impact. Instead, look to 'underpasses', as is the case in Stevenage along Gunnels Wood Road.
• Look to develop a one-way gyratory system around the Church Road / College Lane junctions. For example, eastbound across College Road and westbound across Church Lane. This may better regulate traffic movements in / out of Cheshunt and allow for some additional capacity at the A10 junctions.
• Council should look to prioritise High Occupancy Vehicle (HOV) lanes, to offer an incentive to car-sharing and to reduce car trips. This could also be used by taxis and buses.
• Sustainable transport guarantees should be given to new capacity that may be able to be generated on the A10. E.g. bus lanes and bus gates
Other road improvement solutions
• A new route across to the A1000 is needed, potentially via Bayford. This would stop traffic using the A10/M25 or rat-running via Cuffley.
• Traffic in Waltham Cross is a bigger issue than the A10. This is all due to the impact of the London Transport Plan. Council needs to *"work with TfL to make the London Transport*

Potential solutions and description
Plan work better for us".
• Improvements to the Dinant Link road are needed – queue going into the roundabouts from the A10, and there will be more development!
Reduce car use
• Car parking policies should be scrutinised and more stringent measures adopted. Perhaps car-free developments should be pursued, for example, recent developments near Tottenham Hale station.
• Council needs to investigate town centre parking policies – perhaps charging people more to park would reduce the amount of car trips into Cheshunt?
Technological solutions
• The council should consider introducing road charging / congestion charging to reduce the number of cars on the network
• Broxbourne should work with county to have electronic information boards positioned across road network – particularly on A10 approaches to allow people to make better route choices. (Variable Messaging Systems)
• Council should work with a technology company to develop a mobile app to allow people to check road conditions etc. before they leave home. More people than ever using their apps and this will only increase in the future.
Goods Vehicles
• A policy on when HGVs can travel is needed. Essex Road is already a 'pinch-point' because of industry and further developments are coming! There are big issues for the local community, particularly environmental (air quality).

B Appendix B – EAST spreadsheet outputs

B.1. Appendix B contains full outputs from the Department for Transport's (DfT) Early Appraisal Sifting Tool (EAST). The outputs are the detailed information relating to the sifting set out in chapter 4 of this report.

B.2. EAST outputs are contained across the next few pages. There is a single EAST output per page, each relating to a scheme that has been assessed. Each output provides information on the scheme, including:

- Scheme description;
- Strategic case;
- Economic case;
- Managerial case;
- Financial case; and
- Commercial case.

B.3. As previously noted, the cases given in EAST are aligned with the DfT's Transport Business Case guidance and that of Her Majesty's Treasury (HM Treasury) Green Book.

B.4. Data have been input and the EAST sheets completed to the best of current knowledge. In many cases, the schemes have either no or little history and so there is little information that can be provided for the Financial and Commercial cases. As schemes are developed further, subject to appropriate evidence bases being in place, these data could be revised.

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Park Plaza Signal Operation**	
Date	06/08/2016	
Description	Linkage of the signalised junction south of the A10 / Lieutenant Ellis Way / Winston Churchill Way roundabout with M25 Junction 25 under the Split Cycle Offset and Optimisation Technique (SCOOT) to improve operational efficiency.	

Strategic

Identified problems and objectives	Highways England is currently working with Transport for London to link the M25 Junction 25 and A10 / Bullsmoor Lane junction in London Borough of Enfield using SCOOT. The aim of this is to improve the operational efficiency of the junctions. It is identified that there are likely to be congestion issues at the signalised junction of the A10 with Great Eastern Road (Park Plaza development). Linking this junction under SCOOT may help to improve the operational efficiency of the junction.	
Scale of impact	2	Likely to have a small impact as part of signal optimisation, but could reduce queueing on the A10.
Fit with wider transport and government objectives	3	Enables the transport network to better cope with growth, particulalrly at the Park Plaza developments, supporting the principles of economic regeneration.
Fit with other objectives	3	Would help to support Broxbourne's aim of a reliable and safe transport network, although is unlikely to meet other more sustainable objectives of the Transport Strategy as the intervention is purely road-based.
Key uncertainties	Would need to work together with Highways England and Transport for London to determine feasibility of project and ensure no adverse effect at M25 Junction 25 or A10 / Bullsmoor Lane.	
Degree of consensus over outcomes	4	Accepted that optimisations here are likely to be beneficial to the network as a whole.

Economic

Economic growth	**5. Green**	Likely to improve the connectivity and reliability of the A10 between the M25 and Lieutenant Ellis Way junction. Not required to enable growth at Park Plaza, but would support the opportunities for development and improve access and egress at the site.
Carbon emissions	**4. Amber/green**	Slight reduction in carbon emissions due to more efficient road system and fewer vehicles queueing at this location. Scheme will encourage better flow and movement of traffic on southern reaches of A10 within the borough. Unlikely to result in any change in mode-share.
Socio-distributional impacts and the regions	**6. No Impact**	No significant change in SDI impacts. The scheme will not solve severance or other issues in the area.
Local environment	**6. No Impact**	Scheme is unlikely to have a significant impact on noise or quality of urban realm / environment. There are likely to be some small benefits in air quality due to fewer queued vehicles on the A10.
Well being	**4. Amber/green**	The scheme will have little-to-no impact on reducing existing severance issues in the area, reducing any crime or improving levels of physical activity in the borough (there is unlikely to be any mode-shift as a result of improving the highway network here). However, the scheme would likely improve access to goods and services by reducing congestion and improving day-to-day journey time reliability on this section of the A10. There may also be a small beneficial impact in the number of accidents due to less frequent queuing and traffic build-up.
Expected VfM category	2. High 2-4	Implementation of SCOOT likely to be low cost and result in travel time savings for road users.

Managerial

Implementation timetable	3. 6-12 months	Implementation of SCOOT at this location should be quick as no significant infrastructure upgrades required. Subject to consultation and discussion with Highways England and TfL.
Public acceptability	5. High	
Practical feasibility	5. High	
What is the quality of the supporting evidence?	1. Low	Supporting evidence on general impact of SCOOT is high, but quality of evidence for this particular location is low.
Key risks	Highways England and TfL are key stakeholders and discussion would be required with them to ensure that there are no adverse impacts on their current proposals for SCOOT implementation.	

Financial

Affordability	4	Likely to be a relatively low-cost solution.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	5. Low risk	
Other costs		

Commercial

Flexibility of option	3	
Where is funding coming from?	Broxbourne Borough Council, Hertfordshire County Council and LEP. Potential for some contribution of funds from Highways England due to 'tie-in' with its network.	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Underpass**
Date	06/08/2016
Description	This scheme would involve placing underpasses at the existing at-grade junctions on the A10. The aims of the scheme would be to facilitate direct and un-interrupted movement of the A10 traffic and so remove the mainline conflicting movements from the remaining local traffic junction. This would also improve the urban environment, facilitating at-grade crossings of the junctions along east-west desire lines for pedestrians and cyclists.

Strategic

Identified problems and objectives	Numerous strategic issues are identified across modes. Walking: There are key desire lines to cross the A10, with most infrastructure sited to the east of the road, yet with significant residential development to the west. There are long crossing times at these major junctions and large uninviting crossing points. This causes major severance between the eastern and western areas of the borough. Cycling - public awareness: The A10 is barely used by cyclists and has lead to a perceived lack of north to south routes. The same severance issues as identified for walking exist for east-to-west movements. This results in a disconnected network for cyclists. Road: There is already significant congestion on the A10 at the at-grade junctions on the network, particularly stressed for east to west movements due to weight of traffic on the north to south A10. A specific capacity concern is the southbound A10 right turn movement to Church Lane, where queues often exceed the capacity of the slip road and spill back to main line.	
Scale of impact	4	Likely to have a beneficial impact for 'through' traffic movements on the A10 and could significantly improve east-to-west movements that cross the A10 - both walking / cycling, public transport and road. Could contribute to reduced community severance.
Fit with wider transport and government objectives	4	Potential for east-west movements to improve more sustainable travel choices: reduced community severance and provision of at-grade facilities could help to contribute to better urban environment for pedestrians and cyclists. Potential to reduce carbon emissions through fewer queued vehicles and instigation of some mode-shift for east-west movements across the A10.
Fit with other objectives	4	Opportunity to provide better walking and cycling routes and promote east-west crossings, which would link to associated sustainable infrastructure (e.g. rail)
Key uncertainties	At present, uncertain as to what land-take may be required. Does not aid in localising trips as is a stated objective of Local Plan.	
Degree of consensus over outcomes	Don't know	Traffic modelling required to ascertain impacts to traffic on both the A10 but also for access to Cheshunt.

Economic

Economic growth	**4. Amber/green**	Will contribute to a more reliable transport network, both for the A10 and the local road system. Particularly likely to improve the reliability of the transport network in the future. It is likely that future developments will impact on the Church Lane and College Road junctions and improvement will help to encourage economic growth and thus enable development.
Carbon emissions	**3. Amber**	Vehicle-kilometres likely to reduce due to traffic being able to take more direct routes. No change in fuel type use, but likely to be some reduction in vehicle-kilometres should opportunities to improve mode-share be exploited. Scheme is however likely to require some significant construction.
Socio-distributional impacts and the regions	**6. No Impact**	Slight positive impact in reducing severance and thus connecting communities either side of the A10 and promoting economic growth.
Local environment	**4. Amber/green**	Scheme is likely to have a positive impact on the urban environment due to A10 being placed in an underpass and subsequent at-grade level route being improved, with better facilities on the level. Beneficial impact on air quality due to reduction in queueing on the A10 and side roads, particularly if opportunities for mode-shift to more sustainable modes (as a result of reduced severance) can be taken advantage of.
Well being	**5. Green**	Large improvement in severance as impacts of A10 are reduced and more at-grade crossings for pedestrian and cyclists can be provided. An increase in walking / cycling as a result could lead to health benefits, particularly for a district which is acknowledged as having a higher-than-average level of obesity. Access to facilities improved as a result. Traffic on A10 also likely to be more reliable due to reduced interactions with local traffic.
Expected VfM category		Likely costs unknown. Expected to be at least Medium VfM.

Managerial

Implementation timetable	6. 5-10 years	Likely to require initial feasibility studies and comprehensive, robust evidence base. Likely 5-10 years.
Public acceptability	4	Largely beneficial impacts for majority of local public.
Practical feasibility	Don't know	Land-take requirements currently unknown.
What is the quality of the supporting evidence?	1. Low	At present no further modelling of impacts has been undertaken.
Key risks	Potential land-take required either side of junction to facilitate slip-roads from A10. This may require Compulsory Purchase Orders.	

Financial

Affordability	Don't know	Further work required to develop likely scheme costs.
Capital Cost (£m)	Don't know	Further work required to develop likely scheme costs.
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	2	Infrastructure would be mostly static, but at-grade crossings could be reconfigured in a number of ways.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Flyover**	
Date	06/08/2016	
Description	This scheme would involve construction of flyovers at the existing at-grade junctions on the A10. The aims of the scheme would be to facilitate direct and un-interrupted movement of the A10 traffic and so remove the mainline conflicting movements from the remaining local traffic junction. This would also facilitate at-grade crossings of the junctions along east-west desire lines for pedestrians and cyclists.	

Strategic

Identified problems and objectives	Numerous strategic issues are identified across modes. Walking: There are key desire lines to cross the A10, with most infrastructure sited to the east of the road, yet with significant residential development to the west. There are long crossing times at these major junctions and large uninviting crossing points. This causes major severance between the eastern and western areas of the borough. Cycling - public awareness: The A10 is barely used by cyclists and has lead to a perceived lack of north to south routes. The same severance issues as identified for walking exist for east-to-west movements. This results in a disconnected network for cyclists. Road: There is already significant congestion on the A10 at the at-grade junctions on the network, particularly stressed for east to west movements due to weight of traffic on the north to south A10. A specific capacity concern is the southbound A10 right turn movement to Church Lane, where queues often exceed the capacity of the slip road and spill back to main line.	
Scale of impact	4	Likely to have a beneficial impact for 'through' traffic movements on the A10 and could improve east-to-west movements that cross the A10 - both walking / cycling, public transport and road. Could contribute to reduced community severance, although flyover construction is likely to produce a less-inviting environment than underpasses (i.e. walking underneath structures, compared to above ground).
Fit with wider transport and government objectives	4	Potential for east-west movements to improve more sustainable travel choices: reduced community severance and provision of at-grade facilities could help to contribute to better urban environment for pedestrians and cyclists. Potential to reduce carbon emissions through fewer queued vehicles and instigation of some mode-shift for east-west movements across the A10.
Fit with other objectives	4	Opportunity to provide better walking and cycling routes and promote east-west crossings, which would link to associated sustainable infrastructure (e.g. rail)
Key uncertainties	At present, uncertain as to what land-take may be required. Flyover is potentially a negative impact on the urban realm which, despite providing easier at-grade crossings, would require movements under the structure. Does not aid in localising trips as is a stated objective of Local Plan.	
Degree of consensus over outcomes	Don't know	Traffic modelling required to ascertain impacts to traffic on both the A10 but also for access to Cheshunt.

