

Figure 7.21 2036 Option 3 - With J7 & J7a SLA M11 South of Harlow: Northbound PM

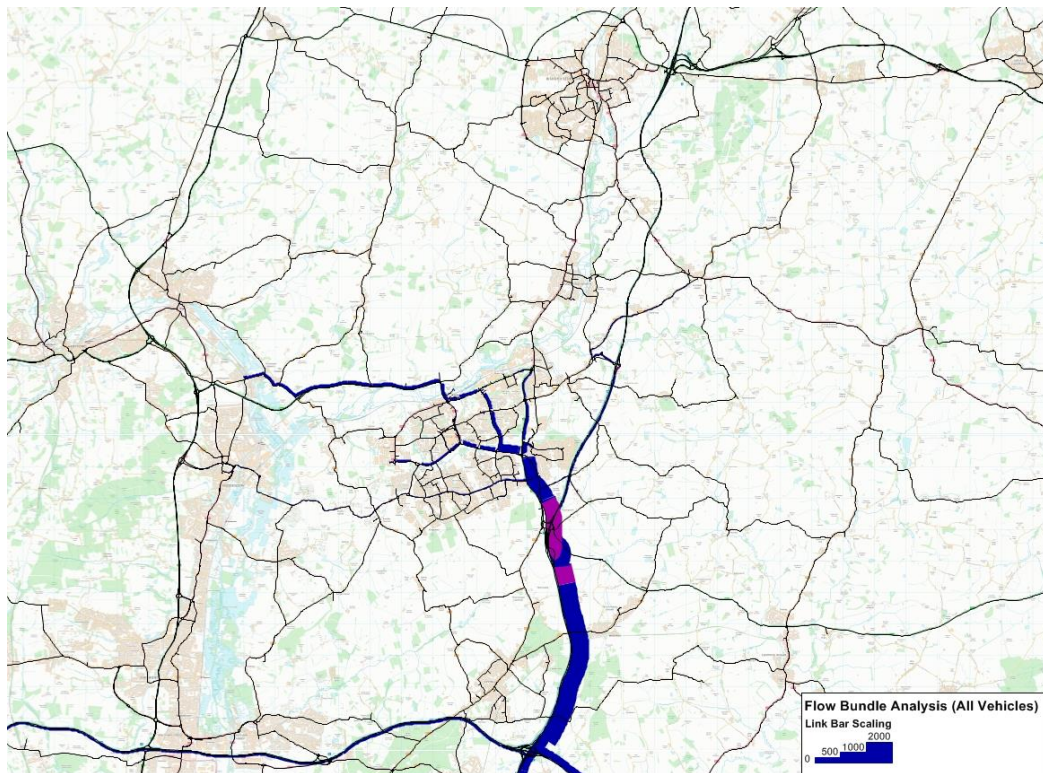


Figure 7.22 2036 Option 3 - With J7 & J7a SLA M11 South of Harlow: Southbound PM

The figures above indicate similar flows on the links to and from Harlow to those in each of the Option 1, J7a, and Option 2, J7, schemes, with limited through-traffic evident, the majority of traffic entering or leaving Harlow having either their origin or destination within the town, in both time periods.

Given that the J7 scheme modelled is unlikely to be implemented in the layout modelled, the Visum model outputs have provided a broad indication of the combined effects of having both schemes in place, and it is considered that these are generally consistent with or better than the impacts of the individual schemes.

#### 7.4.4 Option 4 - Northern Bypass (& J7a)

No detailed scheme design of the bypass element of this option has been undertaken and the modelling is based on schematic assumptions with regard to its route and connections.

The effects of Option 4, a northern bypass of Harlow connected to the M11 via J7a, on total vehicle hours, when compared with the Do Minimum scenarios are set out in Table 7.6.

Table 7.6 VISUM Model Outputs: Option 4 Northern Bypass & J7a

Total Time (Veh Hrs) User Class	Do Min 2021	Do NB&J7a 2021	Diff with NB&J7a 2021	Do Min 2036	Do NB&J7a 2036	Diff with NB&J7a 2036
AM UC1	23,653	23,427	-226	28,796	28,258	-538
AM UC2	2,967	2,942	-26	3,723	3,660	-62
AM UC3	11,020	10,873	-147	16,827	16,430	-397
AM UC4	6,556	6,485	-71	9,478	9,289	-189
AM UC5	1,748	1,733	-15	2,284	2,295	11
IP UC1	6,715	6,641	-75	7,952	7,854	-98
IP UC2	2,282	2,271	-11	2,899	2,881	-18
IP UC3	12,563	12,422	-141	19,853	19,604	-249
IP UC4	4,843	4,807	-36	6,856	6,792	-64
IP UC5	791	785	-5	989	992	3
PM UC1	22,533	22,132	-402	27,707	27,126	-581
PM UC2	3,164	3,132	-32	4,063	4,000	-63
PM UC3	12,929	12,699	-230	20,157	19,729	-428
PM UC4	6,478	6,389	-90	9,479	9,301	-178
PM UC5	767	771	4	988	990	2



It can be seen that Option 4, the Northern Bypass with J7a, results in even greater reductions in total vehicles hours in virtually all time periods and for all classes than for options 1-3.

The modelling of the Northern Bypass, in combination with the J7a scheme, as shown in Figure 7.23 and Figure 7.24, indicates that Option 4 leads to greater impact on flows on the M11 in both directions and time periods, than would Option 1 in isolation. This is likely to be as a result of some more strategic trips transferring to use the new link which improves the connection between the M11 and the A10. This is supported by the reduction in flows on the A120 west, and on the A10, and increases in flows on the A414 west of Harlow.

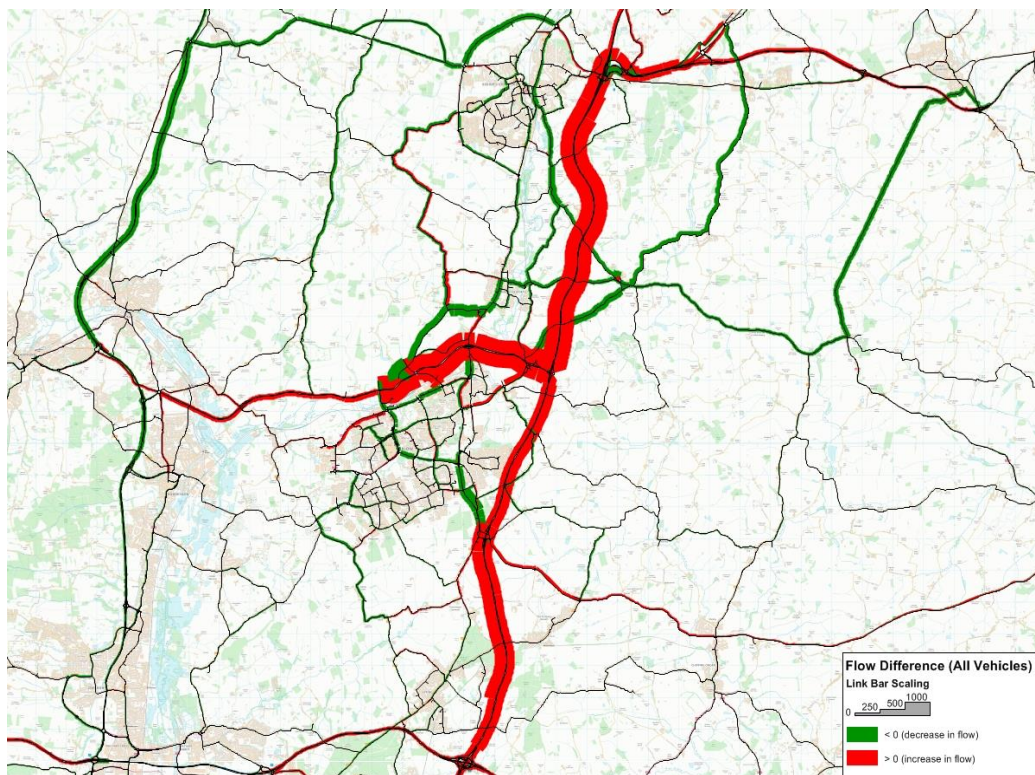


Figure 7.23 2036 Option 4 - With Northern Bypass & J7a Flow Differences: AM

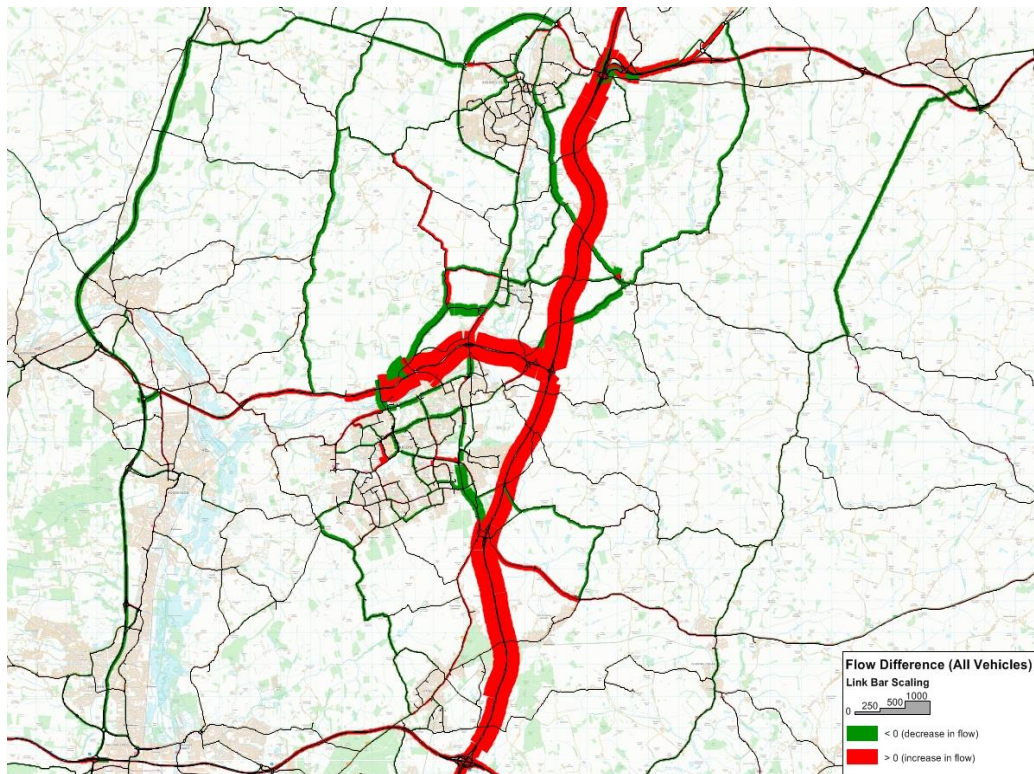


Figure 7.24 2036 Option 4 - With Northern Bypass & J7a Flow Differences: PM

For the A1184/B1393 corridor there would be likely to a slightly greater reduction in flows through Sawbridgeworth, and very little change on flows through Epping, in both time periods.

The flows on High Wych Rd are likely to significantly reduce as a result of traffic switching to the bypass, however some rat-running through villages to the west of the A1184 corridor may increase in both time periods.

On the immediate approaches to Harlow, there is likely to be a reduction in flows on all key links to the town, ie the A414 at Burnt Mill and immediately north of J7, and on the A1184 Cambridge Rd. Flows on B183 Gilden Way during the AM peak are still likely to be higher than for the Do Minimum scenario, and slightly reduced during the PM peak.

Select link analysis (SLA) of Option 4 peak period traffic using the Northern Bypass is set out in the following four figures: Figure 7.25, Figure 7.26, Figure 7.27 and Figure 7.28. These show the origins and destinations of traffic using the Northern Bypass element of Option 4. It should be noted that the traffic which would use J7a and Gilden Way to reach Harlow is not shown on these figures.



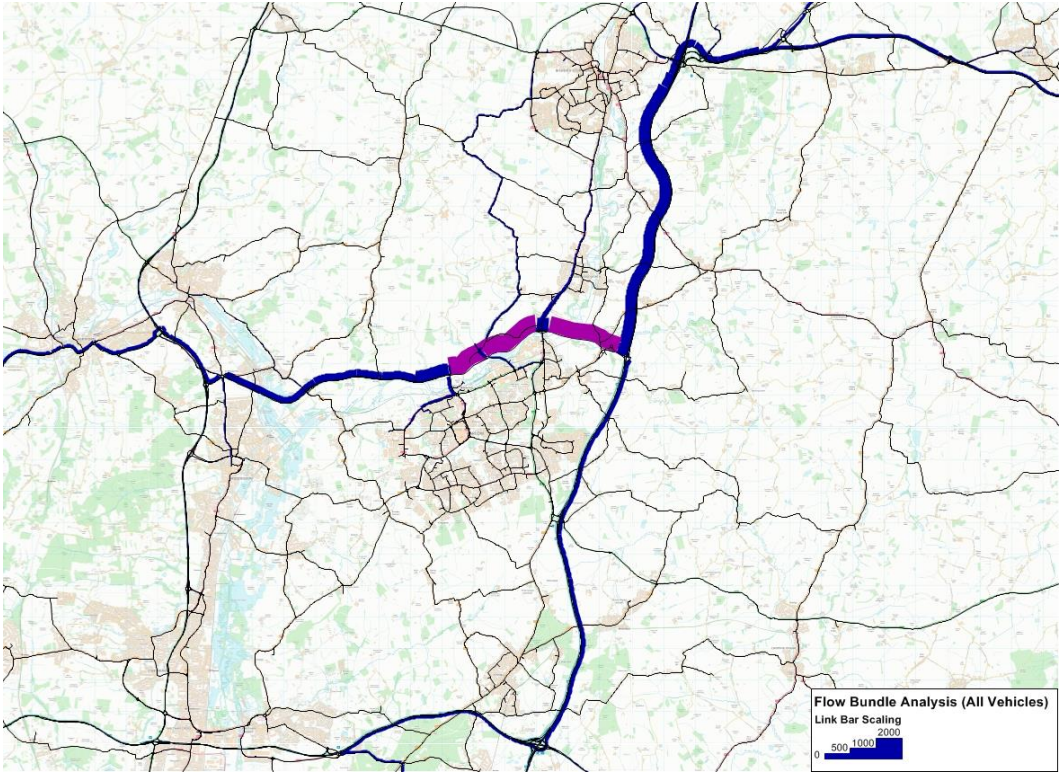


Figure 7.25 2036 Option 4 - With Northern Bypass SLA: Eastbound AM

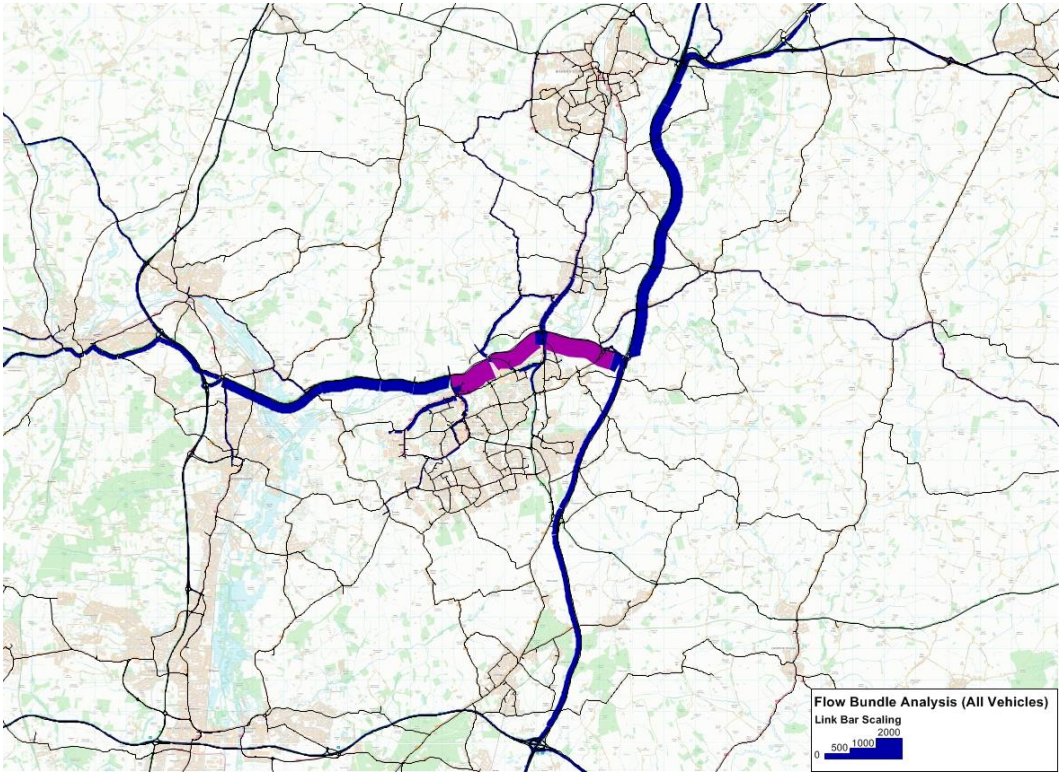


Figure 7.26 2036 Option 4 - With Northern Bypass SLA: Westbound AM



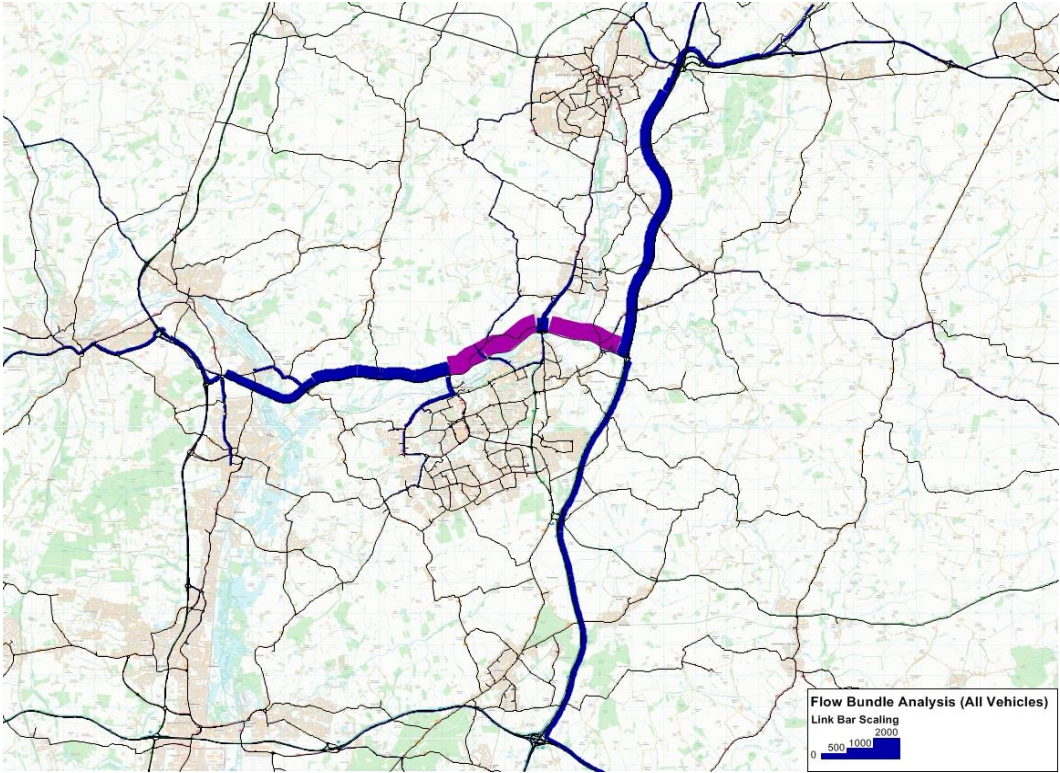


Figure 7.27 2036 Option 4 - With Northern Bypass SLA: Eastbound PM

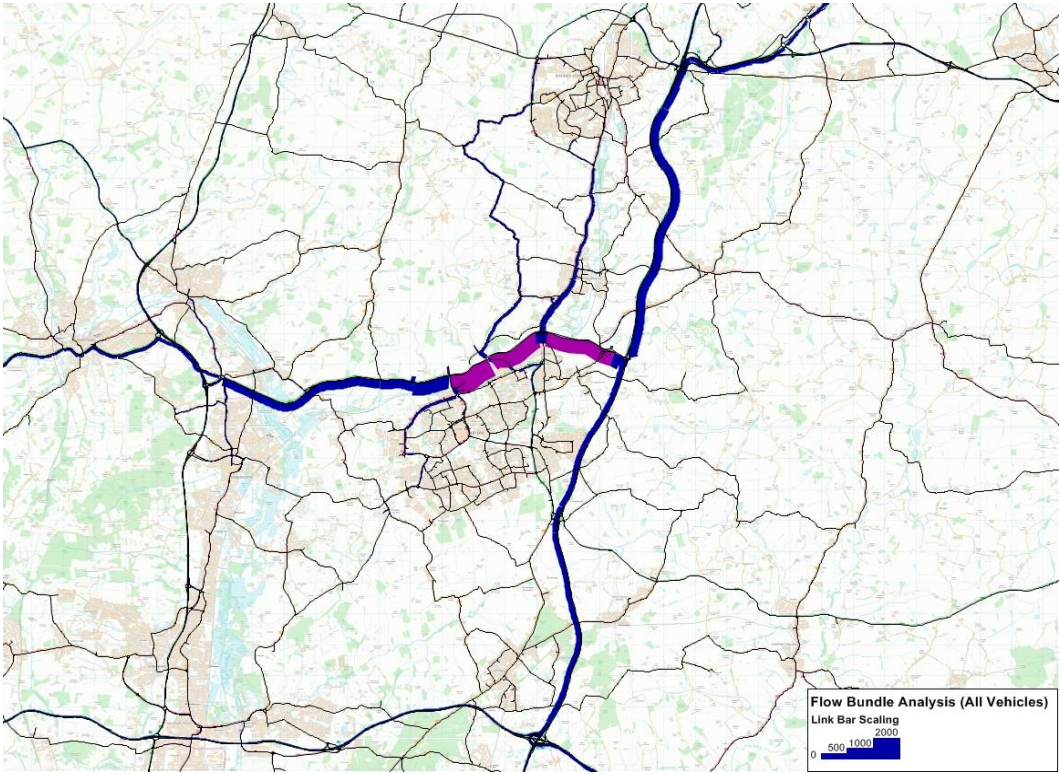


Figure 7.28 2036 Option 4 - With Northern Bypass SLA: Westbound PM

Analysis of the origins and destinations of the traffic using Option 4, the Northern Bypass scheme, shows that very little of the traffic would be Harlow-related, as almost all of the trips using the link appear to be strategic in nature. The key connecting links used are the motorway north of J7a, A414 west of Harlow, and the motorway south of J7a. Of the more local roads, the main connecting link is the A1184 through Sawbridgeworth, and the High Wych Rd. Within Harlow the main connections are with The Pinnacles, the town centre, and the eastern end of A414 Edinburgh Way.

It is concluded, therefore, that Option 4, the Northern Bypass scheme, would have little overall effect on the level of traffic within Harlow itself, but would facilitate more strategic movements around the town. It would not improve the accessibility of Harlow for the majority of trips on the local network, which either have origins or destinations within the town, as shown in 3.2.2.

#### **7.4.5 Option 5 - Northern Northern Bypass**

The modelling of the more extensive Northern Northern Bypass (NNB), to the west and north of Sawbridgeworth has made use of schematic drawings. The design is broadly based on historic studies, with the addition of the link through to River Way to provide an additional link across the River Stort, to correspond with that included in the Northern Bypass scheme. No detailed scheme design has been undertaken.

The effects of Option 5 on total vehicle hours, when compared with the Do Minimum scenarios are set out in

Table 7.7.

While the Northern Northern Bypass scheme results in time savings for all time periods and user classes, these are not as great as those which are likely to be achieved with Option 4, the Northern Bypass, in all scenarios except in 2021 AM.



Table 7.7 VISUM Model Outputs: Option 5 Northern Northern Bypass

Total Time (Veh Hrs) User Class	Do Min 2021	Do NNB 2021	Diff with NNB 2021	Do Min 2036	Do NNB 2036	Diff with NNB 2036
AM UC1	23,653	23,291	-362	28,796	28,355	-441
AM UC2	2,967	2,937	-30	3,723	3,669	-54
AM UC3	11,020	10,827	-193	16,827	16,529	-298
AM UC4	6,556	6,473	-82	9,478	9,332	-147
AM UC5	1,748	1,734	-14	2,284	2,279	-5
IP UC1	6,715	6,648	-67	7,952	7,883	-69
IP UC2	2,282	2,273	-9	2,899	2,886	-13
IP UC3	12,563	12,444	-119	19,853	19,699	-154
IP UC4	4,843	4,811	-32	6,856	6,812	-44
IP UC5	791	787	-3	989	986	-3
PM UC1	22,533	22,206	-327	27,707	27,180	-527
PM UC2	3,164	3,140	-25	4,063	4,009	-54
PM UC3	12,929	12,756	-173	20,157	19,802	-355
PM UC4	6,478	6,407	-71	9,479	9,319	-160
PM UC5	767	765	-2	988	984	-5

The flow difference outputs for this option are illustrated in Figure 7.29 and Figure 7.30. When compared with the likely effects of the Northern Bypass, the modelling of the NNB indicates that this scheme would be likely to have a similar impact on the M11 south of J8, but would have a lower impact on northbound traffic on the motorway south of J7.

The NNB scheme would be likely to attract more traffic from the A120 west and A10 than would the Northern Bypass scheme. The A1184 through Sawbridgeworth would have reduced flows, while flows on the B1393 through Epping are broadly similar to those with the Northern Bypass scheme.

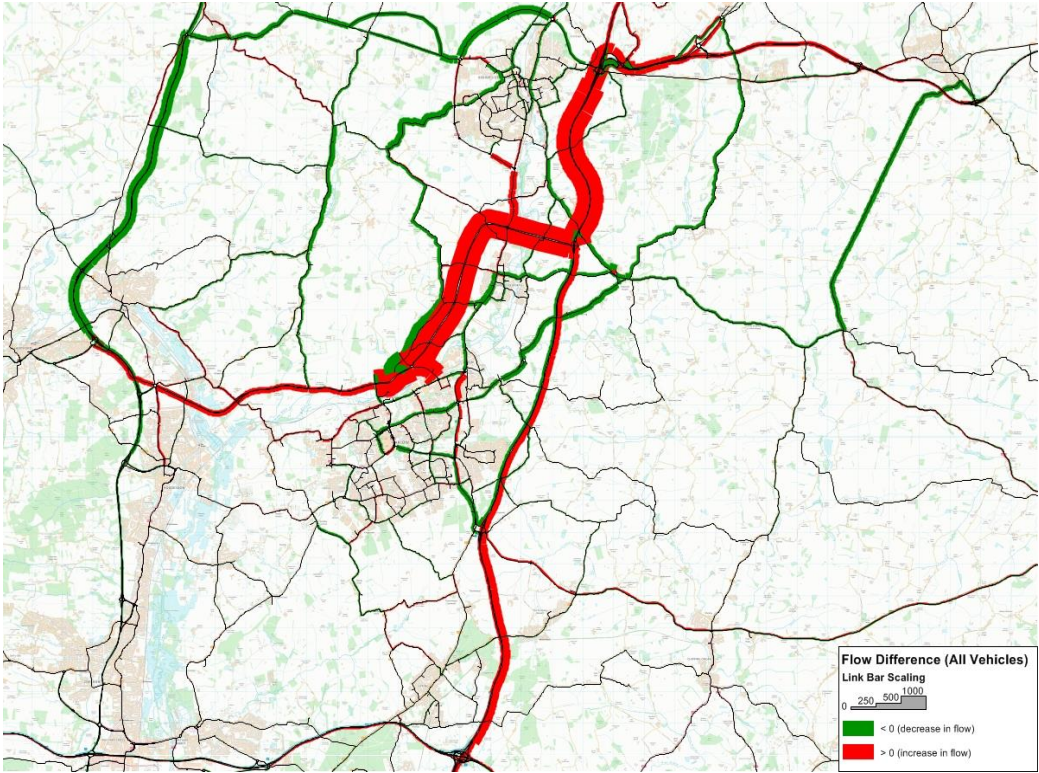


Figure 7.29 2036 Option 5 - With Northern Northern Bypass Flow Differences: AM

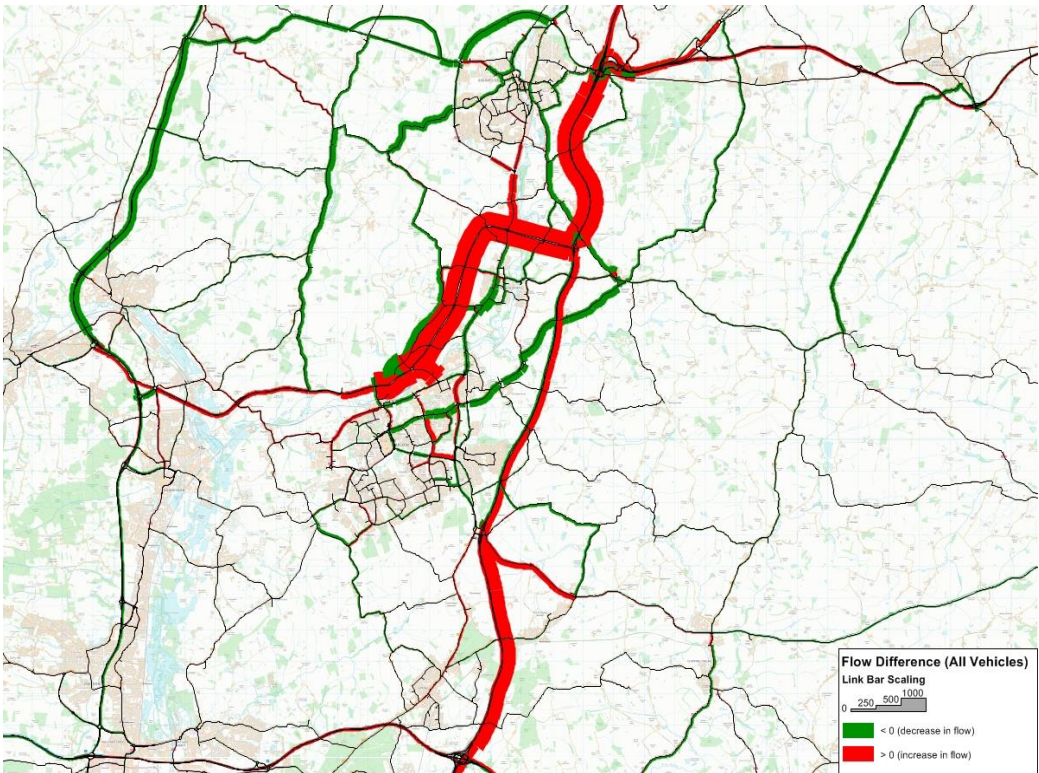


Figure 7.30 2036 Option 5 - With Northern Northern Bypass Flow Differences: PM



On the immediate approaches to Harlow, there is likely to be a lower level of flow reduction on the existing links to the town (A414 Burnt Mill, A1184, A414 south), and more traffic using the River Way link with the NNB in place in both time periods. Flows on B183 Gildea Way would be likely to be reduced with the NNB in place in both time periods.