Economic

Economic growth	**4. Amber/green**	Will contribute to a more reliable transport network, both for the A10 and the local road system. Particularly likely to improve the reliability of the transport network in the future. It is likely that future developments will impact on the Church Lane and College Road junctions and improvement will help to encourage economic growth and thus enable development.
Carbon emissions	**3. Amber**	Vehicle-kilometres likely to reduce due to traffic being able to take more direct routes. No change in fuel type use, but likely to be some reduction in vehicle-kilometres should opportunities to improve mode-share be exploited. Scheme is however likely to require some significant construction.
Socio-distributional impacts and the regions	**6. No Impact**	Slight positive impact in reducing severance and thus connecting communities either side of the A10 and promoting economic growth.
Local environment	**3. Amber**	Scheme is likely to have a slight positive impact on the urban environment due to A10 being taken away from the level with the route being improved, with better facilities on the level. However, would result in flyovers which are visually unappealing. Beneficial impact on air quality due to reduction in queueing on the A10 and side roads, particularly if opportunities for mode-shift to more sustainable modes (as a result of reduced severance) can be taken advantage of.
Well being	**4. Amber/green**	Improvement in severance as impacts of A10 are reduced and more at-grade crossings for pedestrian and cyclists can be provided. An increase in walking / cycling as a result could lead to health benefits, particularly for a district which is acknowledged as having a higher-than-average level of obesity. Access to facilities improved as a result. Traffic on A10 also likely to be more reliable due to reduced interactions with local traffic.
Expected VfM category	3. Medium 1.5-2	Likely costs unknown. Expected to be at least Medium VfM.

Managerial

Implementation timetable	Don't know	Likely to require initial feasibility studies and comprehensive, robust evidence base. Likely 5-10 years.
Public acceptability	3	Acceptability of flyover structures uncertain, although improvement of A10 through movements likely to be supported.
Practical feasibility	Don't know	Land-take requirements currently unknown.
What is the quality of the supporting evidence?	1. Low	At present no further modelling of impacts has been undertaken.
Key risks	Potential land-take required either side of junction to facilitate slip-roads from A10. This may require Compulsory Purchase Orders.	

Financial

Affordability	Don't know	
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	1. Static	Infrastructure inflexible, less flexibility than an underpass for changing at-grade connections after initial construction.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**No right turn at at-grade jct**
Date	06/08/2016
Description	Banning right-turns at the at-grade junctions of the A10 with College Road and/or Church Lane, to facilitate A10 movements.

Strategic

Identified problems and objectives	The A10 junctions at College Road and Church Lane are currently congested and likely to come under significant pressure in the future. Banning right-turns at this junction would allow for right-turn signal stages to be removed and provide greater 'green time' to through movements on the A10, potentially reducing delays and thus travel times.	
Scale of impact	3	Scheme would likely have a medium impact on reducing delays at the junction. There would be no infrastructure improvements included in this so improvements would be limited in scale.
Fit with wider transport and government objectives	3	Reduction in congestion on the A10 would improve reliability and help to accommodate traffic growth from new developments. Unlikely to result in more sustainable travel.
Fit with other objectives	3	Aligned with Broxbourne Transport Strategy vision of more reliable, efifcient and safe roads and better operation of the A10.
Key uncertainties		
Degree of consensus over outcomes	Don't know	Traffic modelling required to ascertain impact of change on A10 operation.

Economic

Economic growth	**4. Amber/green**	
Carbon emissions	**6. No Impact**	No significant change in Carbon emissions. Reduction in queueing may lead to a small beneficial improvement. There are no significant construction impacts.
Socio-distributional impacts and the regions	**4. Amber/green**	Slight positive impact on the economy, as improvement of the A10 operation will enable better accommodation of traffic from proposed new developments. No significant change in SDIs.
Local environment	**6. No Impact**	No significant impact on the urban realm with little change to existing junction layouts.
Well being	**4. Amber/green**	Scheme is likely to improve reliability for movements on the A10 reducing day-to-day variability for these trips. There is unlikely to be any significant change to trips on the minor roads. Lakc of change to infrastructure means that no community severance benefits are realised.
Expected VfM category	3. Medium 1.5-2	Likely relatively low cost to implement (no significant infrastructure changes), but benefits unlikely to be as high as some of the proposed larger interventions.

Managerial

Implementation timetable	3. 6-12 months	Could likely be implemented in a short timescale, due to lack of infrastructure aleterations required.
Public acceptability	Don't know	Improvements in reliability and journey times on A10 likely to be welcomed, but banning of right-turns would mean that current routes may not be possible and this may be judged negatively.
Practical feasibility	5. High	Likely easy to implement.
What is the quality of the supporting evidence?	1. Low	Traffic modelling required at present.
Key risks		

Financial

Affordability	5. Affordable	Capital outlay is likely to be relatively low as there are no significant alterations to existing infrastructure.
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	4	
Other costs		

Commercial

Flexibility of option	3	Right-turns could be re-instated at a later-date if required. Alterations required for scheme would not preclude future changes at the junctions.
Where is funding coming from?	Broxbourne Borough Council, Hertfordshire County Council, Hertfordshire LEP	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Closure of minor road accesses**
Date	06/08/2016
Description	This option concerns the two at-grade signalised junctions on the A10 at Church Lane and College Road. The scheme concerns low-cost changes at the junction that would prevent general vehicle access to the minor roads, re-connecting local trips away from Church Lane and College Road to new or improved junctions both north and south. It is envisaged that the scheme would facilitate better east to west access for public transport, cycling trips and pedestrians. Express bus movements may be able to be accommodated east-west.

Strategic

Identified problems and objectives	The A10 causes major severance issues between the communities east and west of the A10. There are issues across modes. Walking: There are currently long crossing times at the two junctions, for example, it can take five minutes to cross at Church Lane; this severley inhibits pedestrian movements in the area. Road: Both College Road and Church Lane junctions are particularly stressed for east to west movements due to the dominance / weight of traffic on the north to south A10. There are specific concerns regarding the southbound A10 right turn onto Church Lane where queues regularly exceed the capacity of the slip road and spill back to main line - same for left turn to Church Lane from the A10.	
Scale of impact	4	Movement on the A10 would be prioritised and capacity greatly enhanced. Signals would be retimed and re-staged; the lack of minor road movements increasing green time for the A10. Pedestrain stages could be incorporated.
Fit with wider transport and government objectives	3	Heavily highways focussed, but opportunity to promote sustainable transport by allowing bus priority for movements across the A10 at the stopped-up locations. The signals for this would be less frequently called than for general traffic.
Fit with other objectives	3	A less congested and more free-flowing A10 is in-line with Broxbourne's vision. Possible incorporation of bus priority measures would fit with sustainable aims.
Key uncertainties	Uncertain as to the impact that re-routeing would have on the local road network.	
Degree of consensus over outcomes	4	Generally agreed that this would improve movements on A10.

Economic

Economic growth	**4. Amber/green**	Beneficial impact on end-to-end journey times and reliability of A10, which in turn may promote economic growth. However, there are uncertainties as to what the impact on the local road network would be from traffic re-routeing to access the A10 at different locations.
Carbon emissions	**3. Amber**	Carbon emissions may increase as local traffic has to take longer routes in order to access the A10 due to the at-grade minor accesses having been closed.
Socio-distributional impacts and the regions	**3. Amber**	Potential negative impacts as more traffic routed on local road networks, which may adversely affect communities.
Local environment	**2. Red/amber**	Air quality on A10 may increase due to reduction in queueing along the corridor. However, increase in traffic volumes on the local road network may adversely affect air quality away from the A10. Potential for the urban environment to be negatively affected by increased traffic volumes frrom re-routed local trips.
Well being	**3. Amber**	Increased traffic volumes on local roads due to re-routed trips trying to access A10 further north or south may impact local communities negatively, slightly increasing severance. No severance change on A10, where infrastructure is largely unchanged. End-to-end journey times along A10 corridor likely to be improved, but potential worsening of journey times away from A10.
Expected VfM category		Uncertain. Likely to be significant travel time savings on A10, but could be negative travel time impacts on local road network. Implementation cost likely to be relatively low, although remedial off-site works may be required elsewhere.

Managerial

Implementation timetable	4. 1-2 years	
Public acceptability	3	Dependent on scale of re-routeing away from the A10. If this is shown to have a significant detrimental impact then support likely to be low. Residents of College Road and Church Lane may be supportive of reduction in traffic past properties and improved street for them.
Practical feasibility	4	Should be relatively straightforward to implement.
What is the quality of the supporting evidence?	1. Low	
Key risks		

Financial

Affordability	4	Likely to be a relatively low-cost option to implement, dependent on required remedial works off-site.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	Don't know	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Widening of A10 to 3 Lanes**
Date	06/08/2016
Description	Widening the A10 between M25 and Hoddesdon to three mainline running lanes (currently predominantly two mainline running lanes).

Strategic

Identified problems and objectives	The A10 currently suffers from congestion in the AM and PM peak hours, particularly at the at-grade junctions of College Road and Church Lane and at the Lieutenant Ellis Way roundabout. Widening of the A10 to three lanes throughout the Borough of Broxbourne area would provide both greater junction and greater link capacity for traffic and reduce delays and congestion along the route.	
Scale of impact	4	The scheme would likely add significant extra running capacity to the A10. The provision of extra lanes at the stoplines of the at-grade junctions would also create additional capacity for the A10, but would not change capacity for the minor arms.
Fit with wider transport and government objectives	2	Widening to three general traffic lanes would improve the efficiency and operation of the transport system, but would not make the system more sustainable. It is possible that providing additional road capacity would abstract trips from more sustainable modes.
Fit with other objectives	3	Safety and reliability of the A10 would be improved through the reduction of queues, which is in-line with Broxbourne's vision for its transport network.
Key uncertainties	Uncertainties over land-take required for A10 widening to be undertaken. Areas where widening is most needed (Church Lane, College Road) are some of the most built-up areas along the route.	
Degree of consensus over outcomes	4	Generally accepted that the additional capacity would improve the operation of the A10 and reduce queueing. View shared by those attending stakeholder workshops.

Economic

Economic growth	**4. Amber/green**	The scheme would, in all likelihood, reduce end-to-end journey times along the A10 by increasing journey time reliability and reducing congestion at the key pinch-points. The provision of extra capacity would also support economic growth, by providing for development-related traffic.
Carbon emissions	**3. Amber**	Less idling due to fewer queues, but traffic travelling at higher speeds. There would be some significant construction required to construct the wider road pavement required.
Socio-distributional impacts and the regions	**6. No Impact**	Slight benefit for economic growth due to additional capacity, but otherwise no significant change from status quo.
Local environment	**2. Red/amber**	Urban environment negatively affected due increase from two to three lanes.
Well being	**3. Amber**	Decreases end-to-end journey times and improves reliability, thus ensuring road connections to services. However, community severance worsened due to three running lanes to cross, so walking and cycling adversely affected.
Expected VfM category	3. Medium 1.5-2	Costs of implementation uncertain, but likely to have a high benefit in travel time savings. Some negative impacts due to carbon. Assumed medium VfM.

Managerial

Implementation timetable	6. 5-10 years	Would require significant further study and appraisal, which would likely have reasonable lead times (5+ years).
Public acceptability	3	Generally likely to be accepted, although those living adjacent to the A10 may object to the increase in capacity.
Practical feasibility	3	There is a wide central reservation at present which could provide some land. Uncertain what other land-take may be required.
What is the quality of the supporting evidence?	1. Low	Some evidence from the A10 study (2010) that this would help. However, updated traffic modelling required to fit with up-to-date growth assumptions.
Key risks		