Select link analysis (SLA) of peak period traffic using Option 5, the Northern Northern Bypass, is set out in the following four figures: Figure 7.31, Figure 7.32, Figure 7.33 and Figure 7.34. These show the origins and destinations of traffic using the Northern Northern Bypass element of Option 5.

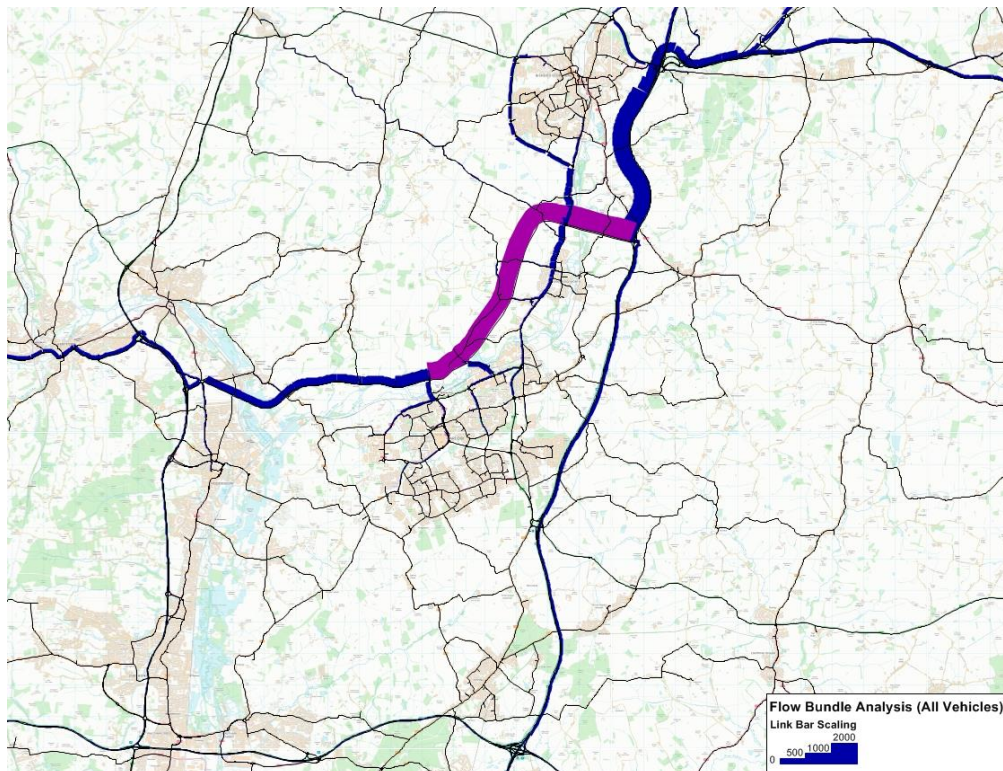


Figure 7.31 2036 Option 5 - With Northern Northern Bypass SLA: Northbound AM

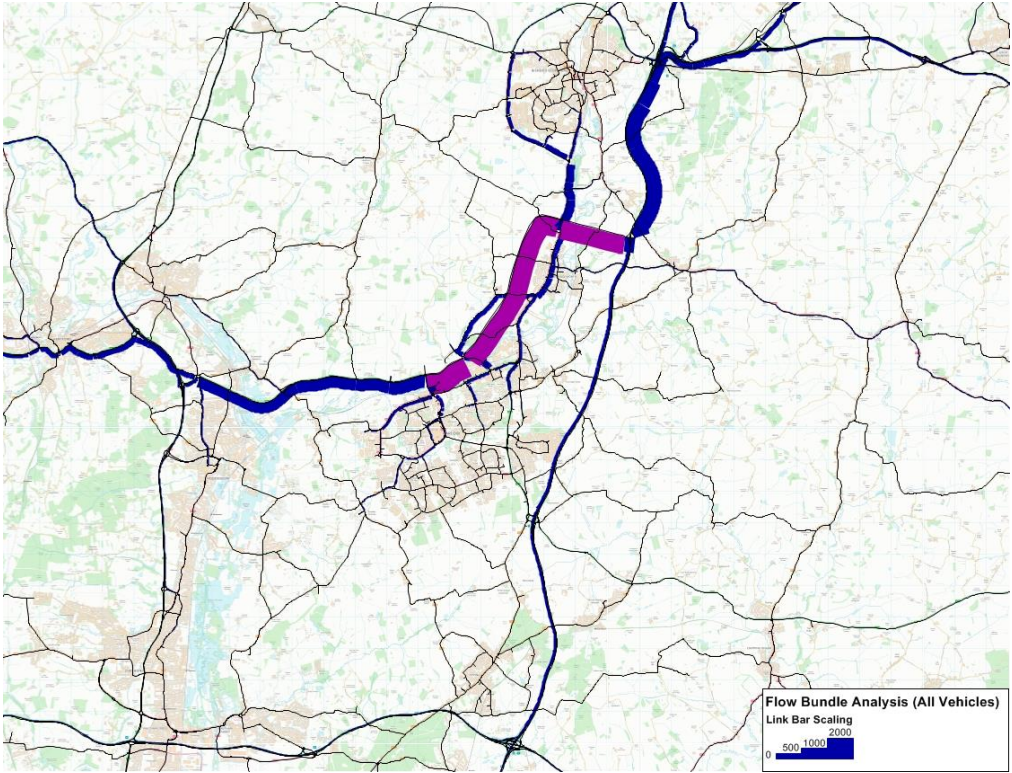


Figure 7.32 2036 Option 5 - With Northern Northern Bypass SLA: Southbound AM

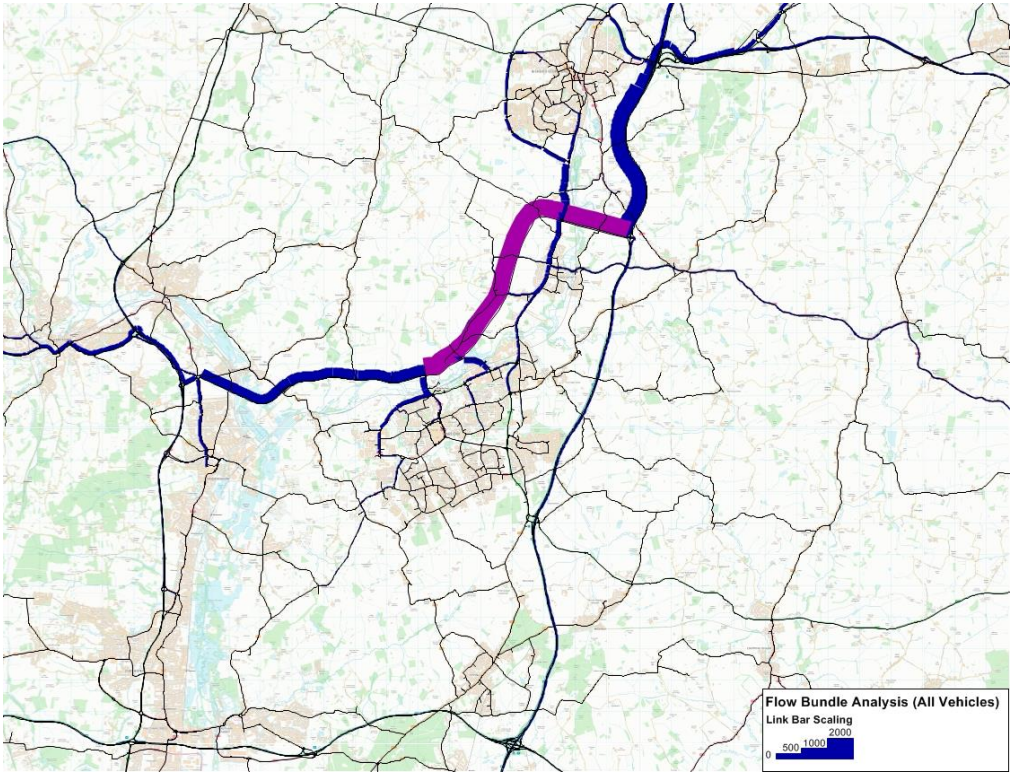


Figure 7.33 2036 Option 5 - With Northern Northern Bypass SLA: Northbound PM



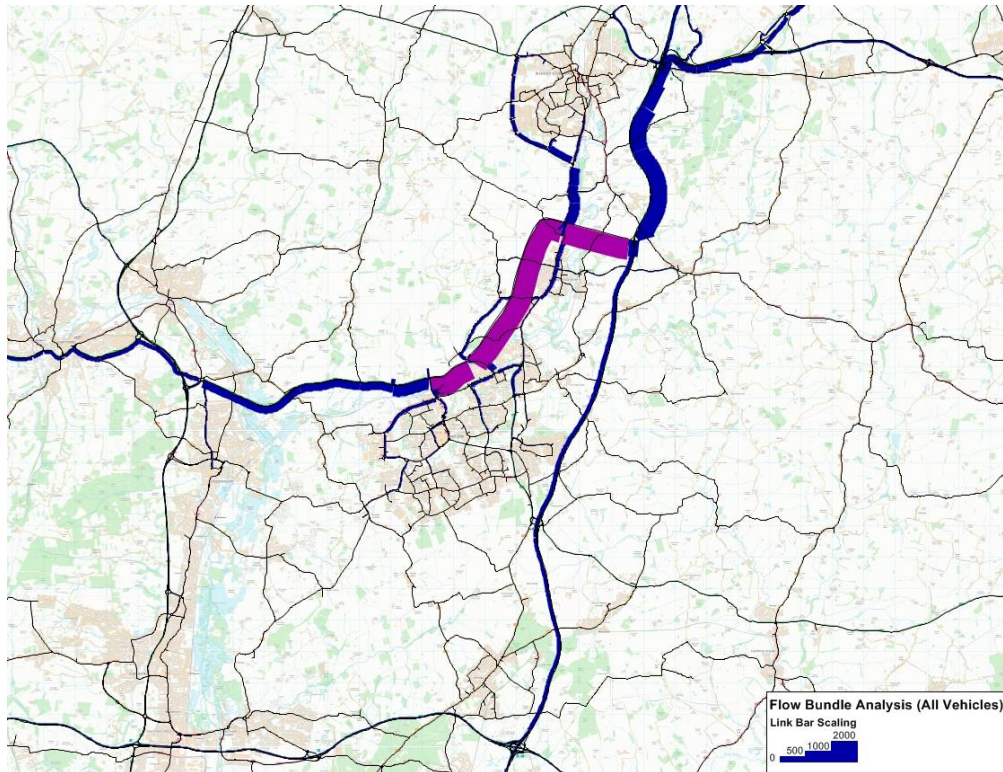


Figure 7.34 2036 Option 5 - With Northern Northern Bypass SLA: Southbound PM

Analysis of the origins and destinations of the traffic using the NNB scheme indicates that the majority of traffic using the scheme appears to be strategic in nature. The key connecting links used would be the motorway north of its connection with the M11, the A414 west of Harlow, and the A120 east of J8.

The level of traffic attracted to the bypass appears to be higher than to Option 4 the Northern Bypass, for all time periods but particularly westbound in the PM peak. This also results in higher flows on the A414 west as well as through Hertford.

There also appear to be more trips accessing the NNB from Bishop's Stortford and Sawbridgeworth than from Harlow, indicating that the scheme is less attractive to Harlow-related traffic than to these settlements in East Herts.

It is concluded that the Northern Northern Bypass scheme would have a lower overall effect on the level of traffic within Harlow than the Northern Bypass, and would be likely to attract more strategic movements around the town. It would not, therefore, improve the accessibility of Harlow for the majority of trips on the local network, which either have origins or destinations within the town, as shown in 3.2.2.

#### 7.4.6 Option 6 - Southern Relief Road

The modelling of the Southern Relief Road (SRR) has been based on a schematic design, and no detailed design has been undertaken.

The effects of Option 6, the Southern Relief Road, on total vehicle hours, when compared with the Do Minimum scenarios are set out in Table 7.8.

This option is likely to achieve lower time savings than Option 4, the Northern Bypass, in all time periods and years. It also performs less well than Option 3, J7 and J7a, in almost all time periods and years, the exception being 2021 AM. It also performs less well when compared with Option 5, the Northern Northern Bypass.

Table 7.8 VISUM Model Outputs: Option 6 Southern Relief Road

Total Time (Veh Hrs) User Class	Do Min 2021	Do SRR 2021	Diff with SRR 2021	Do Min 2036	Do SRR 2036	Diff with SRR 2036
AM UC1	23,653	23,447	-206	28,796	28,601	-195
AM UC2	2,967	2,951	-17	3,723	3,704	-18
AM UC3	11,020	10,935	-85	16,827	16,730	-97
AM UC4	6,556	6,504	-51	9,478	9,420	-59
AM UC5	1,748	1,741	-8	2,284	2,278	-6
IP UC1	6,715	6,689	-26	7,952	7,921	-31
IP UC2	2,282	2,275	-7	2,899	2,893	-6
IP UC3	12,563	12,512	-51	19,853	19,769	-84
IP UC4	4,843	4,826	-17	6,856	6,833	-23
IP UC5	791	788	-2	989	985	-4
PM UC1	22,533	22,411	-123	27,707	27,487	-220
PM UC2	3,164	3,153	-12	4,063	4,043	-20
PM UC3	12,929	12,820	-109	20,157	19,955	-202
PM UC4	6,478	6,438	-40	9,479	9,392	-88
PM UC5	767	766	-1	988	984	-5

The flow difference outputs for the Southern Relief Road are illustrated in Figure 7.35 and Figure 7.36.

The option has very little impact on M11 flows; flows north of J7 may reduce slightly in the AM and increase slightly in the PM; south of J7 flows would be likely to reduce slightly during the AM, with southbound flows increasing in the PM period. At J7 flows on almost all arms reduce slightly during the AM peak, and increase on all arms during the PM peak.



There would be little or no impact on the A120 and A10, while flows on the A414 west of Harlow would be likely to increase more than for any other option during both time periods. To the east of Harlow, flows on the A414 east of J7 are unchanged in the AM, and westbound flows would be likely to increase with the SRR in place.

Flows on the A1184 through Sawbridgeworth show little change. Southbound flows on the B1393 immediately south of J7 would be likely to increase in both time periods, and through Epping the southbound flows are slightly higher in the AM and higher in the PM.

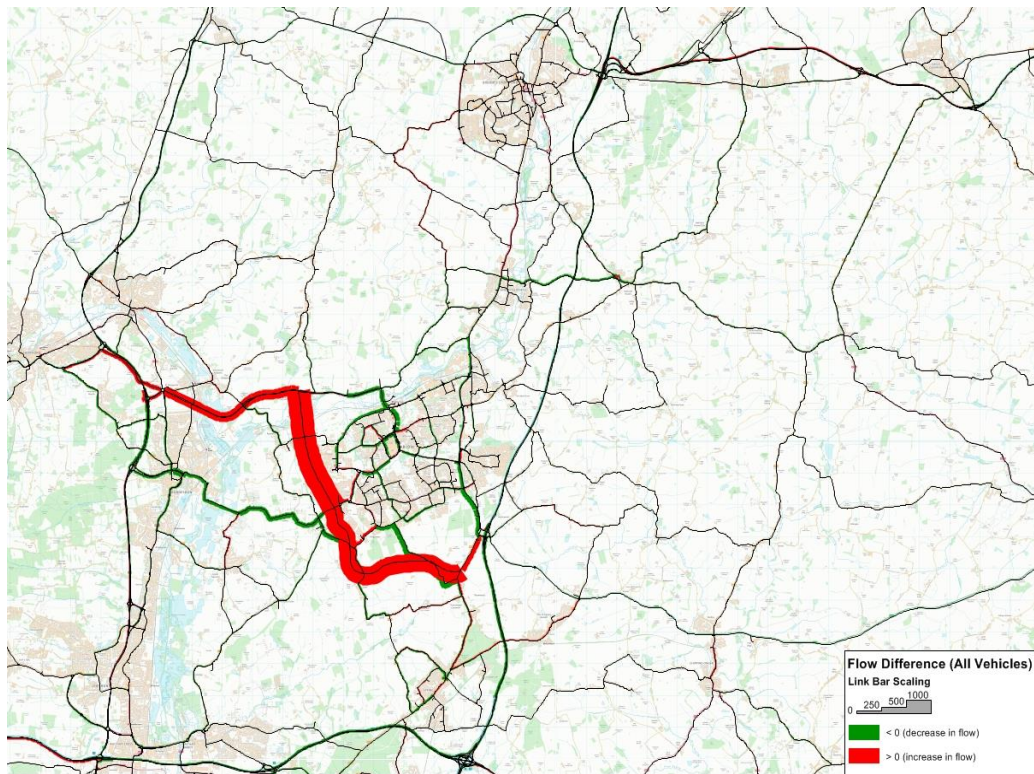


Figure 7.35 2036 Option 6 - With Southern Relief Road Flow Differences: AM

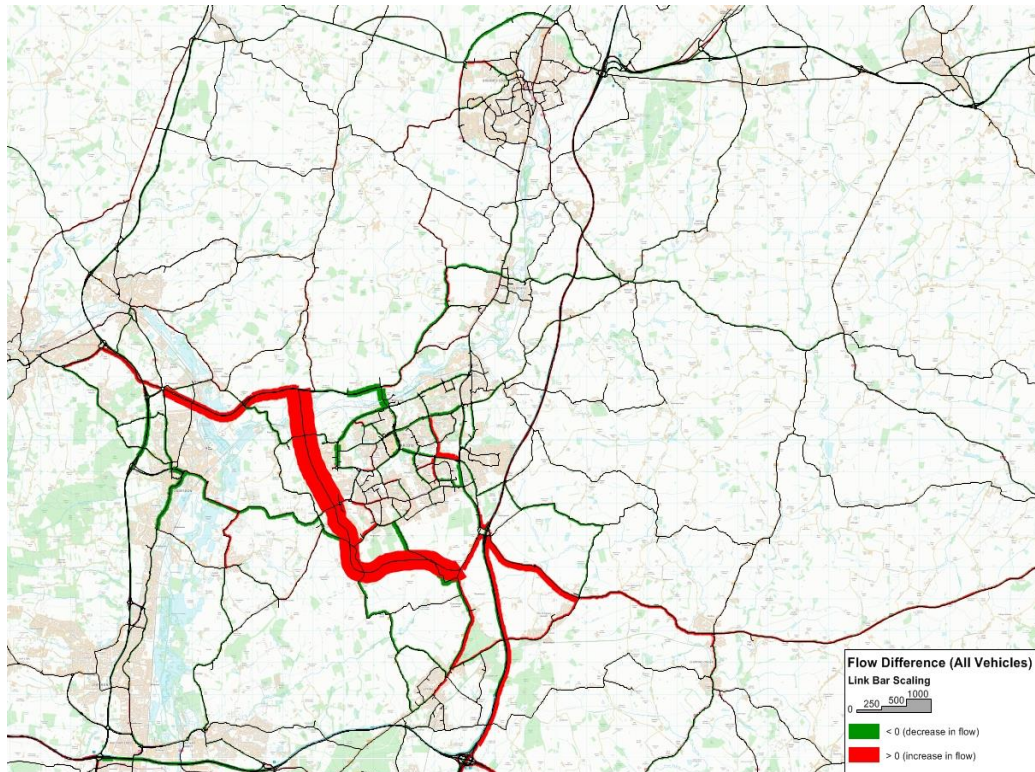


Figure 7.36 2036 Option 6 - With Southern Relief Road Flow Differences: PM

Over the wider local network there is likely to be very little difference to the Do Minimum scenario, with the level of traffic using less suitable routes unchanged with the SRR in place. On the immediate approaches to Harlow flows on the A414 at Burnt Mill and north of J7 would reduce in both time periods, but there would be little or no change on flows on the A1184.

Select link analysis (SLA) of peak period traffic using Option 6, the Southern Relief Road, is set out in the following four figures: Figure 7.37, Figure 7.38, Figure 7.39 and Figure 7.40. These show the general origins and destinations of traffic using the Southern Relief Road.



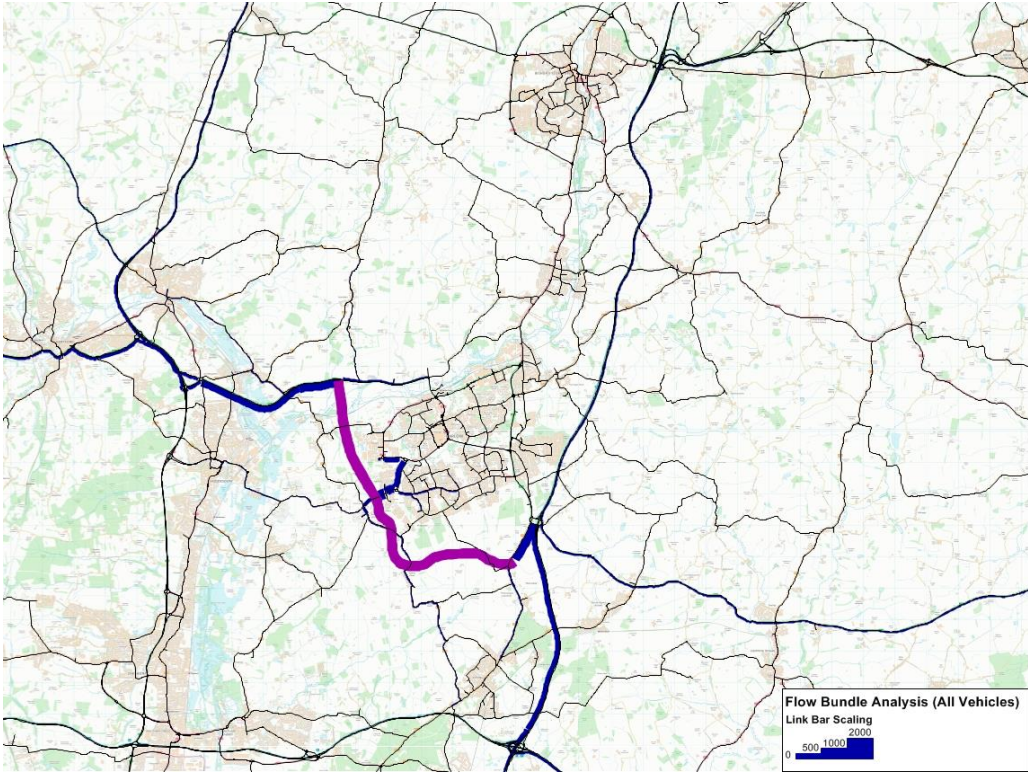


Figure 7.37 2036 Option 6 - With Southern Relief Road SLA: Northbound AM

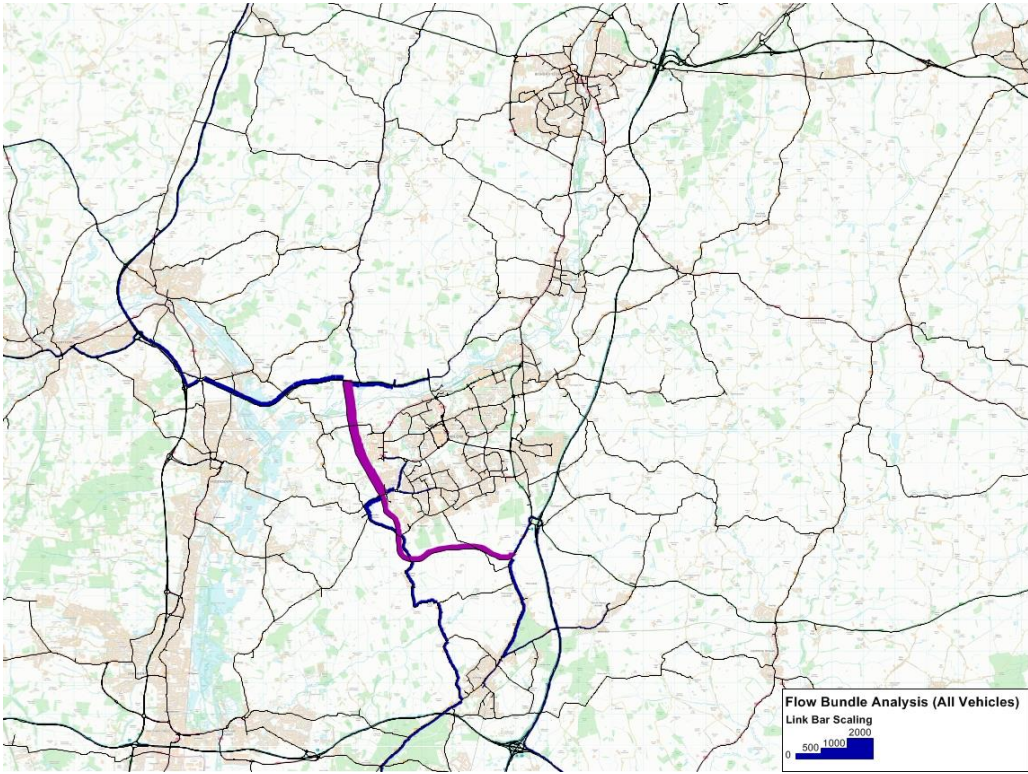


Figure 7.38 2036 Option 6 - With Southern Relief Road SLA: Southbound AM



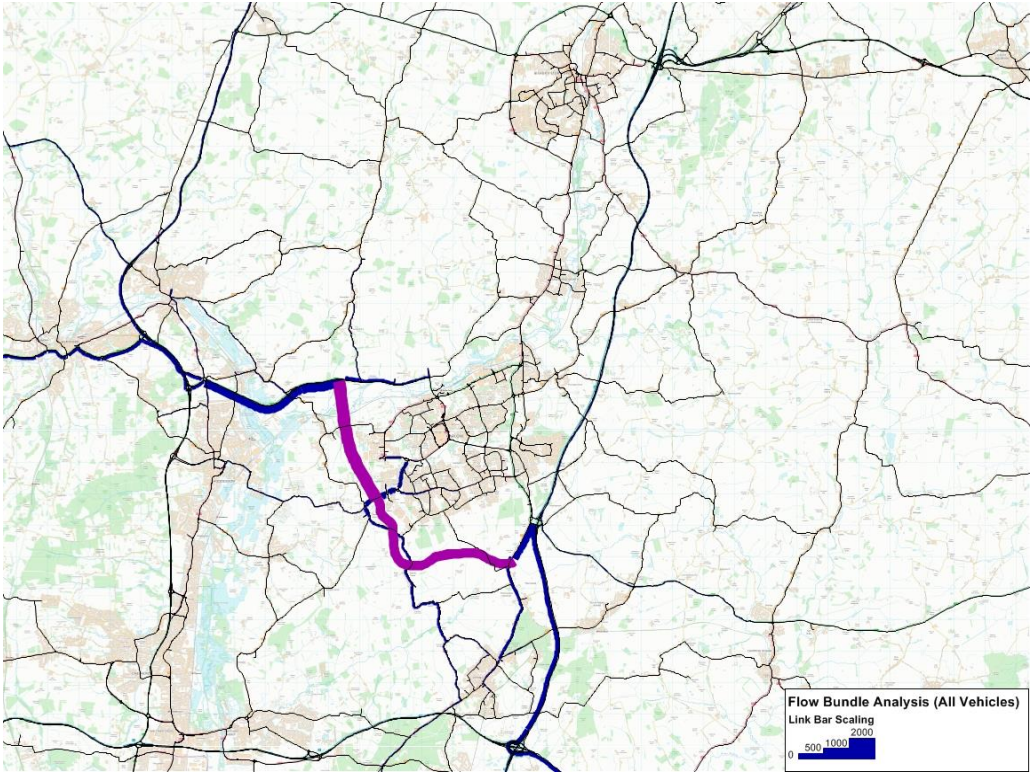


Figure 7.39 2036 Option 6 - With Southern Relief Road SLA: Northbound PM

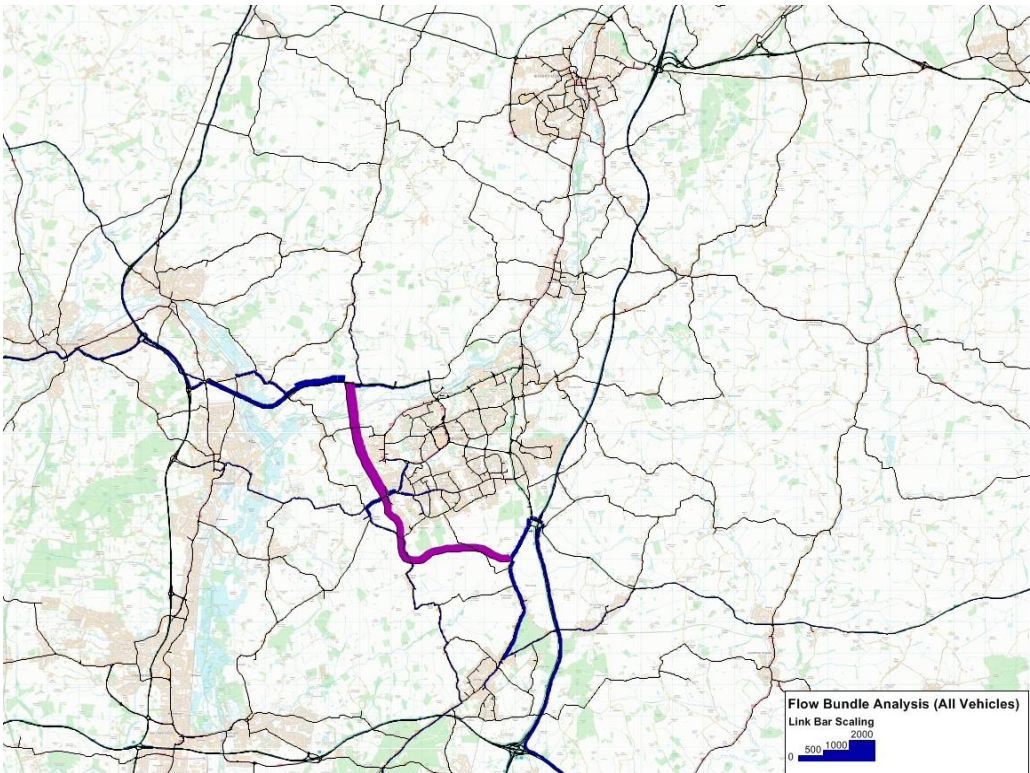


Figure 7.40 2036 Option 6 - With Southern Relief Road SLA: Southbound PM



Origins and destination analysis of the traffic using Option 6 indicates that, as with the other bypass schemes, the majority of traffic using the scheme appears to be strategic in nature. The key connecting links would be the motorway south of J7 via the B1393, and the A414 west of Harlow. Some traffic is attracted from west Harlow and from Epping in both time periods,

It is evident from modelling analysis that flows using Option 6 are likely to be much lower than for the other two bypass schemes (Options 4 and 5). This could be partly the result of this scheme having the least design information available of all the options, and that no improvement of J7 was included in the modelling. However, it is considered that the modelling has provided an adequate indication of general scheme impacts on the network.