Financial

Affordability	Don't know	Cost of widening is likely to be high, dependent on land-take.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	3	Additional running lanes could be converted to bus-only lanes or cycle lanes in the future if more sustainable transport measures were to be promoted.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**M25 Junction 25**	
Date	06/08/2016	
Description	This would be an improvement beyond the Roads Investment Strategy (RIS) scheme that it is anticipated Highways England will deliver in the period 2015-2020. The proposal is to provide an additional tier to the grade separation of Junction 25, enabling free-flow access to Enfield (through movement on the A10) without interaction with traffic on the gyratory accessing or leaving the M25.	
Strategic		
Identified problems and objectives	There are currently significant delays in the AM peak hour in the south of the Borough of Broxbourne. These are, in part, caused by traffic queuing through the M25 Junction 25. It is currently uncertain as to how the scheme being taken forward by Highways England would relieve the junction and thus queueing on the A10.	
Scale of impact	5. Significant impact	Around 50% of traffic on the A10 north of the M25 Junction 25 routes via the M25. The remainder 50% travels on the A10 north-south through the junction. Providing an additional flyover at this location for A10 traffic would lead to significant reduction in trips through Junction 25 and woudl facilitate north-south movements.
Fit with wider transport and government objectives	2	Would support the economic growth and regeneration of Borough of Broxbourne and potentially London Borough of Enfield by facilitating through movements. A secondary effect would potentially be the improvement of the performance of the Strategic Road Network by removing interactions with local A10 traffic. However, the option provides little-to-no improvements to sustainable travel
Fit with other objectives	3	Would enable traffic heading south and potentially economic growth in south of borough, but would not address congestion issues further north on the A10. Would not contribute to sustainable travel objectives.
Key uncertainties	Support of Highways England, London Borough of Enfield and TfL would be required for a scheme of this nature and size. Unsure what land would be required for construction either side of M25 junction.	
Degree of consensus over outcomes	4	Recognised that this would likely significantly improve through movements on the A10 and reduce congestion at Junction 25 of the M25.
Economic		
Economic growth	**4. Amber/green**	May facilitate economic growth, but probably only towards the southern end of the borough. Would have a signficant impact on reducing travel times on the A10 and improving reliability through this section of the road.
Carbon emissions	**2. Red/amber**	Would promote traffic movements through the area and potentially encourage more trips to car, increasing Carbon emissions. Significant construction would also be required.
Socio-distributional impacts and the regions	**3. Amber**	Would not improve severance of communities and would potentially entrench A10-centric view. May be beneficial to economic growth in the south of the borough.
Local environment	**2. Red/amber**	Could increase car trips in the south of the borough promoting movements through the junction, resulting in greater Carbon emissions. Noise may also increase as a result. The urban environment would be negatively affected by the construction of a large flyover that would be visible to many.
Well being	**3. Amber**	Journey time reliability would be improved for north-south movements, whilst end-to-endjourney times for both these movements and those through M25 Junction 25 being reduced. However, the scheme would not improve severance and could entrench use of the A10, continuing the separation of communities.
Expected VfM category		Unknown. Scheme would likely result in travel time benefits for many road users in the south of the borough, but would have significant construction costs.
Managerial		
Implementation timetable	6. 5-10 years	Significant preparatory work would be required, including feasibility studies, traffic modelling and appraisal and consultation. Construction would also be significant.
Public acceptability	Don't know	
Practical feasibility	3	Construction is possible, but would probably require overnight closures of M25 and Junction 25 to bring new flyover structure into place.
What is the quality of the supporting evidence?	1. Low	Traffic modelling and appraisal required - not yet undertaken.
Key risks	Highways England as a key stakeholder would need to support changes to the infrastructure and operation of its junction. It is uncertain whether or not Highways England would support such a scheme, so soon after implementing changes at M25 Junction 25 through the RIS programme.	
Financial		
Affordability	2	Likely to have a very high construction and maintenance cost.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	1.High risk	
Other costs		
Commercial		
Flexibility of option	1. Static	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership, potential funding from Highways England if significant improvement to its infrastructure (Junction 25)	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Access to J22 of M25**
Date	06/08/2016
Description	Re-purposing the existing local highway to facilitate a route to M25 Junction 22 (London Colney), taking traffic away from Junction 25. The route is already used by local traffic, but the capacity of the route is low and the route is unsigned.

Strategic

Identified problems and objectives	There is existing congestion on the A10 and at M25 Junction 25 due to the traffic volumes that use the junctions, particularly in the AM peak hour. Removing traffic from the M25 junction and allowing this traffic to access teh SRN further east would reduce pressure on both the junction and southern reaches of the A10 in the borough.	
Scale of impact	3	Could potentially remove a number of westbound trips from the southern section of the A10. Trips heading east or south would continue to use the existing route.
Fit with wider transport and government objectives	1. Low	Does not promote sustainable transport as a mode - is very highway focussed. Does not support Highways England's objectives of the 'right traffic on the right roads' - strategic trips would be removed from the SRN at their first point of contact (Junction 25) and routed via local roads.
Fit with other objectives	3	Would ease pressure on the A10 in-line with Broxbourne's transport vision, which in turn may help to enable economic growth.
Key uncertainties	Difficult to 'sell' on an environmental platform, given the wildlife, cultural and ecological importance of the local area. The scheme would involve re-routeing a portion of local and strategic trips through small communities and more rural areas. Does not address the sustainable transport agenda, nor the localising of trips the LDP is tasked with. Does not fit with the message that strategic traffic should be using the SRN.	
Degree of consensus over outcomes	Don't know	Unknown. It is likely that at a strategic level, different stakeholders would hold opposing views of such a plan. In particular, neighbouring local authorities are likely to be opposed to higher volumes of traffic using their roads.

Economic

Economic growth	**3. Amber**	The scheme may improve day-to-day variability and reduce journey times on southern sections of A10. However, journey times for eastboudn traffic routed via local roads to Junction 22 would likely be extended. May help to facilitate some Local Plan growth at southern end of borough (e.g. Waltham Cross, Park Plaza).
Carbon emissions	**2. Red/amber**	Would likely increase vehicle-kilometres as a result of trips being routed via the local road network.
Socio-distributional impacts and the regions	**1. Red**	Scheme would negatively affect the local communities through which eastbound traffic from the borough is routed. This would potentially increase severance in these areas.
Local environment	**1. Red**	Both air pollution and noise impacts would be increased in the communities through which traffic is re-routed, although there may be some small beneficial impacts in the south of Broxbourne Borough. The streetscape and urban environment would be negatively impacted in the affected local communities and there would be no significant change in the south of the borough of Broxbourne.
Well being	**2. Red/amber**	Would decrease travel times for trips on the A10 heading west or south of Broxbourne. However the greater volumes of traffic on the local roads would be likely to increase accident rates and would increase severance in affected local communities.
Expected VfM category	4. Low 1-1.5	Likely to be low, due negative impacts of carbon and Social Distributional Impacts. Travel time savings for trips to the east of Broxbourne may actually be negative.

Managerial

Implementation timetable	5. 2-5 years	Would require consultation, but may not require significant construction.
Public acceptability	1. Low	Public acceptability is likely to be low for this option. Communities along the existing local highway network between the Borough of Broxbourne and M25 Junction 22 (London Colney) are likely to have significant opposition to such a scheme.
Practical feasibility	Don't know	
What is the quality of the supporting evidence?	1. Low	Low. No assessment of the scheme has been undertaken. Traffic modelling not possible in existing Broxbourne SATURN model due to geographic coverage that is required.
Key risks	Support of local communities that will be affected by increased traffic volumes is likely to be a significant issue. Also not aligned with Highways England's objectives for the Strategic Road Network (SRN).	

Financial

Affordability	Don't know	
Capital Cost (£m)	Don't know	Currently uncertain what improvements would be needed to the local road network or to M25 Junction 25 to accommodate additional traffic volumes.
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	Don't know	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership, potential to seek contributions from neighbouring Local Authorities.	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Rail Halt Severn Sisters Line**
Date	06/08/2016
Description	Provide a new local service via a new 'halt' (a small station, generally unstaffed and with no goods facilities) on the established line, thus providing access to Park Plaza development.

Strategic

Identified problems and objectives	There is a low frequency of trains on the branch line via Seven Sisters. Significant new development is contained within the Local Plan along this branch line at the Park Plaza and Park Plaza West developments: a new 'halt'/station could help to increase rail mode share and reduce car journeys to these sites.	
Scale of impact	3	Potential to reduce commuter trips on A10 to Park Plaza / Park Plaza West. Unlikely to serve other proposed Local Plan developments to any great degree.
Fit with wider transport and government objectives	4	Promotes the sustainable travel agenda, and will contribute to a reduction in Carbon and other emissions should trip abstraction be from existing (or projected future) car trips.
Fit with other objectives	4	Fits with Borough of Broxbourne objectives to encourage trips by sustainable modes and will contribute to a more efficient A10, which would otherwise serve as the primary access route into both Park Plaza and Park Plaza West developments for car trips.
Key uncertainties	Discussion and negotiation with Network Rail and Transport for London required.	
Degree of consensus over outcomes	3	

Economic

Economic growth	**4. Amber/green**	Would contribute to a reduction in travel times to developments through removal of car trips from the A10 but also improvement in travel times for access by public transport. Journey time reliability would increase as a result of reduced car trips on A10. Would help to promote access to Park Plaza developments.
Carbon emissions	**4. Amber/green**	Helps to shift trips bound for Park Plaza sites from low occupancy cars to higher occupancy train trips. Reduction in cars to sites and thus petrol and diesel usage). Some construction required, but small halt rather than large station.
Socio-distributional impacts and the regions	**6. No Impact**	No siginficant impact, though may improve economic growth due to better access to jobs at the site.
Local environment	**4. Amber/green**	Expected benefit in air quality due to removal of some car trips from A10. Construction of the 'halt' is on the edge of the urban area and unlikely to have significant visual impact on urban / streetscape.
Well being	**4. Amber/green**	Potential decrease in journey times to / from development sites, by both public transport and car. Dependent on level of trip abstraction from highway modes, may reduce accidents on A10.
Expected VfM category		Unknown.

Managerial

Implementation timetable	5. 2-5 years	Significant negotiation likely required with Network Rail for construction of station.
Public acceptability	5. High	Unlikely to have any significant advers effects for majority of public.
Practical feasibility	4	Likely to be feasible.
What is the quality of the supporting evidence?	1. Low	
Key risks	Significant negotiation required with Transport for London and Network Rail. Required consultation could affect implementation timetable.	

Financial

Affordability	Don't know	
Capital Cost (£m)	03. 5-10	Similar station construction (e.g. Cranbrook, Devon) cost £5m in 2013.
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	3	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Plan, potentially from Train Operating Company (Transport for London) and/or Network Rail	
Any income generated? (£m)	Yes	Don't know

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**New Cycle Hire Hub at Stations**
Date	06/08/2016
Description	This would involve working with Brompton to bring one of their cycle hire facilities to existing commuter stations in the borough, enabling commuters to select Brompton Hire to be a valid mode choice to get between workplace / meetings and the rail station.

Strategic

Identified problems and objectives	Existing Conditions, Issues and Opportunities Report (ECIOR) and stakeholder workshop has identified that train stations (particularly Cheshunt) are situated some distance from facilities (+20 minutes walk) and are poorly served by bus. Providing easy bike hire would potentially make rail travel a more appropriate mode choice if better onward connections are	
Scale of impact	2	Small. Would potentially be well used, but only a small number of cycle likely to be provided via a bike hire scheme.
Fit with wider transport and government objectives	4	Allows selection of more sustainable travel modes, potentially encouraging mode shift from car to rail and bike.
Fit with other objectives	3	
Key uncertainties	Quality of onward bicycle infrastructure (shared-use paths, road crossings) may still be a deterrent for some potential commuters that may use the scheme.	
Degree of consensus over outcomes	Don't know	

Economic

Economic growth	**6. No Impact**	No significant impact, as will only affect a small number of users (due to bike availability at stations)
Carbon emissions	**6. No Impact**	Slight benefit due to a few road users potentially transferring to rail + hire bike, but likely to be small.
Socio-distributional impacts and the regions	**6. No Impact**	No significant impact
Local environment	**6. No Impact**	No significant impact, but some small benefit on Air Quality due to reduction in car trips
Well being	**6. No Impact**	No significant impact, but small benefit in health / well-being for those who do transfer modes to use hire bikes.
Expected VfM category		Unknown, but low cost to implement.

Managerial

Implementation timetable	3. 6-12 months	Could be implemented in a relatively quick timescale.
Public acceptability	5. High	Unlikely to have any significant opposition.
Practical feasibility	5. High	Easy to implement - schemes are in use extensively elsewhere in the UK (36 Brompton Hire docks at present).
What is the quality of the supporting evidence?	3	Successfully implemented elsewhere in country. No local data available at present.
Key risks		

Financial

Affordability	5. Affordable	
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	4	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership, potential Brompton Hire contribution	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**New Signed Cycle Routes**
Date	06/08/2016
Description	Provide clearly signed and/or segregated offline cycle routes from stations to key development locations to facilitate the east to west desire lines.

Strategic

Identified problems and objectives	There are shared use paths signed across the borough but no other facilities put in place to support their designation leading to a high level of conflict with pedestrians. The A10 north to south cycle route is barely used and not very well known. Cycle connectivity is poor across the A10; there are a collection of leisure routes to the west	
Scale of impact	3	Has the potential, through better facility provision, to significantly improve cycling and cycling uptake in the borough. This will have a reduction on car usage but is part of a package of solutions, rather than being a sole contributor.
Fit with wider transport and government objectives	5. High	Promotes a sustainable transport system and contributes to a reduction in Carbon emissions.
Fit with other objectives	4	
Key uncertainties	Available highway / pedestrian space to convert to cycle use. An audit of potential routes would be required.	
Degree of consensus over outcomes	3	Reasonable, although would likely need some form of targeted travel planning / behaviour change programme to support and influence change.

Economic

Economic growth	**4. Amber/green**	Some improvement in day-to-day journey time reliability and travel times if sufficient abstraction of trips from the network. Better facilities could signifcantly improve active mode travel times.
Carbon emissions	**4. Amber/green**	Transfer of short-distance trips from car to cycling would result in a reduction in carbon emissions locally. Construction work would be relatively minor and so would not result in significant carbon output.
Socio-distributional impacts and the regions	**4. Amber/green**	Potential to improve accessibility to services through shorter travel times by active modes. Combined with appropriate behaviour change programmes, this could result in benefits to lower income groups through reduced travel costs.
Local environment	**4. Amber/green**	Some improvements to the local environment, as trips transferring from car to bike would result in small improvements in both air quality and noise.
Well being	**4. Amber/green**	Severance would be improved through quicker active mode connections being provided. There is also a health benefit to those who take up cycling or would cycle more as a result - this is of particular importance to the borough which has been acknowledged as having higher-than-average obesity levels.
Expected VfM category		Cycle schemes typically perform poorly under traditional Benefit Cost Ratio (BCR) appraisal.