It is concluded that Option 6, the Southern Relief Road scheme, would have the least overall effect on the level of traffic within Harlow than all of the options being assessed, and would also attract fewer strategic movements around the town. It would not, therefore, improve the accessibility of Harlow for the majority of trips on the local network, which either have origins or destinations within the town, as shown in 3.2.2.

## **7.5 Options Costs**

For the purposes of the economic appraisal, a set of preliminary scheme costs has been developed for each of the intervention options. These have been based on high level concept drawings, from which capital and maintenance costs have been estimated and assumptions made about the overall scheme budget.

More details of the specific design and costing considerations are set out in the 'Order of Magnitude Estimate'<sup>25</sup> (OME). Summarised high level cost estimates for each option are provided in Table 7.9, the more detailed costs breakdown are contained in the OME. It should be noted that Optimism Bias has been included at 44%.

---

<sup>25</sup> Order of Magnitude Estimate, Rev 2, 28 May 2015, Jacobs, Harlow Relief Road Options, ECC

Table 7.9 High Level Option Costings (Q2 2015, rounded to £0.1m)

Element	Junction 7a	Junction 7	Junctions 7 & 7a	Northern Bypass	Northern Northern Bypass	Southern Relief Road
Construction	44.3	48.1	92.4	234.6	190.3	155.1
Land	2.2	2.0	4.2	9.4	7.3	7.1
Preparation	8.2	8.9	17.1	43.5	25.3	28.7
Supervision	2.2	2.0	4.2	9.4	7.3	6.1
Maintenance	27.0	20.5	47.5	114.7	87.7	150.5
Total (£m)	83.8	81.6	165.4	411.6	327.8	346.5

Capital and operating/maintenance cost estimates, as set out in Table 7.9, have been used in the economic assessment.

## 7.6 Economic Appraisal

Time benefits for each option resulting from the difference between the Do Minimum and each Do Something scenario for both forecast years have been monetised using standard WebTAG Values of Time (VoT). These are shown in Table 7.10 for different vehicle and journey types.

Table 7.10 Journey Purpose Proportions and VoT<sup>26</sup>

Vehicle Type	VoT (2010 prices, undiscounted):	AM		IP		PM	
		α	VoT	α	VoT	α	VoT
Car	Employers Business	15%	£31.56	16%	£30.81	11%	£30.34
	Commute	37%	£7.83	9%	£7.77	33%	£7.65
	Other	29%	£10.06	54%	£10.46	38%	£10.74
LGV	Employers Business	11%	£14.62	11%	£14.62	11%	£14.62
	Commute	0%	£9.15	0%	£9.15	0%	£9.15
	Other	1%	£9.15	1%	£9.15	1%	£9.15
OGV1		3%	£14.35	3%	£14.35	2%	£14.35
OGV2		3%	£14.35	4%	£14.35	2%	£14.35
PSV		1%	£96.24	1%	£92.02	1%	£96.86

<sup>26</sup> Source: WebTAG data book (November release, v1.3b), sheet A1.3.5



Vehicle proportions have been extracted from the Visum model for the opening and design years, as set out in Table 7.11 and Table 7.12 respectively.

Table 7.11 2021 Opening Year Model Vehicle Proportions (All Options)

Vehicle Type	AM	IP	PM
Car	78.1%	76.9%	82.3%
LGV	17.1%	19.6%	15.7%
HGV	4.8%	3.5%	2.0%
PSV	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%

Table 7.12 2036 Design Year Model Vehicle Proportions (All Options)

Vehicle Type	AM	IP	PM
Car	76.6%	77.0%	81.0%
LGV	18.8%	19.9%	17.1%
HGV	4.6%	3.1%	1.9%
PSV	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%

Once the benefits from each option are monetised, these are compared to produce the NPV and BCR. The output BCR is an important value when used to assess how a scheme is sifted in order to ensure that only schemes that are economically viable are taken forward for more detailed evaluation.

Figure 7.41 illustrates how the outputs from the Cost Benefit Analysis (CBA) feed in the appraisal process and Value for Money categories.

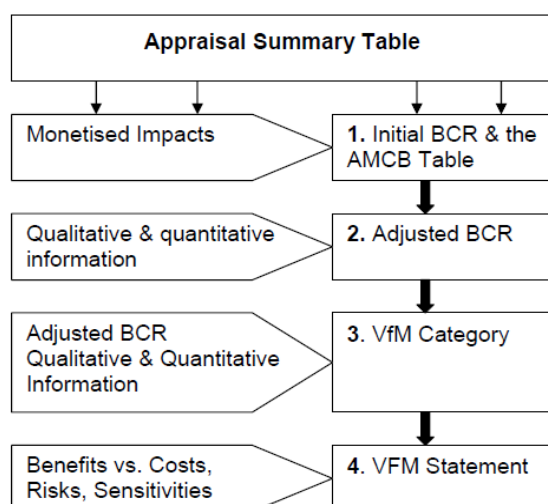


Figure 7.41 Cost Benefit Analysis and Value for Money <sup>27</sup>

The calculated benefits resulting from the analysis have been factored up to an annual period to produce a yearly benefit for each scheme for both opening and forecast years. These values are then interpolated and projected over the standard 60 year appraisal period as illustrated in Figure 7.42.

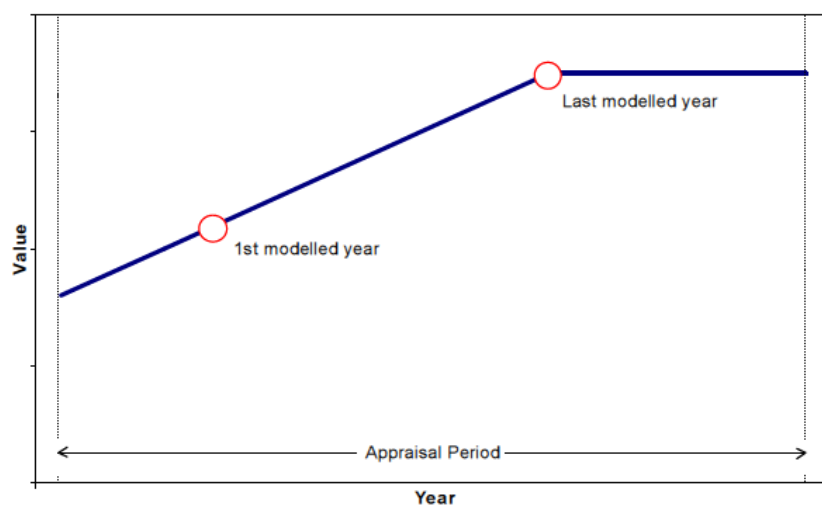


Figure 7.42 Interpolation and Projection of Benefits

The annualisation values used to factor the AM, IP and PM 'time slices' to an annual benefit are shown in Table 7.13.

<sup>27</sup> Taken from DfT (2013) Value for Money Assessment: Advice Note for Local Transport Decision Makers

Table 7.13 Annualisation Factors applied to Highway Model Output Data

Annualisation Factor	Factor
Day to Year Factor	253
AM to AM Period Factor	2
IP to IP Period Factor	6
PM to PM Period Factor	2

Calculated benefits for each of the options were then discounted to 2010 values, as outlined in the standard HM Treasury Green Book appraisal methodology, which were then compared with the 2010 discounted options scheme costs to produce output values. These values include:

- Present Value of Benefits (PVB);
- Present Value of Costs (PVC);
- Net Present Value (NPV);
- Benefit Cost Ratio (BCR).

As per DfT guidance, the output BCR values from the CBA determines the VfM category which the option falls within, as defined here:

- Poor VfM if BCR less than 1.0;
- Low VfM if BCR between 1.0-1.5;
- Medium VfM if BCR between 1.5-2.0;
- High VfM if BCR between 2.0-4.0; and
- Very high VfM if BCR greater than 4.0.

This methodology and key assumptions have been used to calculate each of the options' benefits using the Visum model, and complies with standard WebTAG, DMRB and HM Treasury Green Book approaches to the assessment of public infrastructure projects.

## 7.7 Options VfM Results

The BCR and VfM values derived using the data and methodology as set out in the previous section is summarised in Table 7.14.



Table 7.14 High Level Economic Assessment Results

Options	PVB	PVC	NPV	BCR	VfM
M11 J7a	£288,484,020	£70,331,705	£218,152,316	4.1	Very High
M11 J7	£241,696,376	£73,119,378	£168,576,998	3.3	High
M11 J7 & J7a	£438,107,289	£143,451,083	£294,656,206	3.1	High
Northern Bypass	£714,465,552	£359,837,668	£354,627,884	2.0	Medium
Northern Northern Bypass	£570,129,757	£272,573,997	£297,555,760	2.1	High
Southern Relief Rd	£268,671,711	£259,834,862	£8,836,849	1.0	Low

The VfM values shown in this table have been input into the EAST sifting process, as set out in the next section, as one of the elements evaluated to determine the most appropriate option to take forward for more detailed assessment.

## 7.8 EAST High Level Evaluation

In order to provide a consistent approach to the available options use has been made of the DfT Early Assessment and Sifting Tool (EAST) guidance<sup>28</sup>. EAST is one of the tools available to support high level development of the evidence base for Business Case development.

The EAST spreadsheet tool has been utilised to inform the option evaluation process. EAST is consistent with Transport Business Case principles and has been developed to summarise and present evidence on options in a clear and consistent format. It utilises a simple 5-point Red/Amber/Green (RAG) system for each of the assessment areas, which aims to facilitate the early assessment and comparison of scheme options. Each of the options set out in section 4.1 have been evaluated using the EAST spreadsheet tool. The extended summary sheet for each high level option is included in Appendix B.

---

<sup>28</sup> Department for Transport DfT Early Assessment and Sifting Tool (EAST) guidance, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/4475/east-guidance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4475/east-guidance.pdf)

The methodology has been used to:

- help refine options by highlighting adverse impacts or unanticipated consequences;
- compare options;
- identify trade-offs between objectives;
- filter the number of options, ie to discount non-runners early on to ease the appraisal burden and avoid resources being spent unnecessarily; and
- identify key uncertainties in the analysis and areas where further appraisal effort should focus.

In addition to the use of the EAST spreadsheet tool, a further process was undertaken whereby each of the key elements of the EAST evaluation was weighted. This provided a simple scoring framework and enabled a broad spreadsheet-approach evaluation of all of the options to identify what were likely to be the most beneficial schemes to take forward for more detailed analysis.

The weighting was determined with reference to previous scheme evaluations, and comprised the averaged weighting from three independent reviewers, in order to provide as neutral a value process as possible. The assessment elements and their weighting values are contained in Appendix B.

It should be noted that the methodology used to derive the BCR and VfM values used in this sifting process is explained later in this section.

## **7.9 Option Evaluation – Sifting Results**

The results of the EAST-weighted evaluation are summarised in Table 7.15 which shows each of the schemes' weighted totals for each business case element; the detailed weighting evaluation sheets are contained in Appendix B.

Table 7.15 High Level Option Sifting: Weighted Evaluation Summary

Business Case Element	Scheme Weighted Scores						Case Weighting Total
	Junction 7a	Junction 7	Junctions 7 & 7a	Northern Bypass	Northern Northern Bypass	Southern Relief Road	
Strategic Case	12.3	1.7	11.9	9.5	-1.0	0.2	20.7
Economic Case	23.2	5.4	18.2	17.0	3.2	1.2	35.7
Commercial Case	3.7	3.7	3.7	3.7	3.7	3.7	11.7
Financial Case	9.5	6.7	4.2	2.5	2.5	2.5	18.3
Management Case	10.8	7.7	6.5	5.7	4.1	4.1	13.7
Weighted Total	58.5	25.1	44.5	38.4	12.5	11.7	100.0

The results are illustrated in Figure 7.43, which shows the schemes by their relative rankings. It can be seen that J7a ranks highest by weighted score, followed by the combined J7 and J7a improvements, with the Northern Bypass ranked third.

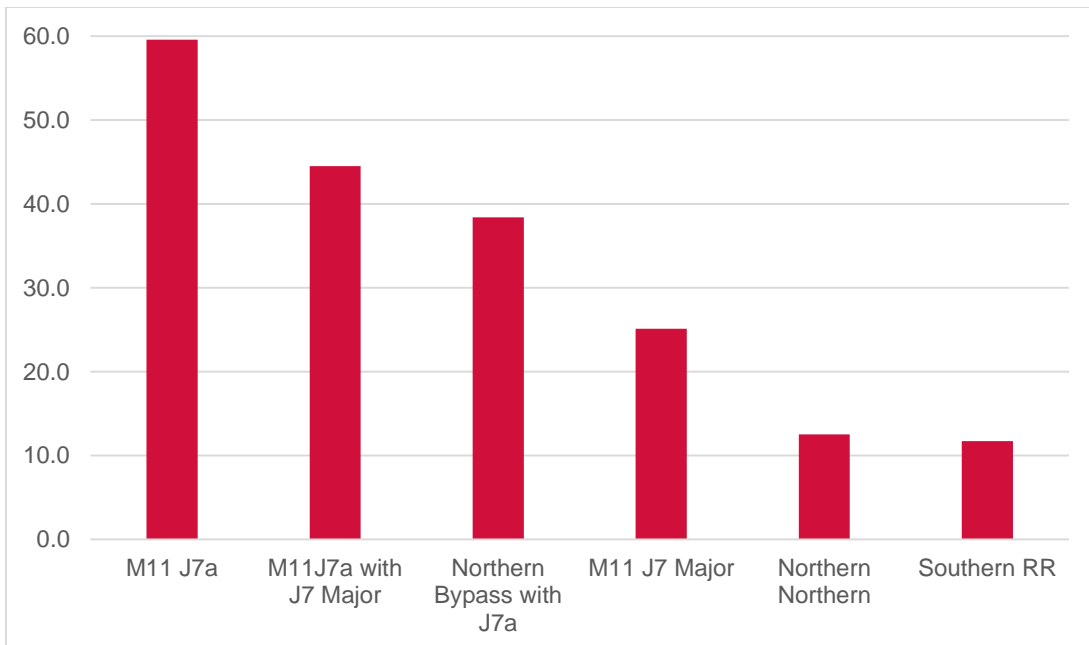


Figure 7.43 Scheme Weighting Ranked Results Summary



Comparison of the performance of these high level options shows the following main differences:

*Strategic Impacts:*

The J7a scheme scores highest in terms of its strategic case, as it is expected to relieve congestion on the A414 in the vicinity of J7, enable economic growth (housing and jobs) in Harlow, and improve local connectivity with the strategic road network. Other options are more likely to provide wider strategic impacts but these may not provide benefits within Harlow itself due to limited through traffic demands.

*Economic Impacts:*

The J7a scheme is likely to result in a more efficient transport network, reducing overall journey times and delays to travel to/from Harlow. It would also unlock housing development land in the east of Harlow and improve access to the Enterprise Zone. J7 may not address A414 congestion issues within Harlow, nor provide additional access to the SRN. J7a could have a positive impact on carbon emissions due to the relief of congestion on the A414, and reduction in journey lengths for Harlow/J8 trips. All schemes would have a significant level of embedded carbon resulting from their construction. All schemes would have generally neutral socio-distributional impacts as there would be accessibility improvements to the wider network for road users, but also some community severance, air and noise pollution, and impacts to Public Rights of Way (PRoW). J7a would have minor negative impacts on the immediate local environment on B183 but have wider positive impacts due to congestion relief.

*Financial Impacts:*

While J7 is a recognised scheme and has funding available, the study is at Stage 0 and so costing is uncertain. J7a does not yet have an assured funding mechanism, but the scheme is at a later stage of design and therefore costing is more certain. The other options have been subject to very high level costings, with a high level of uncertainty; their financial impact is therefore uncertain. J7a provides 'more for less' in that it provides a local access link with a very high BCR value, whereas the longer bypass schemes have higher cost implications and/or uncertainties and lower BCR values as a consequence.