Managerial

Implementation timetable	5. 2-5 years	Reasonably short-term timescales to implement.
Public acceptability	4	Likely to be mostly supportive; although potential for negative response if highway travel times are impacted to improve crossings / priority for cyclists.
Practical feasibility	4	
What is the quality of the supporting evidence?	1. Low	
Key risks		

Financial

Affordability	4	
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	01. None	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	4	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Express Bus Service**
Date	06/08/2016
Description	A new bus service, targeting key destinations and using the A10 to access them. The service would target high frequency and high quality service, with on board facilities such as wi-fi.

Strategic

Identified problems and objectives	There is a lack of consistent bus priority across the borough. The quality of bus infrastructure is poor and the bus quality is low. The routes serving the borough are mainly north to south, minimal provision east to west and don't serve key destinations such as retail centres, rail stations and other local services.	
Scale of impact	4	High frequency, reliable bus services have the potential to significantly alter mode-share, particularly if targeted at specific new developments and backed by comprehensive travel planning and behavious change programmes.
Fit with wider transport and government objectives	4	Encourages a shift to more sustainable travel modes and contributes to reduction in Carbon emissions as part of government objectives.
Fit with other objectives	4	Fits with Broxbourne vision for a more sustainable transport system and could increase efficiency and operation of existing road system through abstraction of car trips from network. If targeted at new developments, then new developments become more sustainable.
Key uncertainties	Funding available from Hertfordshire County Council is likely to be reduced over time, so bus services will have to 'pay for themselves'	
Degree of consensus over outcomes	4	

Economic

Economic growth	**4. Amber/green**	Potential to improve connectivity of existing communities, but also to connect new developments with facilities. Journey time reliability increased for public transport users through express bus service compared to more regular slow stopping services, but also for road users due to abstraction of trips from network.
Carbon emissions	**4. Amber/green**	Encourage mode shift from low occupancy cars to higher occupancy buses. Result in reduced vehicle kilometres.
Socio-distributional impacts and the regions	**4. Amber/green**	Dependent on services and routes selected as well as fares, the express bus service could better connect communities with facilities.
Local environment	**4. Amber/green**	If services are well used and a reasonable mode shift can be affected, then local improvements in air quality will be gained. Noise would be reduced from fewer cars, but aspiration should also be for the service provider to use newer, quieter vehicles (e.g. hybrid, electric).
Well being	**4. Amber/green**	Provides better access to facilities for existing communities, promoting travel and bringing more people into the urban realm.
Expected VfM category		Unknown.

Managerial

Implementation timetable	5. 2-5 years	Phased with delivery of developments if targeted at Local Plan growth locations.
Public acceptability	4	Should have support from communities.
Practical feasibility	Don't know	Dependent on funding for bus services and contributions from developers.
What is the quality of the supporting evidence?	1. Low	
Key risks		

Financial

Affordability	Don't know	
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)	Don’t know	Likely to be additional subsidy requirements in order to operate services.
Cost profile		
Overall cost risk	Don’t know	
Other costs		

Commercial

Flexibility of option	Don't know	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership. Potential for funding or contributions from developers, who may also contribute to travel planning and/or behaviour change programmes.	
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Park Plaza Roundabout**
Date	09/01/2016
Description	Roundabout improvements. Possible designs include: -grade separation; -longabout and hamburger; or - just hamburger at Lieutenant Ellis Way

Strategic

Identified problems and objectives	Would be a necessary prerequisite for the permission for the development to proceed. Longabout option proposed by Park Plaza West developers.	
Scale of impact	3	Would greatly improve access to the Park Plaza West development. Potential for scheme to facilitate access to safeguarded site above (Maxwells Farm site).
Fit with wider transport and government objectives	2	Would provide access to the new development infrastructure and thus support the principles of economic regeneration.
Fit with other objectives	4	Necessary prerequisite for the permission of the new development to proceed. Would reduce queuing to access the development and thus reduce carbon emissions. Would improve bus access to development and promote sustainable travel
Key uncertainties		
Degree of consensus over outcomes	4	Agreed as a necessary prerequisite for Park Plaza development

Economic

Economic growth	**4. Amber/green**	The scheme will improve journey times with either a destination or origin at the new development. It will make the network more resiliant to growth in this area, and is required for planned development.
Carbon emissions	**2. Red/amber**	Construction would generate carbin emissions. Would improve access to development for both cars and buses.
Socio-distributional impacts and the regions	**4. Amber/green**	Would allow the redevelopment of an unused area. Would improve transport links to the development and therefore improve accessibilty for vulnerable groups through the potential provision of public transport.
Local environment	**3. Amber**	Little change on the local environment: traffic is allowed access to a new site and thus redirected, with little impact on the urban realm around the new junction
Well being	**6. No Impact**	Very little effect on well being, other than providing better access to the Park Plaza West facilities.
Expected VfM category	3. Medium 1.5-2	Beneficial in terms of proividing access to new development.

Managerial

Implementation timetable	Don't know	Would fit in with Park Plaza West development
Public acceptability	4	Likely to be generally accepted. Would be viewed as a positive by those wishing to access both the new development and Maxwell's farm.
Practical feasibility	4	Undeveloped land nearby would provide necessary space. Junction would be incorporated into development plans
What is the quality of the supporting evidence?	1. Low	No previous modelling exists
Key risks		

Financial

Affordability	3	Likely to be reasonably costly but some costs may be met by Park Plaza West developers.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	3	Flexibility of design used, but the junction needs to be developed if Park Plaza West is to go ahead
Where is funding coming from?	Broxbourne Borough Council; Park Plaza West developers	
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 News UK Signalised Junction**	
Date	09/01/2016	
Description	Possible linkage into existing signalised junction from the east side of the development	

Strategic

Identified problems and objectives	Would connect development to A10 and provide a second access/egress point. Could limit capacity of A10 through-movement	
Scale of impact	4	High traffic volumes currently experienced on the A10. Adding a fourth arm to this junction could reduce capacity and increase delay.
Fit with wider transport and government objectives	3	Could incorporate pedestrian signal stages and reduce community severance. Could improve the potential for buses to route through the development and off the A10.
Fit with other objectives	2	Likely to disrupt flow along the A10
Key uncertainties		
Degree of consensus over outcomes	3	Could have negative impacts on other areas of the network

Economic

Economic growth	**4. Amber/green**	Will reduce journey times to/from the Park Plaza development, but could increase time taken to travel along the A10. Though not required for the Park Plaza development, this scheme would greatly improve access.
Carbon emissions	**6. No Impact**	Limitted construction required (access roads would be incorporated into development construction). Could improve the frequency of bus services through the development, but this would be offset by the increase in car trips.
Socio-distributional impacts and the regions	**4. Amber/green**	Would improve east-west severance, especially if pedestrian crossing stages are incorporated into the signals. Could lead to an increased bus frequency through the development which would improve access for the elderly.
Local environment	**3. Amber**	Likely to reduce average traffic speeds along the A10 therefore reducing noise levels. Will increase the levels of traffic queuing at the junction, which will cause air quality to decrease.
Well being	**4. Amber/green**	Will improve east-west connection and provide another route across the A10. Could reduce traffic speeds along the A10 and thus reduce accidents
Expected VfM category	2. High 2-4	Low costs associated with changing signal timings, and potential gain from connecting Park Plaza development to the A10. Most of the infrastructure changes will be made as a result of the development construction and costs can be incorporated into this.

Managerial

Implementation timetable	Don’t know	
Public acceptability	3	This will improve access to the development but cause disruption to the traffic flow along the A10, so reception is likely to be mixed
Practical feasibility	4	Land to the west of the A10 will be redeveloped to form Park Plaza west so the junction can be remodelled as part of this.
What is the quality of the supporting evidence?	1. Low	No previous modelling exists
Key risks	Could cause disruption to traffic flow along the A10.	

Financial

Affordability	5. Affordable	A low cost scheme which could be funded a part of the Park Plaza development.
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)	Don’t know	
Cost profile		
Overall cost risk	5. Low risk	
Other costs		

Commercial

Flexibility of option	5. Dynamic	Most of the infrastructure can be put in place as part of the Park Plaza development. Signal timings/allowed movements can be altered easily.
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	Don't know	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Widening, Contraflow Lane**
Date	09/01/2016
Description	Dynamic widening of the A10 using a contraflow lane to alleviate peak time congestion issues (e.g. Southbound in the AM peak and Northbound in the PM peak).

Strategic

Identified problems and objectives		
Scale of impact	4	Scheme would add extra capacity to the A10. Extra lanes at the stoplines of the at-grade junctions would also create additional capacity for the A10, but would not change capacity for the minor arms. Switching the direction of flow between the AM and PM peak would allow the scheme to maximise its potential benefits by targeting the direction of flow with the highest congestion.
Fit with wider transport and government objectives	2	The scheme would enable the network to cope much better with growth and improve its operation and efficiency, but would not make the system more sustainable. It is possible that providing additional rpad capacity would attract trips from more sustainable modes.
Fit with other objectives	3	Safety and reliability of the A10 would be improved through the reduction of queues.
Key uncertainties	Uncertainties over land-take required for A10 widening to be undertaken. Areas where widening is most needed (Church Lane, College Road) are some of the most built-up areas along the route. Specific timings for reversing contraflow lane directions in order to maximise benefit not yet known.	
Degree of consensus over outcomes	4	Generally accepted that the additional capacity would improve the operation of the A10 and reduce queuing. View shared by those attending stakeholder workshops.

Economic

Economic growth	**4. Amber/green**	Whilst this will not facilitate the building of housing, the scheme will increase the capacity along the A10 and make the network more resilient. Journey times are expected to decrease and become more stable as a result of the scheme.
Carbon emissions	**3. Amber**	Lower emissions due to a reduction in queued traffic, but traffic travelling at higher speeds. Significant construction required to construct the wider road pavement options.
Socio-distributional impacts and the regions	**6. No Impact**	Slight benefit for economic growth due to additional capacity, but otherwise no significant change from status quo.
Local environment	**2. Red/amber**	Urban environment negatively affected due to increase in number of lanes affecting noise and air quality levels.
Well being	**3. Amber**	Decreases end-to-end joruney times and improves reliability, thus ensuring road connections to services. However, community severance worsened due to three running lanes to cross, so walking and cycling adversely affected.
Expected VfM category	3. Medium 1.5-2	Costs of implementation uncertain, but likely to have a high benefit in travel time savings. Some negative impacts due to carbon. Assumed medium VfM.

Managerial

Implementation timetable	6. 5-10 years	Would require significant further study and appraisal, which would likely have reasonable lead times (5+ years)
Public acceptability	3	Generally likely to be accepted, though those living adjacent to the A10 may object to the increase in capacity.
Practical feasibility	3	There is a wide central reservation at present which could provide some land. Uncertain what other land-take may be requried.
What is the quality of the supporting evidence?	1. Low	Some evidence from the A10 study (2010) that this would help. However, updated traffic modelling required to fit with up-to-date growth assumptions.
Key risks		

Financial

Affordability	Don't know	Cost of widening is likely to be high, dependent on land-take.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	3	Additional running lanes could be converted to bus-only lanes of cycle lanes in the future if more sustainable transport measures were to be promoted.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 New slip road at Turnford**
Date	09/01/2016
Description	New slip road on to the A10 southbound at Turnford junction. This would alleviate traffic routeing via the A1170 and improve the environment for local residents along the route.

Strategic

Identified problems and objectives	It is understood that HCC has previously been opposed to such a scheme. Detailed evidence of improvement is likely to be required.	
Scale of impact	3	Would prevent traffic rerouting along the A1170 in order to access the A10.
Fit with wider transport and government objectives	2	Southbound traffic would be able to access the A10 at a more northerly point, ensuring 'the right traffic on the right roads'. Scheme will not cause any mode shift onto sustainable transport or encourage economic growth.
Fit with other objectives	2	Scheme will increase the efficiency of the network and improve operation of the A10, but will not improve walking/cycling routes or improve sustainable infrastructure as part of the Broxbourne Council objectives.
Key uncertainties	Possible space issues with proximity of housing estate	
Degree of consensus over outcomes	4	Likely to prevent routeing of southbound traffic down the A1170.

Economic

Economic growth	**6. No Impact**	Will cause minor rerouting. Unlikely to significantly affect journey times or improve reliability of the network.
Carbon emissions	**3. Amber**	Construction of the scheme will produce carbon emissions. Emissions will be reduced for local residents who benefit from less traffic using the A1170.
Socio-distributional impacts and the regions	**6. No Impact**	Minor rerouting will not impact socio-distribution.
Local environment	**3. Amber**	Traffic will be rerouted away from residents living close to the A1170 and improve air quality here. Air quality along the A10 will decrease as a result of the increase in fast-moving traffic.
Well being	**5. Green**	Traffic will reroute off the local A1170 road, which will make this area safer for walkers and cyclists. This should encourage local residents to use these more sustainable modes of transport, as well as reducing the number of safety incidents.
Expected VfM category	4. Low 1-1.5	It will be costly to provide the infrastructure needed for this scheme, and the area of network affected by the traffic rerouting is small.

Managerial

Implementation timetable	6. 5-10 years	May require consultation, and construction could be difficult due to the proximity of local housing.
Public acceptability	3	Would be seen as a positive by those living close to the A1170, but may be viewed negatively by the residents living in Winnipeg Way who would be affected by the slip road.
Practical feasibility	2	Finding space to build the slip could cause issues.
What is the quality of the supporting evidence?	1. Low	
Key risks	Potential land-take required to construct slip-road. This may require Compulsary Purchase Orders.	

Financial

Affordability	Don't know	
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)		
Cost profile		
Overall cost risk	Don’t know	
Other costs		

Commercial

Flexibility of option	4	
Where is funding coming from?		
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**A10 Traffic light phase changes**	
Date	09/01/2016	
Description	Changes to traffic light phasing at at-grade signalised junctions within the Borough, principally being College Road and Church Lane. Assumed to be a highways scheme, but could impact pedestrian and cyclist movements.	

Strategic

Identified problems and objectives	Highway benefits through signal optimisation likely to be small.	
Scale of impact	3	Likely to have little impact on highways traffic, but could improve/increase the frequency of journeys made on foot/by bike.
Fit with wider transport and government objectives	4	Could lessen the severance effects of the A10 by providing better crossing points for cyclists/pedestrians. This in turn could lead to an increase in the number of journeys made using sustainable modes including bus: bus movements could also be given priority at te junctions. This would lower carbon emissions and improve the urban environment.
Fit with other objectives	4	This could help to promote more sustainable modes of travel, promote east-west crossings and reduce severance through better walking/cycling routes. Could worsen the operation of movements along the A10 at these junctions.
Key uncertainties	Unclear whether preference would be given to improving traffic flow along/onto the A10, or improving the junctions for cyclists/pedestrians.	
Degree of consensus over outcomes	1. Little	Likely to be conflict between car users and cyclists/pedestrians.

Economic

Economic growth	**2. Red/amber**	Likely to increase time taken to drive through junction if preference is given to pedestrians/cyclists.
Carbon emissions	**4. Amber/green**	No construction required. Could cause a mode shift onto most sustainable modes.
Socio-distributional impacts and the regions	**6. No Impact**	Will not impact socio-distribution.
Local environment	**5. Green**	Promoting a mode shift onto more sustainable methods of travel will improve air quality and reduce noise pollution. Urban environment will improve.
Well being	**5. Green**	Could promote physical activity through walking and cycling. Severance reduced by improved crossing facilities, which also leads to better connections to amenities. Safety will improve due to reduced traffic speeds.
Expected VfM category	2. High 2-4	Scheme will be relatively cost-free to implement, and benefits will be high for non-road users. Could have a negative effect for drivers.

Managerial

Implementation timetable	3. 6-12 months	Could require modelling to check effects on road network
Public acceptability	3	Likely to be conflict between car users and cyclists/pedestrians.
Practical feasibility	5. High	Straight-forward to implement.
What is the quality of the supporting evidence?	1. Low	No modelling evidence currently exists
Key risks		

Financial

Affordability	5. Affordable	Scheme would be very low-cost to implement.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	5. Low risk	
Other costs		

Commercial

Flexibility of option	5. Dynamic	Timings could be altered as necessary to meet emerging needs
Where is funding coming from?	Broxbourne Borough Council	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Waltham Cross**
Date	09/01/2016
Description	Open up High Street for traffic and parking with access onto northbound carriageway of Monarch's Way. New pedestrian crossing to improve pedestrian access into the town centre from residential areas to east

Strategic

Identified problems and objectives	Shops and buildings on either side of high street limit the space that can be converted to road.	
Scale of impact	2	Unlikely to cause much rerouting of traffic.
Fit with wider transport and government objectives	2	Could attract more visitors to the retail units and support economic growth. Does not promote sustainable transport. Does not improve the urban environment
Fit with other objectives	2	New pedestrian crossing may promote walking and cycling. Scheme will not lessen severance or promote sustainable travel.
Key uncertainties	Possible space issues with proximity shops	
Degree of consensus over outcomes	Don't know	

Economic

Economic growth	**4. Amber/green**	Could attract new businesses to the shopping centre, and attract more visitors.
Carbon emissions	**2. Red/amber**	Traffic levels will increase on the High Street and increase carbon emissions. Traffic may need to queue to turn left onto Monarch's Way northbound which will also increase carbon emissions. Construction of the new road will cause carbon emissions.
Socio-distributional impacts and the regions	**4. Amber/green**	Could make shopping precint more accessible for users reliant on cars. Could stimulate regeneration of the area with new shops setting up.
Local environment	**2. Red/amber**	Air quality and noise pollution will increase. As the High Street already exists, the scheme will have little effect on the landscape.
Well being	**1. Red**	The scheme will encourage more visitors to drive. Allowing vehicles to use the high street will increase severance and increase the likelihood of an incident occurring. This could discourage pedestrians and cyclists.
Expected VfM category	3. Medium 1.5-2	Could attract new businesses and visitors and encourage growth.

Managerial

Implementation timetable	5. 2-5 years	Requires modelling to test the impact of opening the road to traffic. Requires construction of the road and new junction.
Public acceptability	3	Scheme likely to be supported by motorists, and opposed by cyclists and pedestrians.
Practical feasibility	2	Space may be insufficient.
What is the quality of the supporting evidence?	1. Low	No modelling evidence currently exists
Key risks	Potential land-take required along the highstreet to provide sufficient space for road and parking.	

Financial

Affordability	Don't know	Further work required to develop likely scheme costs
Capital Cost (£m)	Don't know	Further work required to develop likely scheme costs
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	4	Road could be opened at set times only, or access given only to buses and taxis between certain times.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Congestion Charging Zone (CCZ)**
Date	09/02/2016
Description	Demand management of road network through financial tariffs and funding of improvements of road network through financial tariffs

Strategic

Identified problems and objectives	Likely to require significant initial capital costs to implement and ongoing maintenance and data collection / monitoring costs.	
Scale of impact	4	Could affect multiple roads and influence driving patterns and behaviours
Fit with wider transport and government objectives	4	Likely to discourage driving and promote a mode shift onto more sustainable modes such as public transport, cycling and walking.
Fit with other objectives	2	The scheme may use the revenue it generates to improve the network to may it more reliable, safe and efficient. The scheme does not support sustainable infrastructure or create better walking/cycling routes.
Key uncertainties	Which roads would be affected, and what level of charging would be applied is unknown.	
Degree of consensus over outcomes	1. Little	Very little information is known about which areas would be affected, or how the CCZ would operate.

Economic

Economic growth	**2. Red/amber**	Likely to increase journey times and variability of journey times. Could have a negative impact on local businesses.
Carbon emissions	**4. Amber/green**	Likely to deter some users from driving, resulting in less carbon emission.
Socio-distributional impacts and the regions	**2. Red/amber**	Likely to have a negative effect on low-income road users.
Local environment	**4. Amber/green**	Could reduce the traffic volumes using the roads and promote a mode shift onto more sustainable transport. Likely to decrease noise polution and air pollution.
Well being	**4. Amber/green**	Likely to increase walking and cycling levels. Traffic speed likely to be reduced which will improve safety for cyclists and pedestrians.
Expected VfM category	3. Medium 1.5-2	Likely to require significant inital capital, and money to cover running costs, but money could be recovered through user charging.

Managerial

Implementation timetable	4. 1-2 years	Time required to finalise scheme details, provide information and warning to road users, and put systems in place to monitor and collect fees
Public acceptability	2	Likely to be unpopular with road users.
Practical feasibility	2	Would require ongoing management and technology to monitor and collect fees due.
What is the quality of the supporting evidence?	1. Low	Scheme details unclear. No information currently in place to support proposal.
Key risks	Could be very difficult to implement and monitor. High capital required for initial start up and ongoing maintenance.	

Financial

Affordability	2	High capital required for initial start up and ongoing maintenance.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile	Would be an expensive scheme to implement. It is unclear how easy it would be to cover costs and generate income through user charging.	
Overall cost risk	2	
Other costs		

Commercial

Flexibility of option	4	Areas and affected and levels of charging are yet to be decided.
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership	
Any income generated? (£m)	Yes	Don't know

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**New rail station at Turnford**	
Date	09/02/2016	
Description	New station promoted for Turnford, potentially as part of Crossrail 2, but with opportunity to deliver within Local Plan period.	

Strategic

Identified problems and objectives	Would provide growing residential population and Hertford Regional College area with walkable access to the railway.	
Scale of impact	3	Would prevent journeys to Cheshunt and Broxbourne in order to access the railway.
Fit with wider transport and government objectives	4	Promotes most sustainable transport, and allows more people to access the rail network using sustainable modes such as walking. Could encourage urban growth.
Fit with other objectives	3	Provides sustainable infrastucture. Removes traffic from the road network.
Key uncertainties	Which train routes would use the station; frequency of services	
Degree of consensus over outcomes	4	Likely to be widely accepted as a benefit. Possible opposition to journeys being made longer by the extra stop.

Economic

Economic growth	**4. Amber/green**	Could reduce journey times as users can access the rail network more easily. Could facilitate housing being built in the area in the future as the station improves accessibility of the site.
Carbon emissions	**4. Amber/green**	Would remove traffic from the network and encourage a shift onto rail travel. Shorter journeys would need to be made by car in order to access the rail network.
Socio-distributional impacts and the regions	**4. Amber/green**	Would increase accessibility of Turnford to those without access to a car.
Local environment	**4. Amber/green**	Would reduce traffic on local roads. Trains would travel at lower speeds due to the station. These factors would contribute to a reduction in air and noise pollution.
Well being	**4. Amber/green**	Reduces severance by the railway tracks. Increases the area that people can easily access.
Expected VfM category	3. Medium 1.5-2	Costs could remain reasonably low depending on the station facilities that are to be provided.

Managerial

Implementation timetable	6. 5-10 years	Likely to require modelling to test the resulting effect on the rail network
Public acceptability	4	Likely to be widely accepted as a positive.
Practical feasibility	3	Rail infrastructure is in place; would require planning for station building and access.
What is the quality of the supporting evidence?	1. Low	No modelling has currently been undertaken to support the scheme
Key risks	Liaison with train companies required to negotiate use of station. Further negotation required to determine who is responsible for upkeep.	

Financial

Affordability	Don't know	Likely to require significant capital to build station
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)		
Cost profile		
Overall cost risk	Don’t know	
Other costs		

Commercial

Flexibility of option	1. Static	
Where is funding coming from?	Broxbourne Borough Council, Local Enterprise Partnership.	
Any income generated? (£m)	Don't know	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Rye House Station Improvements**	
Date	09/02/2016	
Description	Provide a new commuter car park as part of Turnford Surfacing redevelopment. Provide pedestrian access to northbound platform from Rye Road	
Strategic		
Identified problems and objectives	Potential space issues.	
Scale of impact	1. Small impact	Unlikely to greatly affect number of users of the station
Fit with wider transport and government objectives	2	Promotes use of sustainable transport (rail) but also promotes car use in order to access the rail network
Fit with other objectives	2	Small promotion of walking via the new pedestrian access
Key uncertainties	Unknown how much affect the car park would have on mode shift	
Degree of consensus over outcomes	Don't know	Unclear what the outcomes are likely to be
Economic		
Economic growth	**6. No Impact**	Unlikely to attract new businesses or visitors
Carbon emissions	**6. No Impact**	May attract more users onto the more-sustainable rail, but promotes car use as access. Emissions created by building the car park will also counteract the switch of users onto rail.
Socio-distributional impacts and the regions	**6. No Impact**	Unlikely to have any effect.
Local environment	**2. Red/amber**	Likely to increase car numbers around the station leading to an increase in air and noise pollution.
Well being	**4. Amber/green**	Accessibility of station improved to car users and pedestrians.
Expected VfM category	4. Low 1-1.5	Unlikely to attract significantly more users.
Managerial		
Implementation timetable	3. 6-12 months	Time required for plans to be drawn up and construction to take place.
Public acceptability	4	Likely to be viewed as a positive by those who would make use of the car park.
Practical feasibility	3	Could be problematic to find available land to use for car park.
What is the quality of the supporting evidence?	1. Low	
Key risks	Potential land-take required. This may require Compulsory Purchase Orders.	
Financial		
Affordability	Don't know	Further work required to develop likely scheme costs
Capital Cost (£m)	Don't know	Further work required to develop likely scheme costs
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		
Commercial		
Flexibility of option	3	Location of car park could be flexible.
Where is funding coming from?	Broxbourne Borough Council and Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Theobalds Grove Station**
Date	09/02/2016
Description	Redevelopment of station car park: retaining some commuter car parking; improving access from High Street; and enhancing appearance of industrial units New bus stop for better interchanges between modes