*Commercial Impacts:*

All the options score the same in terms of their commercial case, as they all offer similar flexibility of option design. Inclusion of major infrastructure projects in Local Plans enables potential Section 106 financial contributions from site promoters.

### *Managerial Impacts:*

J7, J7a and the combined scheme could be implemented within a similar timescale, while the longer bypass schemes would take more time to bring forward. Limited public consultation has taken place on all except the J7a scheme. Both J7a and the northern bypass have a higher quality of evidence from which to draw conclusions, the other options have greater uncertainty over feasibility, and public acceptability.

## **7.10 Targets**

The preferred option will be expected to result in a range of measurable impacts on traffic and travel conditions. Impacts and measurable indicators relevant to improving conditions within Harlow and on its immediate strategic highway network could include:

- Delivery of identified housing and employment growth in line with the emerging Local Plans, measured by the number of homes/jobs delivered/occupied by 2031;
- Reduced congestion and improved journey reliability, measured by traffic volume and relative difference in peak/off-peak journey times compared against the pre-scheme implementation situation (likely to be 2018);
- Improved connectivity, reflected by absolute journey times on key routes compared against the 2018 pre-scheme implementation situation;
- High quality of life and natural environment, reflected through number of collisions, carbon emissions and level of noise (dB) compared against the 2018 pre-scheme implementation situation.

Setting targets is an iterative process and these will evolve as further evidence is collected. Final targets would be developed during full Business Case development, in line with the principles listed above, and set out as 'SMART' (Specific Measurable Accepted Realistic Time-defined) targets.

## **7.11 Option Evaluation – Conclusions**

The results of this sifting process have been used to determine which schemes are more likely to meet the targets and are therefore to be evaluated further:

- M11 J7a with B183 Gildea Way link
- M11 J7 major scheme with J7a and B183 Gildea Way link
- M11 J7a with Northern Bypass
- M11 J7 major scheme



These potential options have been taken forward for more detailed assessments. The results from the next stage of this assessment, which will use an updated version of the VISUM model, are detailed in the MFR.

The following options have not been taken forward for more detailed assessment as they are considered to be less likely to meet the requisite targets:

- |                          |  |
|--------------------------|--|
| Northern Northern Bypass | A scheme linking the A414 at Eastwick with a new junction to the south of Bishop's Stortford, via a western Sawbridgeworth bypass would have significant risks in terms of costs and deliverability, including multiple land owners and public acceptability. It is not likely to address congestion issues within Harlow, nor unlock key development land to the east of Harlow. It also lies wholly within Hertfordshire and so is outside the control of ECC. |
| Southern Relief Road     | A scheme linking the A414 east of Roydon with M11 J7 via a western and southern bypass of Harlow, would have significant risks in terms of costs and deliverability, including multiple land owners, and public acceptability. It would also require a major improvement at J7, would be unlikely to address congestion issues within Harlow, nor unlock key development land to the east of Harlow.   |

## 8 Summary and Conclusions

### 8.1 Summary

This OAR has set out the need for a scheme, together with its context. The evidence for the need for an intervention in order to meet policy and strategy objectives has been collated over a number of years.

The key objectives of the intervention are:

- To provide connectivity to and within urban areas to support self-contained employment and housing growth and regeneration;
- To provide good connectivity within Essex and with adjacent major areas, maximising benefit to the local economy of international gateways and strategic links to London, the East and South East;
- To address network infrastructure capacity issues and improve network resilience;
- To reduce congestion and improve traffic management within Harlow and along the A414 corridor and at M11 J7;
- To enable housing and employment growth and regeneration;
- To unlock development land.

#### Current situation

It has been demonstrated that growth within Harlow is currently constrained due to inadequate road capacity. This constraint results from a number of issues, including limited access routes into and out of the town, a single connection to the strategic road network at M11 J7 and the grid structure of the local road network. In addition, Harlow is both a key origin as well as a destination of commuting trips, which leads to peak hour pressures on junctions that are operating close to or in excess of their original design thresholds.

There is high dependency on the use of private cars, which is compounded by the ready availability of car parking in the town centre and at places of work. While the town has a comprehensive local bus network, buses are likely to be less attractive for cross-town travel due to the need to change buses in the town centre.

The opportunities and constraints are summarised as:

**Constraints:**

- majority of Harlow district already developed resulting in very limited opportunities to deliver required growth within boundary;
- existing highway network constraints need to be addressed before growth can occur;
- restriction on number of jobs at Enterprise Zones until strategic network access issues addressed;
- major improvement to J7 may result in unacceptable pressure on A414 junctions within town, limiting the effectiveness of the increased junction capacity;
- likelihood of adjacent districts proposing urban extensions to Harlow during current round of Local Plan development as these would provide more a sustainable growth location if network constraints can be reduced;
- physical and environmental constraints likely to reduce viability of some network congestion solutions.

**Opportunities:**

- Emerging Local Plans provide mechanism for delivering and funding network improvements;
- Growth in the vicinity of Harlow provides an opportunity for sustainable development due to opportunity to improve current and future public transport accessibility;
- Opportunity to open up development land within and around district for housing and employment;
- Improving network resilience will encourage private sector investment and help to deliver new jobs and homes;
- Improving network will also encourage regeneration, Harlow is in the most deprived 30% of local authorities, and is 2<sup>nd</sup> most deprived in Essex.

**Future situation**

There are already several large committed housing and employment developments, most of which are in the eastern side of the town, as well as significant housing development in Bishop's Stortford, and the ongoing expansion in the numbers of passengers at Stansted Airport. A number of road capacity improvement schemes in the local and wider area are scheduled, and others have been identified and are



subject to current feasibility studies, in order to address issues resulting from this committed growth.

The likely future travel demands resulting from already committed development, the 'Do Minimum' scenario, has been assessed. This shows that the situation on roads and at junctions that are already under pressure will worsen, and delays and congestion will increase.

The four key districts, Harlow, Epping Forest, Uttlesford and East Hertfordshire, are developing new Local Plans which, together require at least 37,000 new homes, and 26,000 new jobs to be delivered by 2031. This additional growth is likely to lead to increases in daily flows of between 45-75% on the key routes in the study area, further exacerbating capacity issues.

### **Need for intervention**

The underlying drivers for intervention have been identified, and include the inability of the current highway infrastructure to accommodate existing traffic, as shown by the existing levels of peak period congestion on the road network. The resilience of the major through route, the A414, is also compromised by its routing through M11 J7, which itself requires major capacity improvements. These constraints affect not only existing and committed growth but also compromise the ability of the network to accommodate future sustainable economic growth and regeneration, and the need to release the residential and employment potential of key sites around Harlow.

The impacts of not intervening will result in very limited scope for growth, worsening congestion at J7, and worsening connectivity both within the town and with major centres along the London-Stansted-Cambridge corridor.

### **Options generation**

A range of highway infrastructure options have been identified and evaluated over the past 30 years, and range from extensive bypass routes, to more localised improvements. These studies include: investigation of alternative A1184-M11 connections; examination of northern relief routes and southern relief routes, all combined with high quality public transport corridors; investigations into the feasibility of more direct connections between A414 and M11; and assessment of feasibility providing additional eastern access opportunities between Harlow and the M11.

From these studies six key options, which were considered to be able to fulfil some or all of the scheme objectives, were identified. As is befitting by the early stage of this

options evaluation process, the level of detail of each of these intervention options is schematic, as no detailed designs are available, and each option has been assessed at an equally high (coarse) level of conceptual assumptions.

The six options are:

- Option 1: New M11 junction to east of Harlow, J7a, with local link to B183 Gilden Way;
- Option 2: Improved M11 J7 (based on 2011 Mouchel design);
- Option 3: Both Option 1 and Option 2;
- Option 4: 'Northern Bypass', which includes the Option 1 J7a scheme together with a dual carriageway link from J7a through to A414 at Eastwick, and an additional single carriageway access into Harlow via River Way;
- Option 5: 'Northern Northern Bypass', which comprises a dual carriageway link from A414 at Eastwick, aligned to the south of Gilston, and then to the west of Sawbridgeworth, connecting with the M11 via a new junction south of Little Hallingbury;
- Option 6: 'Southern Relief Road', which comprises a dual carriageway link from the A414 east of Roydon, skirting the western and southern edges of Harlow, and connecting with J7 via the B1393. Please note that the capacity improvement required at J7 in conjunction with this scheme has not been modelled or assessed.

### **Options Sifting**

These six options have been evaluated against 'no intervention' future scenarios using a number of methodologies:

- assessment using highway assignment modelling (VISUM);
- economic appraisal to estimate benefit cost ratios (BCR) and Value for Money (VFM); and
- ranking using Department for Transport (DfT) early assessment and sifting tool (EAST) and bespoke spreadsheet analysis.

In terms of total time, all options provide modelled time savings, primarily through providing additional network capacity or reduced travel distances. The option which showed the greatest modelled time savings is Option 4, the Northern Bypass.

Option 1, Junction 7a, results in additional peak period traffic on the M11 north and south of Harlow, and on B183 Gilden Way, and on the A414 around the north of Harlow. It also results in reduced traffic on the A414 north of J7 and through to the

B183 junction. This reflects the reassignment of some trips in the southern part of the town re-routing to use J7a. There is also evidence of less traffic on more unsuitable routes through villages around Harlow, due to traffic using the M11 to reach the town. Select link analysis also indicates that the majority of traffic attracted to Option 1 is Harlow-related, with very little evidence of through-trips increasing. The highway assignment modelling, therefore, indicates that Option 1 improves accessibility for Harlow-related trips, and could improve the network resilience particularly on the A414 north of J7.

Option 2, the Junction 7 improvement, results in modelled travel time reductions, but these are less than those for Option 1. Option 2 is likely to increase flows on the M11 south of J7, as well as on all the approaches to J7. Within Harlow there is no clear evidence of overall beneficial effects on the local road network flows. The select link analysis indicates that the majority of the trips using the J7 scheme would be Harlow-related. While Option 2 would reduce congestion at J7, it is less likely to result in improved accessibility on the local road network within Harlow, and the additional traffic on the A414 would not improve its network resilience.

Option 3, the combination of both J7 and J7a, would be likely to result in greater travel time savings than each of these individual schemes in isolation. The changes in traffic flows resulting from Option 3 are broadly the same as for each scheme, with increases in traffic on the M11 north and south of the town. There are also reductions in traffic on less suitable rural routes indicating that traffic is re-assigning to the more strategic routes. Select link analysis shows that Option 3 traffic is primarily Harlow-related. It is concluded that implementation of Option 3 would result in improved accessibility for Harlow-related trips and could improve network resilience on the A414 and through the town.

Option 4, the Northern Bypass with J7a, results in higher levels of traffic on the M11 than for J7a in isolation, and leads to greater use by strategic traffic, rather than Harlow-related traffic. Traffic on less suitable rural routes to the east of Harlow is likely to reduce but there are indications that these could increase on rural routes to the north-west of the town. On the immediate approaches to Harlow there is likely to be a reduction in flows on the key links, however the northern bypass itself is most attractive to strategic trips, with the more local Harlow-related trips more likely to access the town via B183 Gilden Way and J7a. Therefore the key benefits of the scheme in relation to improving access to Harlow are achieved through J7a, with the bypass itself likely to provide network resilience benefits.



Option 5, the Northern Northern Bypass, results in lower time savings than Option 4 in almost all time periods and years. The option would attract more strategic traffic, from the A10 and A120, particularly to the north of its connection to the M11 than other options. On the immediate approaches to Harlow, there is likely to be less benefit to Harlow-related traffic, although flows on B183 Gilden Way are likely to be lower. The key areas that would be likely to benefit from Option 6 appear to be in Bishop's Stortford and Sawbridgeworth. Option 6 is less likely to improve accessibility to Harlow, although it could provide strategic network resilience.

Option 6, the Southern Relief Road, performs less well than both Option 4 and Option 5 in terms of time savings likely to be achieved. It would have little impact on the level of traffic on the M11 but flows on the A414 west of Harlow would be likely to increase. Select link analysis indicates that the majority of traffic using Option 6 would be strategic in nature. It is concluded that this option would have the least overall effect on the level of traffic within Harlow and therefore would not improve accessibility within the town.

Economic appraisal of the options, using the highway assignment model outputs and indicative scheme costs have found that Option 1 would have Very High Value for Money (VfM), Options 2, 3 and 5, would have High VfM, Option 4 would have medium and Option 6 would have Low VfM. All of the options, with the exception of Option 6, would have Benefit Cost Ratios (BCR) values greater than 2.

Early Assessment Sifting Tool analysis, which evaluates each option against their fit with standard business case elements has enabled the six options to be ranked using weighted scores. This analysis has been summarised in Table 7.15, which is reproduced Table 8.1. This shows that Option 1 is ranked first, followed by Option 3, then Option 4. It should be noted that the evaluation of Options 2, 5 and 6, is based on highly schematic high level design assumptions. In the case of Option 2, the J7 scheme, this is currently being studied by Highways England and the resulting scheme design may achieve much better results than that used in the high level options assessment process reported herein.

Table 8.1 High Level Option Sifting: Weighted Evaluation Summary

Business Case Element	Scheme Weighted Scores						Case Weighting Total
	Junction 7a	Junction 7	Junctions 7 & 7a	Northern Bypass	Northern Northern Bypass	Southern Relief Road	
Strategic Case	12.3	1.7	11.9	9.5	-1.0	0.2	20.7
Economic Case	23.2	5.4	18.2	17.0	3.2	1.2	35.7
Commercial Case	3.7	3.7	3.7	3.7	3.7	3.7	11.7
Financial Case	9.5	6.7	4.2	2.5	2.5	2.5	18.3
Management Case	10.8	7.7	6.5	5.7	4.1	4.1	13.7
Weighted Total	58.5	25.1	44.5	38.4	12.5	11.7	100.0
Ranking	1	4	2	3	5	6	

The outcome of the Options Assessment is that three options, Option 1, Option 2, and Option 3, will be taken forward for more detailed modelling and evaluation. Option 4 will also be further evaluated in order to determine when this scheme would be needed, however, given its scale, this is unlikely to be within the period of the currently emerging Local Plans.

Results from the later stages of the traffic modelling will be reported in the Model Forecast Report.