Strategic

Identified problems and objectives		
Scale of impact	1. Small impact	Unlikely to greatly affect number of users of the station
Fit with wider transport and government objectives	3	Promotes use of sustainable transport (rail and bus) but also promotes car use in order to access the rail network
Fit with other objectives	1. Low	No improvement to walking/cycling routes, road network operation or east-west crossings
Key uncertainties	Unknown how much affect the scheme would have on mode shift	
Degree of consensus over outcomes	Don't know	Unclear what the outcomes of the scheme would be

Economic

Economic growth	**6. No Impact**	Unlikely to have an impact
Carbon emissions	**6. No Impact**	Unlikely to have an impact
Socio-distributional impacts and the regions	**6. No Impact**	Unlikely to have an impact
Local environment	**6. No Impact**	Traffic will be rerouted away from residents living close to the A1170 and improve air quality here. Air quality along the A10 will decrease as a result of the increase in Car park already exists therefore unlikely to have an impact.
Well being	**6. No Impact**	Unlikely to have an impact
Expected VfM category	4. Low 1-1.5	Scheme unlikely to have much impact

Managerial

Implementation timetable	3. 6-12 months	Time required to design and implement
Public acceptability	5. High	Unlikely to be objected to
Practical feasibility	5. High	Scheme is an upgrade of what already exists
What is the quality of the supporting evidence?	1. Low	
Key risks		

Financial

Affordability	Don't know	
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	1. Static	Infrastructure would be static
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**New cycle route along A1170**	
Date	09/02/2016	
Description	New off road cycle route along A1170 between North Hoddesdon, Hoddesdon Town Centre and Broxbourne	

Strategic

Identified problems and objectives	Potential space issue along A1170, with little room for a 'road diet' (narrowing of lanes)	
Scale of impact	3	Potential to reroute cyclists off the road and improve traffic flow
Fit with wider transport and government objectives	4	Supports sustainable transport and low carbon emissions
Fit with other objectives	5. High	Promotes sustainable infrastructure through better cycling routes. Will remove cyclists from te road which will improve the efficiency of the network.
Key uncertainties	Will space used to provide cycle lanes be taken from pedestrians?	
Degree of consensus over outcomes	5. Majority	Likely to be seen as a positive move by both cyclists and motorists.

Economic

Economic growth	**4. Amber/green**	Scheme will improve journey times and journey time reliability for motorists on the A1170
Carbon emissions	**4. Amber/green**	Likely to attract a shift towards cycling as a mode of transport. Some carbon emissions generation from construction of the scheme but a positive effect overall.
Socio-distributional impacts and the regions	**6. No Impact**	Unlikely to have any impact
Local environment	**5. Green**	Should improve air quality and reduce noise polution. Urban environment improved.
Well being	**5. Green**	Likely to have a positive effect on physical exercise levels, as well as improving safety for cyclists
Expected VfM category	2. High 2-4	Likely to be well used, with positive effects for cyclists and motorists

Managerial

Implementation timetable	5. 2-5 years	Would require design, potential land-take and construction
Public acceptability	5. High	Likely to be received positively by both motorists and cyclists
Practical feasibility	3	Could be difficult to obtain required land
What is the quality of the supporting evidence?	3	Multiple examples exist of separated cycle routes
Key risks		

Financial

Affordability	Don't know	More information required to assess costs involved
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	2	Infrastructure that would be built would be suitable as a cycle route with little flexability. Could be extended in the future.
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Improved cycle links by river**	
Date	09/02/2016	
Description	Broxbourne Borough Council has joined the County Council and Thames Water in a pilot project to improve the New River Path for cyclists	

Strategic

Identified problems and objectives		
Scale of impact	2	Potential to remove cyclists from the road network, which would improve traffic flow
Fit with wider transport and government objectives	4	Supports sustainable transport and low carbon emissions
Fit with other objectives	5. High	Promotes sustainable infrastructure through better cycling routes. Will remove cyclists from te road which will improve the efficiency of the network.
Key uncertainties	Unknown whether the improvements would cause a significant mode shift, or cause cyclists to reroute to the new path	
Degree of consensus over outcomes	3	Difficult to predict the scale of outcomes

Economic

Economic growth	**6. No Impact**	Likely to have limitted impact on journey times, unless a signifcant number of cyclists reroute to use the path
Carbon emissions	**4. Amber/green**	Likely to attract a shift towards cycling as a mode of transport. Some carbon emissions generation from construction of the scheme but a positive effect overall.
Socio-distributional impacts and the regions	**6. No Impact**	Minor rerouting of cyclists/mode shift will not impact socio-distribution.
Local environment	**5. Green**	Should improve air quality and reduce noise polution. Urban environment improved.
Well being	**5. Green**	Likely to have a positive effect on physical exercise levels, as well as improving safety for cyclists
Expected VfM category	3. Medium 1.5-2	Likely to

Managerial

Implementation timetable	6. 5-10 years	May require consultation, and construction could be difficult due to the proximity of local housing.
Public acceptability	3	Would be seen as a positive by those living close to the A1170, but may be viewed negatively by the residents living in Winnipeg Way who would be affected by the slip road.
Practical feasibility	2	Finding space to build the slip could cause issues.
What is the quality of the supporting evidence?	3	Multiple examples exist of schemes that provide cycling infrastructure
Key risks		

Financial

Affordability	Don't know	Further research required to assess likely costs
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)		
Cost profile		
Overall cost risk	Don’t know	
Other costs		

Commercial

Flexibility of option	2	Generally static, but infrastructure could be adapted to provide improved routes for pedestrians
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**New bus service for Park Plaza**
Date	09/02/2016
Description	New/reinstated bus service to be provided. Service from Waltham Cross town centre to News UK has been temporarily discontinued pending the wider Park Plaza development.

Strategic

Identified problems and objectives		
Scale of impact	3	Likely to be well used by the Park Plaza residents. Could reduce the number of car trips passing through the News UK signalised junction
Fit with wider transport and government objectives	2	Promotes use of sustainable transport which will help lower carbon emissions. Bus services can be easily expanded to support new growth.
Fit with other objectives	2	Promotes east-west crossings; improves efficiency of the transport network; could improve operation of the A10 by removing trips passing through the signalised junction
Key uncertainties	Unclear whether the number/frequency of services would be sufficient to remove trips from the network.	
Degree of consensus over outcomes	4	Likely to be widely accepted as a positive, especially for those who were reliant on the previous service before it was discontinued.

Economic

Economic growth	**4. Amber/green**	Would remove car trips from network and cause a reduction in journey times/ improve reliability
Carbon emissions	**4. Amber/green**	Provides a more sustainable mode of transport/higher occupancy vehicle and will therefore reduce carbon emissions
Socio-distributional impacts and the regions	**4. Amber/green**	Could improve accessibility to/from the Park Plaza development and the town centre for those without access to a car
Local environment	**4. Amber/green**	By reducing the number of cars on the network, the scheme will improve air quality and noise pollution
Well being	**5. Green**	Fewer cars will result in improved safety for pedestrians and cyclists. East-west severance is also reduced by the introduction of this bus service. For some users, access to amenities and facilities is improved by the bus service.
Expected VfM category	2. High 2-4	As this bus service has previously run then cost to implement would be low, but potential benefits are significant.

Managerial

Implementation timetable	3. 6-12 months	Would be straight forward to implement due to service previously existing.
Public acceptability	5. High	Will be widely accepted by all, especially those who relied on the previous service,
Practical feasibility	5. High	Other than requiring vehicles and drivers, everything else required would already be in place due to the previous service.
What is the quality of the supporting evidence?	5. High	Service existed previously.
Key risks		

Financial

Affordability	5. Affordable	Drivers and buses are the only expenses, and funding for these was found in the past.
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	5. Low risk	
Other costs		

Commercial

Flexibility of option	4	Routes/frequency of services can be adjusted to meet emerging needs.
Where is funding coming from?		
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Greater Brookfield Bus Services**
Date	09/02/2016
Description	New bus terminus serving the Great Brookfield development. This would enable better bus provision and better passenger facilities at the new development, promoting bus use as a more valid mode choice. Additional services will be explored to ensure more sustainable travel mode choices to/from Greater Brookfield.

Strategic

Identified problems and objectives		
Scale of impact	3	Likely to be well used by the Greater Brookfield residents. Could remove car trips from the network.
Fit with wider transport and government objectives	2	Promotes use of sustainable transport which will help lower carbon emissions. Bus services can be easily expanded to support new growth.
Fit with other objectives	2	Promotes east-west crossings; improves efficiency of the transport network; could improve operation of the A10
Key uncertainties		
Degree of consensus over outcomes	4	Would be widely agreed to be a positive scheme. Possible objections realted to construction/location of the bus terminus.

Economic

Economic growth	**4. Amber/green**	Would remove car trips from network and cause a reduction in journey times/ improve reliability
Carbon emissions	**3. Amber**	Provides a more sustainable mode of transport/higher occupancy vehicle and will therefore reduce carbon emissions. Construction of bus terminus will produce carbon emissions.
Socio-distributional impacts and the regions	**4. Amber/green**	Could improve accessibility to/from the Greater Brookfield development and the town centre for those without access to a car
Local environment	**4. Amber/green**	By reducing the number of cars on the network, the scheme will improve air quality and noise pollution
Well being	**5. Green**	Fewer cars will result in improved safety for pedestrians and cyclists. East-west severance is also reduced by the improvement of these bus services. For some users, access to amenities and facilities is improved by the bus services.
Expected VfM category	3. Medium 1.5-2	Cost to implement could be reasonably high, but benefits likely to be significant.

Managerial

Implementation timetable	5. 2-5 years	Planning required to design bus terminus and bus routes/frequencies to maximise benefits.
Public acceptability	4	Likely to be widely accepted. Scheme could face some opposition depending on the location of the bus terminus
Practical feasibility	3	Moderate levels of new infrastructure required for new bus terminus
What is the quality of the supporting evidence?	1. Low	No modelling undertaken to test effects of new bus routes in this area
Key risks	A large increase in the frequency/number of services may cause congestion in the proximity of the bus station.	

Financial

Affordability	Don't know	More information needed in order to determine scheme costs
Capital Cost (£m)	Don’t know	
Revenue Costs (£m)		
Cost profile		
Overall cost risk	Don’t know	
Other costs		

Commercial

Flexibility of option	4	
Where is funding coming from?		
Any income generated? (£m)		

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Expanding Waltham Cr. bus stn.**
Date	09/02/2016
Description	Potential expansion of the existing bus station at Waltham Cross to better serve passengers and provide improved facilities for operators

Strategic

Identified problems and objectives	Possible space restrictions, depending on the level of expansion planned. Aims to provide better bus connections to and from Waltham Cross	
Scale of impact	3	Likely to be well used by residents. Could reduce the number of car trips on the network.
Fit with wider transport and government objectives	2	Promotes use of sustainable transport which will help lower carbon emissions. Bus services can be easily expanded to support new growth.
Fit with other objectives	2	Promotes east-west crossings; improves efficiency of the transport network; could improve operation of the A10 by removing car trips here
Key uncertainties		
Degree of consensus over outcomes	4	Likely to be well received, with the possible exception of those impacted by the expansion of the bus station, such as local business owners

Economic

Economic growth	**4. Amber/green**	Would remove car trips from network and cause a reduction in journey times/ improve reliability
Carbon emissions	**4. Amber/green**	Provides a more sustainable mode of transport/higher occupancy vehicle and will therefore reduce carbon emissions
Socio-distributional impacts and the regions	**4. Amber/green**	Could improve accessibility to/from the Waltham Cross housing and the town centre for those without access to a car
Local environment	**4. Amber/green**	By reducing the number of cars on the network, the scheme will improve air quality and noise pollution
Well being	**5. Green**	Fewer cars will result in improved safety for pedestrians and cyclists. East-west severance is also reduced by the introduction of new bus services. For some users, access to amenities and facilities is improved by the bus service.
Expected VfM category	3. Medium 1.5-2	Could be costly to expand bus station and set up new services, but potential benefits are significant.

Managerial

Implementation timetable	6. 5-10 years	Requires design of new bus station alongside planning of improved bus services
Public acceptability	4	Likely to be widely accepted. The exception is likely to be those who are disrupted by the improvements to the bus services.
Practical feasibility	3	Bus station already exists; extra land may be needed depending on the scale of the improvements.
What is the quality of the supporting evidence?	3	Bus station and bus routes currently exist.
Key risks	A large increase in the frequency/number of services may cause congestion in the proximity of the bus station.	

Financial

Affordability	Don't know	More information needed about details of scheme
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	4	Bus services can be adjusted to meet emerging needs
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	Don't know	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Improved walking routes**
Date	09/02/2016
Description	Improved network throughout the Borough, including: •Improved routes to Park Plaza West and throughout the Rags Valley; •Improvements to existing network of paths and tracks along eastern side of A10; and •Improvements to existing network of paths and tracks along eastern side of West Anglian railway

Strategic

Identified problems and objectives	Aims to improve quality of walking routes in the borough	
Scale of impact	1. Small impact	Some small mode shift away from less sustainable methods of transport, but would need to be supported by travel behaviour change programmes for full, lasting impact to be achieved.
Fit with wider transport and government objectives	3	Promotes sustainable travel methods/low carbon emissions
Fit with other objectives	3	Promotes a safe transport network and improves walking routes.
Key uncertainties		
Degree of consensus over outcomes	Don't know	

Economic

Economic growth	**6. No Impact**	Unlikely to impact economic growth
Carbon emissions	**6. No Impact**	Unlikely to cause a mode shift away from less sustainable travel methods
Socio-distributional impacts and the regions	**6. No Impact**	Unlikely to have an impact
Local environment	**4. Amber/green**	Improves urban landscape for pedestrians
Well being	**5. Green**	Improves safety for pedestrians; increases physical activity; may reduce the risk of crime for pedestrians as there are likely to be several people using a walking route at any one time
Expected VfM category	4. Low 1-1.5	Could be costly to implement scheme; benefits unlikely to be significant

Managerial

Implementation timetable	4. 1-2 years	Will take time for infrastructure to be put in place, dependent on level of improvements planned
Public acceptability	5. High	Likely to be well receieved by all
Practical feasibility	3	Space for routes already exists; could be costly to upgrade infrastructure
What is the quality of the supporting evidence?	3	Multiple examples of improved walking routes exist
Key risks		

Financial

Affordability	Don't know	Dependent on scale of scheme
Capital Cost (£m)	Don't know	
Revenue Costs (£m)	Don't know	
Cost profile		
Overall cost risk	Don't know	
Other costs		

Commercial

Flexibility of option	3	Footways could be converted to cycleways/used as shared space in the future if required
Where is funding coming from?	Broxbourne Borough Council; Local Enterprise Partnership	
Any income generated? (£m)	No	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**Expansion of London LEZ**	
Date	09/02/2016	
Description	Expansion of the existing London Low Emissions Zone (LEZ) into the southern half of the Borough, penalising heaily polluting vehicles from using the Borough's already congested roads with an aim to improve air quality in Waltham Cross and in congested locations on the A10.	

Strategic

Identified problems and objectives	The southern half of the Borough of Broxbourne is severley congested. The at-grade junctions on the A10 are key 'pinch-points' on the network. Furthermore, the urban area of Waltham Cross is forecast to become significantly more congested in the future, with additional pressures on the A121 through the town. Increased traffic volumes may also present an issue for the existing Air Quality Management Areas (AQMAs) in the area.	
Scale of impact	3	Potential significant impact on affected vehicles, but ultimately affecting only pre-Euro III standard rigids and LDVs, so a small overall proportion of all traffic on the roads.
Fit with wider transport and government objectives	4	Would help to enable a shift to cleaner vehicles and may be a 'stick' that is needed to enable cleaner vehicle use.
Fit with other objectives	4	Would meet a number of BBCs aims in the Local Plan away from transport, such as improving the health of its residents and ensuring better streetscapes.
Key uncertainties	Potential significant costs to implement and monitor within the borough. Currently uncertain as to how many vehicles this would affect within the Borough of Broxbourne.	
Degree of consensus over outcomes	Don't know	

Economic

Economic growth	**2. Red/amber**	No significant change in travel times for most road users. Additional cost to business for deliveries etc. may negatively affect local economy, although proximity to London may mean that some fleets have already switched to cleaner rigids and LDVs.
Carbon emissions	**4. Amber/green**	Slight improvement in emissions due to cleaner fleet vehicles being used to avoid the LEZ charges. Evidence from London in respect to particulates shows that, for Air quality measurements for PM10, annual mean concentrations reduced between 2.46% and 3.07% within the LEZ compared to just over 1% for locations outside the LEZ. For NOx, no significant changes were monitored.
Socio-distributional impacts and the regions	**6. No Impact**	No significant impact
Local environment	**5. Green**	Overall beneficial effect on local air quality in the southern half of the borough, particularly in the vicinity of Waltham Cross where there are existing AQMAs.
Well being	**6. No Impact**	No significant change, although may lead to some small increase in active modes if perception that air quality is improved.
Expected VfM category		Uncertain. Costs of initial implementation and ongoing maintenance, data collection etc. unknown.

Managerial

Implementation timetable	5. 2-5 years	Discussion with TfL required. Acquisition of equipment and establishment of operational methods needs consideration.
Public acceptability	4	
Practical feasibility	Don't know	Initial discussions with TfL would be required. Unlikely that Broxbourne could purse a scheme in isolation from the larger TfL scheme as would be prohibitively expensive.
What is the quality of the supporting evidence?	4	Much evidence of beneficial impact in London.
Key risks		

Financial

Affordability	2	Likely to be expensive. Prohibitively so if Broxbourne was to undertake in isolation from TfL.
Capital Cost (£m)	Don't know	To be explored with TfL.
Revenue Costs (£m)	Don't know	To be explored with TfL
Cost profile		
Overall cost risk	1.High risk	
Other costs		

Commercial

Flexibility of option	5. Dynamic	Once implemented, possible to monitor vehicles and alter areas covered, vehicle types that are subject to LEZ charges etc.
Where is funding coming from?	Broxbourne Borough Council, Hertfordshire LEP	
Any income generated? (£m)	Don't know	

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	**HOV Lanes on the A10**
Date	09/02/2016
Description	Explore the use of High Occupancy Vehicle (HOV) lanes on the A10 as a means to promote car-sharing and reduce total number of cars on the road in the peak hours.

Strategic

Identified problems and objectives	There is significant congestion on the A10, particularly in the peak hours (southbound in the AM peak; northbound in the PM peak). Congestion is a particular concern at the at-grade junctions within Cheshunt, being Church Lane and College Road.	
Scale of impact	4	The average occupancy rate in the UK is 1.6 persons to a car (NTS 2012). This is lower (1.2) for commuters and business trips. These commuting and business trips are those that are primarily travelling in the peak hours. It is therefore a reasonable assumption that a significant number of vehicles caught in congestion on the A10 are single occupancy.
Fit with wider transport and government objectives	4	Would potentially encourage car sharing and thus reduce car trips on the network.
Fit with other objectives	3	Unlikely to affect any shift to more sustainable modes, but does support the economy by keeping traffic moving and allowing people to get to work and other facilities.
Key uncertainties	Costs of enforcement of HOV lane are unknown and cameras and other technology would require maintenance. Unknown if sufficient space exists for an additional lane down the A10 corridor.	
Degree of consensus over outcomes	Don't know	

Economic

Economic growth	**5. Green**	Would potentially improve end-to-end journey times along the A10, as well as daily reliability and thus efficiency of the road, providing facilities exist and support the infrastructure to promote car sharing.
Carbon emissions	**4. Amber/green**	More efficient driving due to less queueing and idling.
Socio-distributional impacts and the regions	**6. No Impact**	
Local environment	**3. Amber**	Additional lane on the A10 would reduce quality of the streetscape. However, less idling and queueing could improve the environment.
Well being	**3. Amber**	Decrease in travel times, allowing people to access facilities more easily and more quickly. However, an additional lane on the A10 would only further entrench poor east-west connectivity and could further sever existing communities.
Expected VfM category		

Managerial

Implementation timetable	6. 5-10 years	Feasibility studies required, funding identification.
Public acceptability	4	Additional capacity on the A10 likely to be welcomed by most road users, although some would prefer an extra lane for any vehicle to use.
Practical feasibility	Don't know	Feasibility for construction of an additional lane would need to be undertaken.
What is the quality of the supporting evidence?	Don't know	There are no similarly placed HOV lanes across teh rest of Hertfordshire.
Key risks	Data collection costs.	

Financial

Affordability	3	
Capital Cost (£m)	Don’t know	Would require a detailed scoping exercise.
Revenue Costs (£m)	Don’t know	
Cost profile		
Overall cost risk	2	
Other costs		

Commercial

Flexibility of option	5. Dynamic	Could be converted to extra high occupancy lane, public transport / green lane or a general traffic lane with little issue in the future.
Where is funding coming from?	Broxbourne Borough Council, Hertfordshire LEP	
Any income generated? (£m)	Yes	Don’t know

C Appendix C – Tabulated data from traffic modelling

C.1. Appendix C contains tabulated data outputs from the traffic model. These data support the commentary made in the main body of the report that summarises the results of the package analysis.

C.2. The data provided are for:

- Travel times:
  - along the A10 corridor between the M25 and the A1170 Dinant Link Road at Hoddesdon;
  - between key development locations in the Local Plan and identified rail stations.
- Delays at key locations affected by the scheme packages tested; and
- Volume-to-Capacity ratios for key locations affected by the scheme packages tested.

Table C.4 – Comparison of Journey Times (minutes:seconds) on A10- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	11:21	7:32	10:44	10:20	8:53
		SB	13:03	7:51	11:40	11:41	10:12
	PM Peak	NB	14:24	9:31	14:19	11:10	9:22
		SB	11:46	9:01	10:39	11:09	10:13

Table C.5 – Comparison of Journey Times (minutes:seconds) on A10- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	14:29	11:27	13:37	12:46	11:23
		SB	18:43	11:53	15:35	14:46	14:42
	PM Peak	NB	21:36	13:44	21:11	17:07	14:55
		SB	16:16	9:24	13:44	13:15	13:34

Table C.6 – Comparison of average speeds (kilometres per hour) on A10- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	48	72	51	53	59
		SB	42	70	47	47	52
	PM Peak	NB	38	57	38	49	56
		SB	46	61	51	49	52

Table C.7 – Comparison of average speeds (kilometres per hour) on A10- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between M25 Junction 25 and A1170	AM Peak	NB	38	44	40	43	46
		SB	29	46	35	37	36
	PM Peak	NB	25	40	26	32	35
		SB	33	58	40	41	39

Table C.8 – Comparison of Journey Times (minutes:seconds) to and from stations- 2023

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between Brookfield development and Cheshunt Station	AM Peak	To station	10:36	10:11	10:14	10:15	8:54
		From station	9:03	19:11	8:26	8:31	7:31
	PM Peak	To station	7:34	8:53	7:34	7:37	7:38
		From station	14:53	24:33	14:43	13:13	9:30
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	6:58	10:32	7:10	7:11	7:02
		From station	10:33	15:57	9:47	9:56	8:49
	PM Peak	To station	11:47	17:22	11:48	11:79	9:56
		From station	12:43	18:19	12:46	13.03	11:50
Between Park Plaza development and Cheshunt Station	AM Peak	To station	9:00	11:54	8:57	8:49	8:01
		From station	9:33	24:42	8:05	8:38	6:43
	PM Peak	To station	11:23	14:49	11:23	10:11	8:30
		From station	15:21	29:56	14:14	14:46	9:11
Between Goffs Oak and Cheshunt Station	AM Peak	To station	9:59	22:17	9:57	9:48	9:01
		From station	12:11	35:12	10:46	11:16	9:30
	PM Peak	To station	12:20	20:39	12:39	11:10	9:29
		From station	15:41	39:41	14:47	14:46	10:15
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	11:39	24:44	11:19	11:13	9:13
		From station	11:02	37:29	9:37	10:06	8:20
	PM Peak	To station	12:04	23:01	12:01	10:30	8:34
		From station	14:54	42:02	14:00	13:59	9:22

Table C.9 – Comparison of Journey Times (minutes:seconds) to and from stations- 2033

Route	Time Period	Direction	Local Plan	Package 1	Package 2	Package 3	Package 4
Between Brookfield development and Cheshunt Station	AM Peak	To station	11:11	11:21	10:51	10:46	9:55
		From station	11:59	30:35	11:28	11:27	8:10
	PM Peak	To station	7:43	9:11	7:49	7:49	7:49
		From station	23:27	41:41	23:23	18:38	14:58
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	9:37	9:27	11:27	11:12	10:57
		From station	12:21	18:42	11:57	12:40	11:54
	PM Peak	To station	15:03	18:02	15:19	16:04	16:47
		From station	17:16	27:57	18:20	19:12	19:14
Between Park Plaza development and Cheshunt Station	AM Peak	To station	9:56	12:21	10:09	9:17	8:11
		From station	13:40	37:34	11:30	12:47	7:09
	PM Peak	To station	11:48	13:34	11:30	10:32	8:37
		From station	21:12	51:45	21:34	18:44	12:43
Between Goffs Oak and Cheshunt Station	AM Peak	To station	10:58	23:39	11:11	10:20	9:13
		From station	15:51	48:09	13:43	14:47	9:56
	PM Peak	To station	12:43	20:43	12:24	11:32	9:38
		From station	23:19	61:35	24:33	20:56	16:15
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	14:36	26:10	12:42	12:30	9:22
		From station	14:42	40:32	12:27	13:31	8:33
	PM Peak	To station	14:41	23:06	14:02	10:50	8:49
		From station	22:25	63:58	11:41	20:04	15:16

Table C.10 – Link Delay Time (seconds) in key scheme areas- College Road/A10 junction- 2023