# Appendices



# Appendix A: Model Inputs

Planning and Network Assumptions

Table A-2: Uncertainty Log Development Summary

DISTRICT	Development Probability	DEVELOPMENT LOCATION	Medium Growth Housing 2021	Medium Growth Jobs 2021	Medium Growth Housing 2036	Medium Growth Jobs 2036
East Herts:	Near Certain	Bishop's Stortford	284	129	1027	517
	Reasonably Foreseeable	Bishop's Stortford	687	470	3477	1880
	Reasonably Foreseeable	Sawbridgeworth	75	0	400	0
	Near Certain	Hertford	53	0	211	0
	Reasonably Foreseeable	Hertford & Welwyn GC	626	0	2684	0
	Near Certain	Ware	81	0	81	0
	Hypothetical	Ware	0	0	3050	0
	Near Certain	Harlow	200	0	200	0
	Hypothetical	Harlow	1188	0	3500	0
	Near Certain	Watton-at-Stone	28	0	111	0
	Near Certain	Puckeridge	58	0	58	0
	More than Likely	Buntingford	70	0	280	0
	Hypothetical	Buntingford	0	0	480	0
<b>East Herts</b>		<b>Sub-Total</b>	<b>3350</b>	<b>599</b>	<b>15559</b>	<b>2397</b>
Epping Forest:	Reasonably Foreseeable	Buck Hill/Chigwell/Loughton /Debden/T Bois	185	0	659	0
	Reasonably Foreseeable	Ch Ongar/N Weald	353	561	1262	2243
	Deliverable	N Weald/Epp Up	50	0	87	0
	Reasonably Foreseeable	Epping/Thornwood	163	55	682	218
	Deliverable	Roydon	35	0	35	0
	Reasonably Foreseeable	Roydon/Nazeing/W Abbey	476	504	1663	2016
	Reasonably Foreseeable	Lwr Sheering/Sheering	24	0	85	0
	Reasonably Foreseeable	Harlow	202	0	0	0
	Deliverable	Harlow	130	304	0	1215
	Developable	Harlow	838	407	2100	4045
	Hypothetical	Harlow	0	0	0	0
<b>Epping Forest</b>		<b>Sub-Total</b>	<b>2455</b>	<b>1830</b>	<b>6573</b>	<b>9737</b>

DISTRICT	Development Probability	DEVELOPMENT LOCATION	Medium Growth Housing 2021	Medium Growth Jobs 2021	Medium Growth Housing 2036	Medium Growth Jobs 2036
Harlow:	Near Certain	Harlow	1882	1566	3402	5899
	More Than Likely	Harlow	257	0	384	0
	Reasonably Foreseeable	Harlow	700	0	1060	0
	Hypothetical	Harlow	0	0	0	0
<b>Harlow</b>		<b>Sub-Total</b>	<b>2839</b>	<b>1566</b>	<b>4846</b>	<b>5899</b>
Uttlesford:	Near Certain	Saffron Waldon	292	400	1019	2000
	More than likely	Saffron Waldon	333	0	333	0
	Near Certain	Takeley	70	0	438	0
	More than likely	Takeley	25	0	25	0
	Near Certain	Gt Dunmow/Stebbing/FI Grn	809	100	5319	500
	More than likely	Felsted	0	0	68	0
	Reasonably Foreseeable	Great Dunmow	29	0	100	0
	More than likely	Elsenham	57	0	57	0
	Near Certain	Elsenham/Henham	128	0	464	0
	Reasonably Foreseeable	Elsenham	300	78	800	390
	Near Certain	Stansted Mountfitchet	86	0	331	0
	More than likely	Stansted Mountfitchet	22	0	22	0
	Reasonably Foreseeable	Stansted Mountfitchet	0	86	0	432
	Reasonably Foreseeable	Stansted Airport	0	377	0	1884
	Hypothetical	Stansted Airport	0	1143	0	2286
	More than likely	Rest of UDC	130	0	208	0
	Near Certain	Rest of UDC	80	25	1271	127
	Reasonably Foreseeable	Rest of UDC	0	27	0	133
<b>Uttlesford</b>		<b>Sub-Total</b>	<b>2361</b>	<b>2236</b>	<b>10455</b>	<b>7751</b>
<b>Housing Market Area</b>		<b>TOTALS</b>	<b>11005</b>	<b>6230</b>	<b>37433</b>	<b>25784</b>



**Table A-1: Uncertainty Log Highway Schemes**

DISTRICT	Log Ref	SCHEME DESCRIPTION	SCHEME PROBABILITY	PRIMARY DEVELOPMENT TYPE	DEVELOPMENT LOCATION
East Herts	1	A120 Little Hadham By-pass	More than Likely	Highway	East Herts
East Herts	3	London Road / Whittington Way S163 Refurbishment	More than Likely	Highway	Bishop's Stortford
East Herts	4	London Road South / Thorley Hill S155 Signal Refurbishment	More than Likely	Highway	Bishop's Stortford
East Herts	5	Cambridge Road near Leventhorpe School S150 Signal Refurbishment	More than Likely	Highway	Sawbridgeworth
East Herts	7	High Street / Near East Street S146 Signal Refurbishment	More than Likely	Highway	Ware
East Herts	8	Hertford Road / Near Walton Road S148 Signal Refurbishment	More than Likely	Highway	Ware
East Herts / Uttlesford	16	M11 J8 short term capacity improvements	More than Likely	Highway	Uttlesford
East Herts	17	A120 / B1383 Capacity Improvements	More than Likely	Highway	Bishop's Stortford
East Herts	18	A120 / A1250 Capacity Improvements	More than Likely	Highway	Bishop's Stortford
East Herts	29a	Bishop's Stortford North Development, Access onto Hadham Road	Near Certain	Highway	Bishop's Stortford
East Herts	29b	Bishop's Stortford North Development, Access onto A120	Reasonably Foreseeable	Highway	Bishop's Stortford
East Herts	29c	Bishop's Stortford North Development, Access onto Rye Street	Reasonably Foreseeable	Highway	Bishop's Stortford
Harlow / East Herts	55	A414 Eastwick to Burnt Mill dualling	Hypothetical	Highway	Harlow

# **Appendix B: Early Assessment & Sifting Tool**

DfT Summary Sheets

Weighted Summary Sheets

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

Option Name/No.	<b>Do Nothing</b>
Date	16/04/2015
Description	No major infrastructure schemes to be delivered in the next Local Plan period

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions are operating close to capacity or in excess of their original design thresholds. The ability of the transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow. M11 J7 is currently operating close to its planned capacity and any significant growth in the Harlow area will cause the junction to exceed this capacity. Harlow EZ jobs area already capped as a consequence of existing network capacity issues. With a single access for Harlow to the SRN, growth would also impact on A414 junctions. Unless major highway infrastructure improvements are implemented it will be very difficult to meet economic needs and deliver growth in housing and jobs, and Harlow will become a less attractive location for residents and businesses. According to national RTF2015 forecasts, congestion is forecast to grow in broadly the same proportions as traffic demand; traffic growth concentrated in already areas and times of day will naturally have a greater impact than growth that is spread more evenly. Harlow already experiences peak congestion, and Local Plan growth is likely to be concentrated within its immediate vicinity, thereby adding to likely congestion.	
Scale of impact	3	Congestion will increase significantly, journey times will increase and become even less reliable, and network resilience will be severely affected
Fit with wider transport and government objectives	1. Low	Does not fit with local or government objectives; London-Harlow-Stansted-Cambridge corridor key area for economic growth will be adversely affected
Fit with other objectives	1. Low	Does not deliver economic growth, and would probably lead to economic decline in the local economy; impact of increased carbon emissions levy and European carbon emissions trading, with impact on national budgets. Worsening network resilience, adverse impact on emergency services response times.
Key uncertainties	Continued deterioration of network reliability	
Degree of consensus over outcomes	1. Little	No consultation has taken place; existing situation includes frequent gridlock events; incidents on M11 (and M25) result in major impact on Harlow road network

### Economic

<b>Economic growth</b>	<b>1. Red</b>	No intervention will hinder economic growth
<b>Carbon emissions</b>	<b>2. Red/amber</b>	Network congestion will significantly increase
Socio-distributional impacts and the regions	<b>2. Red/amber</b>	Increasing network congestion will negatively impact on accessibility to goods and services, and AQ and noise.
Local environment	<b>3. Amber</b>	
Well being	<b>2. Red/amber</b>	Will increase journey times, driver stress and accidents; adverse impact on public health; reduce journey time reliability; negative impact on noise and AQ
Expected VfM category		

### Managerial

Implementation timetable		Not applicable
Public acceptability	Don't know	No consultation has taken place, not likely to be acceptable
Practical feasibility	1. Low	Not applicable?

What is the quality of the supporting evidence?	4	Refer to Harlow Model
---	---	-----------------------

Key risks	Not assessed	
-----------	--------------	--

**Financial**

Affordability		Not applicable
---------------	--	----------------

Capital Cost (£m)		Not applicable
-------------------	--	----------------

Revenue Costs (£m)		Not applicable? Increased maintenance costs?
--------------------	--	--

Cost profile		
--------------	--	--

Overall cost risk	
-------------------	--

Other costs		
-------------	--	--

**Commercial**

Flexibility of option	Don't know	Not applicable?
-----------------------	------------	-----------------

Where is funding coming from?	Not applicable	
-------------------------------	----------------	--

Any income generated? (£m)		
----------------------------	--	--



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

Option Name/No.	<b>M11J7a B183 Gilden Way Link</b>
Date	16/04/2015
Description	New grade separated motorway junction and single carriageway link road connecting to B183 Gilden Way via 5-arm roundabout

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions are operating close to capacity or in excess of their original design thresholds. Ability of the transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow. Single access to SRN at M11 J7 adversely affects resilience of local road network. J7 on the M11 is operating close to its planned capacity and any significant growth (housing and/or employment) in the Harlow area will cause the junction to exceed this capacity. Additional access to SRN, ie new junction on the M11 (J7a) would unlock development site and help to deliver growth and regeneration in and around the town, reduce congestion and improve network resilience.	
Scale of impact	4	Expected to significantly relieve congestion at J7 and on the A414 corridor between J7 and A1025 Second Avenue (refer to Harlow Model); moderate adverse impact on B183 Gilden Way
Fit with wider transport and government objectives	4	Scheme enables economic growth (housing & jobs); demonstrates 'more for less' as is local access road rather than a strategic link; improves network resilience
Fit with other objectives	4	Provides improved connectivity to SRN while minimising the attraction to additional through traffic; facilitates improved access to EZ, enables economic growth and unlocks development land
Key uncertainties	Does J7a and link provide sufficient additional network capacity given high level of growth coming forward; can Gilden Way accommodate traffic demand. Will become clearer once detailed Vissim modelling available; is scheme acceptable to the public	
Degree of consensus over outcomes	3	Some consultation has taken place, which is ongoing; local feeling that scheme adversely affects the immediate area without benefiting the wider area, consensus should increase when more detailed information released

### Economic

<b>Economic growth</b>	<b>5. Green</b>	Scheme would result in a more efficient transport network, reducing journey times/delays to travel to/from Harlow. Scheme would unlock significant housing development in East Harlow and improve access to the Harlow Enterprise Zones
<b>Carbon emissions</b>	<b>3. Amber</b>	Significant construction, so high levels of embedded carbon. Not likely to induce additional car trips; journey lengths of Harlow/J8 trips would reduce.
<b>Socio-distributional impacts and the regions</b>	<b>3. Amber</b>	Loss of farmland area. Noise and air quality impacts on B183 Gilden Way to be fully mitigated through vegetation planting and acoustic barriers where required. There will be improvements for road users accessing the wider network. Other issues: severance: minor impact (mitigation); accessibility: minor improvement (peds/cycle); accidents: no information; user benefits ?; personal affordability: no impact.
<b>Local environment</b>	<b>3. Amber</b>	The scheme would produce some negative landscape and visual impacts from some receptors after mitigation (eg from footpath 204-17). Some negative impacts on existing Tree Preservation Orders (TPOs). No direct impact to heritage features expected. Not expected to have an effect on local ecology after mitigation. No European or nationally significant ecological sites present. Expected to have a neutral impact on flooding after mitigation.

Well being	<b>6. No Impact</b>	Scheme will have positive impact on AQ due to relief of J7 and A414 corridor. There is potential for a positive impact on AQ for small number of properties near The Campions in the operational period as the new road will be offset from its existing alignment. Potential for negative impact on AQ along B183 Gilden Way although few properties face onto the link. Noise and air quality impacts to be fully mitigated through vegetation planting and acoustic barriers where required. Minimal recreational and community impact on non-motorised users (NMUs). Physical activity no impact; transport accidents, no information; crime, terrorism no change; access to services minor improvement; severance impact (mitigation)
Expected VfM category	1. Very High >4	this is BCR, so doesn't include non-monetised impacts (regen & enviro effects)

## Managerial

Implementation timetable	5. 2-5 years	
Public acceptability	4	Ongoing consultation; public perception of need for northern bypass needs to be dealt with.
Practical feasibility	4	Possible issues around Section 6; CPO process?
What is the quality of the supporting evidence?	4	Analysis based on initial model outputs, will improve when detailed outputs received
Key risks	Low, QRA actively being managed to limit risks;	

## Financial

Affordability	3	A number of funding streams have been identified; delivers 'more for less'
Capital Cost (£m)	06. 50-100	
Revenue Costs (£m)	05. 25-50	Based on Jacobs maintenance estimates
Cost profile	Risk at 15%; OB at 44%	
Overall cost risk	4	
Other costs		

## Commercial

Flexibility of option	4	Scheme has already been optimised and demonstrates clear association with future link to a northern bypass; scheme could be redesigned to link more directly to B183 Gilden Way
Where is funding coming from?	Range of options available, with contributions possible from: LEP/HE, developers through S106, forward funding by ECC	
Any income generated? (£m)	No	

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

Option Name/No.	<b>M11 J7 Improvement</b>
Date	16/04/2015
Description	Upgrade of existing M11 motorway junction and its immediate approaches as a result of existing capacity issues, and peak period knock-on impact on M11 mainline. HE currently undertaking Stage 0 review to identify optimal junction improvement scheme. Assessment has used historic junction improvement proposal as HE Stage 0 report not yet available.

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions are operating close to capacity or in excess of their original design thresholds. The ability of the transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow. Intervention required to unlock development land. J7 on the M11 is operating close to its planned capacity and any significant growth (housing and/or employment) in the Harlow area will cause the junction to exceed this capacity. EZ LDO already capped due to J7 capacity issue. Therefore a scheme to significantly improve its capacity is required to deliver committed and future growth in and around Harlow. With a single access for Harlow to SRN, growth will also impact on A414 corridor and other junctions through the town, which may require mitigation, not included in this scheme. The J7 upgrade is included in HE RIS1.	
Scale of impact	2	Expected to relieve congestion at J7 and on the approach arms. Still likely to be congestion issues on A414 Harlow corridor (refer to Harlow Model), would not unlock development land and would not improve network resilience
Fit with wider transport and government objectives	2	Scheme in isolation not likely to improve connectivity for Harlow to wider road network nor relieve congestion on A414 Harlow corridor, so reduced ability to deliver economic growth, does not unlock development land
Fit with other objectives	1. Low	Would not unlock development land; may not relieve congestion on local road network; does not increase attractiveness of Harlow for prospective businesses
Key uncertainties	Impact of scheme on A414 through Harlow, issue of single access to SRN remains; network resilience; buildability given possibly significant levels of traffic management to accommodate traffic during construction.	
Degree of consensus over outcomes	1. Little	Little or no consultation has yet taken place

### Economic

<b>Economic growth</b>	<b>2. Red/amber</b>	Scheme would not facilitate economic growth without significant additional infrastructure improvements on A414 corridor; does not unlock development land; does not improve network resilience; ongoing maintenance costs
<b>Carbon emissions</b>	<b>3. Amber</b>	No change as any benefits from reduced congestion at J7 offset by increased congestion on A414 corridor; initial model outputs indicate J7 reduces vehhrs the least
Socio-distributional impacts and the regions	<b>3. Amber</b>	Would not affect any Public Rights of Way. No noise and AQ impacts expected. Scheme likely to have some impact on local users, offset by shifting journey times across the wider network.
Local environment	<b>3. Amber</b>	Neutral landscape and visual impacts expected after mitigation. No impacts to heritage assets expected. No European or nationally significant ecological sites present.
Well being	<b>6. No Impact</b>	Noise and AQ impacts would be fully mitigated; Accidents?
Expected VfM category	2. High 2-4	Costs exclude any mitigation of A414 junctions which may be impacted

### Managerial

Implementation timetable	5. 2-5 years	
Public acceptability	3	Not considered likely to be an issue, no consultation to date
Practical feasibility	3	? significant TM issues during construction, may require CPOs, may affect viability/deliverability of employment development site
What is the quality of the supporting evidence?	3	Initial outputs from high level modelling
Key risks	Likely need for significant additional wider transport infrastructure improvements to improve access to Harlow to facilitate growth;	