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	169	21	44	66	1	118	17	40	66	1
North Arm outbound	79	12	93	60	20	245	24	290	60	38
East Arm inbound	163	67	82	110	11	304	67	248	110	30
East Arm outbound	2	1	2	2	9	2	1	2	2	8
South Arm inbound	97	3	21	66	1	90	5	20	66	1
South Arm outbound	1	1	1	1	2	1	1	1	1	2
West Arm inbound	83	80	62	74	47	172	80	134	74	11
West Arm outbound	2	1	1	2	2	2	1	2	2	3
Off-slip northbound	-	-	-	-	8	-	-	-	-	9
On-slip northbound	-	-	-	-	5	-	-	-	-	5
Off-slip southbound	-	-	-	-	41	-	-	-	-	41
On-slip southbound	-	-	-	-	5	-	-	-	-	5
Flyover northbound	-	-	-	-	1	-	-	-	-	1
Flyover southbound	-	-	-	-	1	-	-	-	-	1
Underpass eastbound	-	-	-	-	0	-	-	-	-	0
Underpass westbound	-	-	-	-	0	-	-	-	-	0

Table C.11 – Link Delay Time (seconds) in key scheme areas- Church Lane/A10 junction- 2023

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	50	28	50	50	1	62	22	36	50	1
North Arm outbound	9	13	12	14	0	13	25	12	14	1
East Arm inbound	163	66	139	131	6	495	66	493	131	16
East Arm outbound	9	5	9	8	2	7	5	6	8	2
South Arm inbound	79	12	93	60	1	245	24	290	60	1
South Arm outbound	169	21	44	66	2	118	17	40	66	2
West Arm inbound	121	67	125	116	6	180	67	186	116	9
West Arm outbound	2	3	4	2	2	2	3	4	2	2
Off-slip northbound	-	-	-	-	9	-	-	-	-	10
On-slip northbound	-	-	-	-	5	-	-	-	-	5
Off-slip southbound	-	-	-	-	11	-	-	-	-	24
On-slip southbound	-	-	-	-	5	-	-	-	-	6
Flyover northbound	-	-	-	-	1	-	-	-	-	1
Flyover southbound	-	-	-	-	1	-	-	-	-	1
Underpass eastbound	-	-	-	-	0	-	-	-	-	0
Underpass westbound	-	-	-	-	0	-	-	-	-	0

Table C.12 – Link Delay Time (seconds) in key scheme areas- College Road/A10 junction- 2033

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	340	29	46	106	1	281	25	44	85	1
North Arm outbound	101	21	168	67	29	347	21	378	90	40
East Arm inbound	284	67	230	268	14	372	67	293	352	360
East Arm outbound	2	1	2	2	10	2	1	2	2	7
South Arm inbound	134	4	21	65	1	82	5	20	58	1
South Arm outbound	1	2	2	1	3	1	2	1	1	3
West Arm inbound	116	80	101	127	51	156	80	122	110	12
West Arm outbound	2	1	1	1	2	2	1	2	1	4
Off-slip northbound	-	-	-	-	8	-	-	-	-	9
On-slip northbound	-	-	-	-	5	-	-	-	-	6
Off-slip southbound	-	-	-	-	67	-	-	-	-	59
On-slip southbound	-	-	-	-	5	-	-	-	-	5
Flyover northbound	-	-	-	-	1	-	-	-	-	1
Flyover southbound	-	-	-	-	1	-	-	-	-	1
Underpass eastbound	-	-	-	-	0	-	-	-	-	0
Underpass westbound	-	-	-	-	0	-	-	-	-	0

Table C.13 – Link Delay Time (seconds) in key scheme areas- Church Lane/A10 junction- 2033

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	63	36	74	65	1	93	32	94	67	1
North Arm outbound	11	22	12	20	1	12	22	13	31	1
East Arm inbound	337	66	310	312	8	1027	66	1035	704	65
East Arm outbound	9	5	8	7	2	7	5	6	7	2
South Arm inbound	101	21	168	67	1	347	21	378	90	1
South Arm outbound	340	29	46	106	3	281	25	44	85	3
West Arm inbound	172	67	173	142	7	228	67	228	131	8
West Arm outbound	1	3	4	2	2	3	3	6	2	2
Off-slip northbound	-	-	-	-	10	-	-	-	-	11
On-slip northbound	-	-	-	-	5	-	-	-	-	5
Off-slip southbound	-	-	-	-	23	-	-	-	-	37
On-slip southbound	-	-	-	-	6	-	-	-	-	6
Flyover northbound	-	-	-	-	1	-	-	-	-	1
Flyover southbound	-	-	-	-	1	-	-	-	-	1
Underpass eastbound	-	-	-	-	0	-	-	-	-	0
Underpass westbound	-	-	-	-	0	-	-	-	-	0

Table C.14 – Volume/Capacity (%) in key scheme areas- College Road/A10 junction- 2023

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	99	75	62	82	41	100	70	55	78	41
North Arm outbound	52	61	54	51	78	58	76	56	66	92
East Arm inbound	103	17	98	100	75	106	17	104	107	98
East Arm outbound	43	1	43	43	77	42	1	38	45	63
South Arm inbound	84	39	49	83	41	88	48	52	92	44
South Arm outbound	57	68	67	43	76	56	63	61	39	76
West Arm inbound	88	7	90	84	101	102	7	100	97	81
West Arm outbound	35	1	33	34	39	49	1	44	34	55
Off-slip northbound	-	-	-	-	30	-	-	-	-	29
On-slip northbound	-	-	-	-	42	-	-	-	-	42
Off-slip southbound	-	-	-	-	100	-	-	-	-	100
On-slip southbound	-	-	-	-	27	-	-	-	-	30
Flyover northbound	-	-	-	-	41	-	-	-	-	52
Flyover southbound	-	-	-	-	45	-	-	-	-	44
Underpass eastbound	-	-	-	-	36	-	-	-	-	27
Underpass westbound	-	-	-	-	45	-	-	-	-	55

Table C.15 – Volume/Capacity (%) in key scheme areas- Church Lane/A10 junction- 2023

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	70	75	70	77	48	70	70	60	72	47
North Arm outbound	55	61	60	63	39	62	76	61	77	48
East Arm inbound	100	0	100	102	62	115	0	112	111	93
East Arm outbound	71	0	71	69	45	52	0	45	47	44
South Arm inbound	52	61	54	51	41	58	76	56	66	44
South Arm outbound	99	75	62	82	76	100	70	55	78	76
West Arm inbound	100	0	100	100	50	103	0	104	100	77
West Arm outbound	20	0	23	16	33	27	0	20	29	41
Off-slip northbound	-	-	-	-	59	-	-	-	-	50
On-slip northbound	-	-	-	-	29	-	-	-	-	40
Off-slip southbound	-	-	-	-	71	-	-	-	-	91
On-slip southbound	-	-	-	-	46	-	-	-	-	52
Flyover northbound	-	-	-	-	36	-	-	-	-	44
Flyover southbound	-	-	-	-	45	-	-	-	-	45
Underpass eastbound	-	-	-	-	19	-	-	-	-	25
Underpass westbound	-	-	-	-	16	-	-	-	-	26

Table C.16 – Volume/Capacity (%) in key scheme areas- College Road/A10 junction- 2033

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	108	81	67	98	45	109	78	64	86	45
North Arm outbound	55	73	56	60	86	58	73	56	67	93
East Arm inbound	105	16	107	107	85	104	16	103	105	118
East Arm outbound	47	1	48	52	79	43	1	40	46	55
South Arm inbound	86	48	50	92	43	85	48	50	94	42
South Arm outbound	58	74	73	49	83	55	71	65	44	84
West Arm inbound	98	7	98	95	100	100	7	96	96	85
West Arm outbound	35	1	28	29	38	48	1	47	26	59
Off-slip northbound	-	-	-	-	31	-	-	-	-	22
On-slip northbound	-	-	-	-	44	-	-	-	-	45
Off-slip southbound	-	-	-	-	102	-	-	-	-	101
On-slip southbound	-	-	-	-	34	-	-	-	-	33
Flyover northbound	-	-	-	-	47	-	-	-	-	52
Flyover southbound	-	-	-	-	52	-	-	-	-	50
Underpass eastbound	-	-	-	-	36	-	-	-	-	25
Underpass westbound	-	-	-	-	45	-	-	-	-	55

Table C.17 – Volume/Capacity (%) in key scheme areas- Church Lane/A10 junction- 2033

	AM peak					PM peak				
	Local Plan	Packages 1	2	3	4	Local Plan	Packages 1	2	3	4
North Arm inbound	76	81	74	86	54	76	78	71	80	52
North Arm outbound	59	73	59	71	44	61	73	61	81	47
East Arm inbound	111	0	108	99	74	118	0	107	124	102
East Arm outbound	70	0	62	58	52	42	0	33	46	45
South Arm inbound	55	73	56	60	43	58	73	56	67	42
South Arm outbound	108	81	67	98	83	109	78	64	86	84
West Arm inbound	103	0	103	101	64	105	0	105	101	75
West Arm outbound	25	0	19	23	38	21	0	14	27	44
Off-slip northbound	-	-	-	-	62	-	-	-	-	50
On-slip northbound	-	-	-	-	38	-	-	-	-	43
Off-slip southbound	-	-	-	-	93	-	-	-	-	99
On-slip southbound	-	-	-	-	47	-	-	-	-	55
Flyover northbound	-	-	-	-	40	-	-	-	-	43
Flyover southbound	-	-	-	-	51	-	-	-	-	50
Underpass eastbound	-	-	-	-	22	-	-	-	-	23
Underpass westbound	-	-	-	-	21	-	-	-	-	27

Table C.18 – Comparison of Journey Times (minutes:seconds) on A10 with alternative package 1-2023

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between M25 Junction 25 and A1170	AM Peak	NB	11:21	7:32	11:28
		SB	13:03	7:51	13:36
	PM Peak	NB	14:24	9:31	15:26
		SB	11:46	9:01	11:30

Table C.19 – Comparison of Journey Times (minutes:seconds) on A10 with alternative package 1-2033

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between M25 Junction 25 and A1170	AM Peak	NB	14:29	11:27	16:56
		SB	18:43	11:53	19:34
	PM Peak	NB	21:36	13:44	22:39
		SB	16:16	9:24	17:21

Table C.20 – Comparison of average speeds (kilometres per hour) on A10 with alternative package 1-2023

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between M25 Junction 25 and A1170	AM Peak	NB	48.0	72.4	47.6
		SB	41.8	69.5	40.1
	PM Peak	NB	37.9	57.4	35.4
		SB	46.4	60.5	47.4

Table C.21 – Comparison of average speeds (kilometres per hour) on A10 with alternative package 1-2033

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between M25 Junction 25 and A1170	AM Peak	NB	37.7	33.9	32.2
		SB	29.2	45.9	27.9
	PM Peak	NB	25.3	39.7	24.1
		SB	33.6	58.1	31.5

Table C.22 – Comparison of Journey Times (minutes:seconds) to and from stations with alternative package 1- 2023

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between Brookfield development and Cheshunt Station	AM Peak	To station	10:36	10:11	11:27
		From station	9:03	19:11	10:08
	PM Peak	To station	7:34	8:53	7:40
		From station	14:53	24:33	19:55
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	6:58	10:32	7:06
		From station	10:33	15:57	10:59
	PM Peak	To station	11:47	17:22	12.20
		From station	12:43	18:19	15:36
Between Park Plaza development and Cheshunt Station	AM Peak	To station	9:00	11:54	11:16
		From station	9:33	24:42	11:32
	PM Peak	To station	11:23	14:49	13:56
		From station	15:21	29:56	23:44
Between Goffs Oak and Cheshunt Station	AM Peak	To station	9:59	22:17	12:16
		From station	12:11	35:12	14:05
	PM Peak	To station	12:20	20:39	14:51
		From station	15:41	39:41	23:51
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	11:39	24:44	12:33
		From station	11:02	37:29	12:56
	PM Peak	To station	12:04	23:01	15:08
		From station	14:54	42:02	23:06

Table C.23 – Comparison of Journey Times (minutes:seconds) to and from stations with alternative package 1- 2033

Route	Time Period	Direction	Local Plan	Package 1	Alternative Package 1
Between Brookfield development and Cheshunt Station	AM Peak	To station	25.4	26.4	23.5
		From station	29.5	13.9	26.3
	PM Peak	To station	35.5	30.8	35.0
		From station	17.9	10.9	13.4
Between Park Plaza development and Waltham Cross Station	AM Peak	To station	23.8	15.7	23.3
		From station	15.4	10.2	14.8
	PM Peak	To station	14.0	9.5	13.4
		From station	12.8	8.9	10.4
Between Park Plaza development and Cheshunt Station	AM Peak	To station	35.9	17.3	28.6
		From station	20.0	6.9	16..6
	PM Peak	To station	28.3	13.9	23.1
		From station	12.4	5.7	8.0
Between Goffs Oak and Cheshunt Station	AM Peak	To station	31.0	27.2	25.2
		From station	25.4	14.3	22.0
	PM Peak	To station	25.1	29.3	20.9
		From station	19.7	12.7	13.0
Between Tudor Nurseries and Cheshunt Station	AM Peak	To station	24.7	28.4	25.0
		From station	25.1	16.0	21.4
	PM Peak	To station	23.8	30.6	20.7
		From station	18.6	14.3	12.0

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