## Financial

Affordability	4	Scheme included in HE Road Investment Strategy
Capital Cost (£m)	06. 50-100	Based on Mouchel scheme
Revenue Costs (£m)	05. 25-50	Based on Jacobs maintenance estimates
Cost profile	15% risk; 44% OB	
Overall cost risk	2	
Other costs	Feasibility/scheme currently being reviewed; cost could increase or decrease; additional mitigation schemes not included	

## Commercial

Flexibility of option	3	Scaling not likely due to capacity improvement extent required
Where is funding coming from?	HE	
Any income generated? (£m)	No	

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

Option Name/No.	<b>M11J7MajorPlusJ7a</b>	
Date	06/07/2015	
Description	Deliver both J7 major scheme and new junction J7a with Gilden Way link	

## Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions are operating close to capacity or in excess of their original design thresholds. Single access to SRN reduces network resilience. Ability of transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow and unlock development land. Unless major highway infrastructure improvements are implemented it will be very difficult to meet economic needs and deliver growth in housing and jobs, and Harlow will become a less attractive location for residents and businesses	
Scale of impact	4	Combination of schemes will provide additional connection to SRN, address congestion issues at J7 and mitigate impact on A414 junctions
Fit with wider transport and government objectives	4	Meets wider and government objectives, unlocking land, increasing access to SRN, reducing congestion, increasing attractiveness of Harlow for economic growth
Fit with other objectives	5. High	Delivers economic growth, and helps to make Harlow more attractive to existing and new employers
Key uncertainties	Acceptability of delivering two major schemes; funding; public acceptability	
Degree of consensus over outcomes	Don't know	No consultation has taken place

## Economic

<b>Economic growth</b>	<b>5. Green</b>	Improves connectivity to CBD, reliability, network resilience; reduces journey times; positive impact on regional economic growth
<b>Carbon emissions</b>	<b>4. Amber/green</b>	Reduced vkm and congestion; significant embedded carbon with construction
Socio-distributional impacts and the regions	<b>3. Amber</b>	No change in accessibility to local goods and services
Local environment	<b>3. Amber</b>	Reduction in congestion; slight adverse impact on noise; J7a negative impact on low value environment
Well being	<b>6. No Impact</b>	Severance, physical activity, crime, terrorism: no impact; injury deaths minor impact; accessibility to goods/services, day-to-day journey variability: improves; does not encourage sustainable travel
Expected VfM category	2. High 2-4	

## Managerial

Implementation timetable	5. 2-5 years	
Public acceptability	Don't know	No consultation has taken place
Practical feasibility	3	Delivery of J7 element: tm issues during construction; impact on employment development site; CPO likely
What is the quality of the supporting evidence?	3	From initial outputs from Harlow model
Key risks	Public acceptability; funding; costs; timescales	

## Financial

Affordability	3	Same funding sources as individual schemes, used lesser of two levels
---------------	---	---



Capital Cost (£m)	07. 100-250	Simple addition of both scheme costs
Revenue Costs (£m)	06. 50-100	Simple addition of both maintenance costs
Cost profile	Risk at 15%; OB at 44%	
Overall cost risk	2	
Other costs		

## Commercial

Flexibility of option	3	
Where is funding coming from?	Combination of J7a and J7 funding sources: HE; SELEP; developer contributions; ECC	
Any income generated? (£m)	No	

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

Option Name/No.	<b>NorthernBypassWithJ7a</b>
Date	06/07/2015
Description	New M11 junction and dual carriageway link through to A414 at Eastwick, together with single carriageway link to Gilden Way

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions are operating close to capacity or in excess of their original design thresholds. Single connection to SRN adversely impacts network resilience. Ability of transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow. Unless major highway infrastructure improvements are implemented it will be very difficult to meet economic needs and deliver growth in housing and jobs, and Harlow will become a less attractive location for residents and businesses	
Scale of impact	4	Would provide additional connection to SRN and relieve A414 corridor; may attract additional through traffic;
Fit with wider transport and government objectives	3	New connection to M11 fits with objectives; doesn't demonstrate 'more for less' due to scheme cost; significant adverse environmental impact
Fit with other objectives	4	Unlocks larger area of development land helping to deliver economic growth, and helps to make Harlow more attractive to existing and new employers, help to relieve congestion on urban network
Key uncertainties	Acceptability of delivering major infrastructure in sensitive environmental areas; funding; environmental impact	
Degree of consensus over outcomes	1. Little	Little consultation, strong reasons to suggest that outcome would be controversial

### Economic

<b>Economic growth</b>	<b>5. Green</b>	Would make Harlow much more attractive to new and existing businesses; Harlow DC commissioned "Future Prospects Study: Linking Regeneration & Growth" NLP Aug 2013, and, with specific reference to new towns, reported that 'bigger populations can sustain more diverse economies which are better placed to endure economic decline and attract inward investment'.
<b>Carbon emissions</b>	<b>3. Amber</b>	Would increase vkm, induced traffic [would need to be mitigated with LSTF/demand management/smarter choices (not within scope of this assessment)]
Socio-distributional impacts and the regions	<b>3. Amber</b>	Should improve accessibility to local goods and services; facilitate regeneration. Loss of significant amount of farmland and open space. Noise and AQ impacts for north Harlow residents would be fully mitigated. Dissects two PRow. Improvements for road users accessing wider network.
Local environment	<b>1. Red</b>	Increase in noise, reduction in air quality, significant adverse impact on natural environment, route runs through major floodplain of River Stort. Potential contaminated land issues as route passes through historic landfill. Potential heritage impact as route runs close to listed buildings at Gilston. Potential ecological impacts.
Well being	<b>4. Amber/green</b>	Sustainable travel, severance, physical activity, crime, terrorism: no change; injuries may increase; journey times and day-to-day journey variability should improve; decreased driver stress. Accidents?
Expected VfM category	2. High 2-4	

### Managerial

Implementation timetable	5. 2-5 years	
Public acceptability	2	No consultation has taken place, likely to be controversial
Practical feasibility	3	
What is the quality of the supporting evidence?	4	From initial outputs from Harlow model
Key risks	Public acceptability; funding; costs; timescales	

## Financial

Affordability	1. Not affordable	Not affordable now; no funding identified; developments contribution unlikely to fund whole scheme; next LP period
Capital Cost (£m)	07. 100-250	Simple addition of both scheme costs
Revenue Costs (£m)	06. 50-100	Simple addition of both scheme costs
Cost profile	Risk at 15%; OB at 44%	
Overall cost risk	1.High risk	
Other costs		

## Commercial

Flexibility of option	3	
Where is funding coming from?	Not identified	
Any income generated? (£m)	No	

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

Option Name/No.	<b>Northern Northern Bypass</b>	
Date	06/10/2015	
Description	Dual c'way link from A414 at Eastwick, new Stort Crossing to River Way, dual c'way bypass west of Sawbridgeworth with new M11 south of Spellbrook junction. Majority of scheme would be within Hertfordshire.	

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of junctions in Herts on the A1184 corridor are operating close to capacity or in excess of their original design thresholds. This leads to inappropriate use of minor roads in Herts during peak periods. The need to unlock east Harlow development area, improve access to SRN for Harlow and to improve local network resilience and reliability, are not addressed by this scheme, which is likely to attract traffic to the A414/A1184 corridor.	
Scale of impact	1. Small impact	Does not address key objectives of unlocking land and additional connection to the SRN; is likely to attract additional traffic onto A414 and A1184 corridor
Fit with wider transport and government objectives	1. Low	Low, conflicts with local or government objectives, as would be unlikely to deliver growth to Harlow, nor relieve congestion
Fit with other objectives	1. Low	Poor, doesn't unlock land or improve access to SRN, nor improve network resilience in Harlow
Key uncertainties	Deliverability and viability of scheme; public acceptability; environmental impact	
Degree of consensus over outcomes	Don't know	No recent consultation has taken place

### Economic

<b>Economic growth</b>	<b>2. Red/amber</b>	Would not unlock development land, nor improve access for Harlow to the SRN, may relieve congestion on A414, would exacerbate situation at M11 J7
<b>Carbon emissions</b>	<b>4. Amber/green</b>	Would reduce vkm and congestion in some areas
Socio-distributional impacts and the regions	<b>3. Amber</b>	Not likely to affect accessibility to local goods and services nor facilitate regeneration. Loss of significant amount of farmland and open space. Noise and AQ impacts for north Harlow residents would be fully mitigated. Dissects four PRoW. Route splits village of High Wych in two, ie community severance.
Local environment	<b>1. Red</b>	Significant landscape, noise, and light pollution issues. Route runs through River Stort major floodplain. Potential contaminated land issues as passes through two historic landfills. Potential ecological impacts
Well being	<b>6. No Impact</b>	Route splits village, negative noise and AQ impacts. Decreased drivers stress. Accidents?
Expected VfM category	2. High 2-4	

### Managerial

Implementation timetable	6. 5-10 years	
Public acceptability	Don't know	No consultation has taken place
Practical feasibility	4	Scheme uses proven designs
What is the quality of the supporting evidence?	3	From initial outputs from Harlow model
Key risks	Public acceptability; funding; costs; timescales	

### Financial

Affordability	1. Not affordable	Not affordable within 15-20 years
Capital Cost (£m)	07. 100-250	

Revenue Costs (£m)	07. 100-250	
Cost profile	Risk at 15%; OB at 44%	
Overall cost risk	1.High risk	
Other costs		

## Commercial

Flexibility of option	4	
Where is funding coming from?	Unknown	
Any income generated? (£m)	No	



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

Option Name/No.	<b>Southern Relief Road</b>	
Date	15/06/2015	
Description	Dual c'way link connecting A414 east of Roydon, west and south of Harlow, to B1393 and M11 J7	

### Strategic

Identified problems and objectives	On the strategic and local road network congestion is severe at peak times and a number of A414 junctions are operating close to capacity or in excess of their original design thresholds. Single connection to SRN adversely impacts network resilience. Ability of transport system to accommodate growth has emerged as one of the single biggest barriers to accommodating the level of development needed in Harlow. Unless major highway infrastructure improvements are implemented it will be very difficult to meet economic needs and deliver growth in housing and jobs, and Harlow will become a less attractive location for residents and businesses. Need to unlock east Harlow development area, improve access to SRN and improve local network resilience and reliability	
Scale of impact	2	May provide some relief to A414 junctions, but does not provide additional access to SRN nor unlock development land
Fit with wider transport and government objectives	1. Low	Low, conflicts with local or government objectives
Fit with other objectives	1. Low	Poor, doesn't unlock land or improve access to SRN, exacerbates situation at J7
Key uncertainties	Deliverability and viability of scheme; public acceptability; environmental impact	
Degree of consensus over outcomes	Don't know	No consultation has taken place

### Economic

<b>Economic growth</b>	<b>2. Red/amber</b>	Would not make Harlow more attractive to businesses, nor unlock development land
<b>Carbon emissions</b>	<b>4. Amber/green</b>	Would reduce vkm and some congestion
Socio-distributional impacts and the regions	<b>3. Amber</b>	Loss of significant amount of farmland and open space. Noise and AQ impacts for the west of Harlow would be fully mitigated. Dissects several PRoW. Improvements for road users accessing the wider network. Would not affect accessibility to local goods and services; nor facilitate regeneration
Local environment	<b>2. Red/amber</b>	Route runs through River Stort major floodplain. Route runs through registered park and garden and directly adjacent to a listed building.
Well being	<b>6. No Impact</b>	Decreased driver stress for relieved journeys. Accidents?
Expected VfM category	4. Low 1-1.5	

### Managerial

Implementation timetable	6. 5-10 years	
Public acceptability	Don't know	No consultation has taken place
Practical feasibility	4	Use of proven designs and technology
What is the quality of the supporting evidence?	3	From initial outputs from Harlow model
Key risks	Public acceptability; funding; costs; timescales	

### Financial

Affordability	1. Not affordable	Not affordable within 15-20 years
Capital Cost (£m)	07. 100-250	

Revenue Costs (£m)	07. 100-250	
Cost profile	Risk at 15%; OB at 44%	
Overall cost risk	1.High risk	
Other costs		

## Commercial

Flexibility of option	4	
Where is funding coming from?	Unknown	
Any income generated? (£m)	No	

Eastern Harlow Access Scheme Ranking - Weights					
<b>Level 1</b>					
			Strategic Case (Case for Change)	20.67	Total of 100
			Economic Case (Value for Money)	35.67	
			Commercial Case (Commercial Viability)	11.67	
			Financial Case (Financial Affordability)	18.33	
			Management Case (Achievability)	13.67	
		<b>Scale</b>	<b>Level 2</b>		
<b>Case for Change</b>					
<b>Strategic Case</b>					
	S1	1 to 5	Scale of impact / address identified problem	28.33	Total of 100
	S2	0 to 5	Fit with wider transport and government objectives	20.00	
	S3	0 to 5	Fit with objectives of the overall project	23.33	
	S4	-2 to 1	Key Uncertainties	13.33	
	S5	1 to 5	Consensus over outcomes	15.00	
<b>Value for Money</b>					
<b>Economic Case</b>					
			<b>Economic Growth</b>		Total of 100
	E1	-1 to 1	Connectivity	13.00	
	E2	-2 to 1	Connectivity during construction	2.67	
	E3	-1 to 1	Reliability	10.00	
	E4	-1 to 1	Resilience	5.33	
	E5	0 to 1	Delivery of Housing	13.33	
	E6	0 to 1	Delivery of Jobs	7.67	
			<b>Carbon Emissions</b>		
	E7-E9	-1 to 1	Carbon Emissions	2.67	
			<b>Socio-Distributional Impacts</b>		
	E10	-3 to 1	Social and Distributional	2.33	
	E11	-1 to 1	Regeneration	3.00	
	E12	-1 to 1	Regional imbalance	2.33	
			<b>Local Environment</b>		
	E13	-1 to 1	Air Quality	2.00	
	E14	-2 to 1	AQMA	0.00	
	E15	-2 to 2	Noise	1.33	
	E16	-2 to 2	Natural environment and landscape	2.33	
	E17	-2 to 2	Streetscape and urban environment	1.67	
			<b>Well being</b>		
	E18	-1 to 1	Physical activity	1.33	
	E19	-1 to 1	Injury or death	2.33	
	E20	-1 to 1	Crime	0.67	
	E21	-1 to 1	Terrorism	0.00	
	E22-E24	-1 to 1	Enable access to goods, services, people and places	5.67	
	E25	-1 to 1	Severance	4.00	
	E26	-2 to 0	Support environmentally sustainable travel	2.33	
			<b>Value for Money</b>		
	E27	-1 to 3	Expected VfM (BCR) and wider economic benefit	14.00	
<b>Commercially Viable</b>					
<b>Commercial Case</b>					
	C1	0 to 2	Flexibility of options	63.33	Total of 100
	C2	0 to 5	Income generation	36.67	
			Source of funding (not scored)		
<b>Financially Affordable</b>					
<b>Financial Case</b>					
	F1	1 to 5	Affordability	23.33	Total of 100
	F2	0 to 2	Capital Cost	33.33	
	F3	0 to 2	Revenue Costs	16.67	
	F4	0 to 4	Cost profile / quality of estimates	13.33	
	F5	0 to 5	Overall cost risk	13.33	
<b>Achievability</b>					
<b>Management Case</b>					
	M1	0 to 4	Implementation time table from present to start of construction	16.67	Total of 100
	M2	1 to 4	Construction period	13.33	
	M3	1 to 5	Public acceptability	20.00	
	M4	0 to 2	Practical feasibility	21.67	
	M5	0 to 5	Quality of supporting evidence	11.67	
	M6	0 to 4	Key delivery risk	16.67	

# Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>M11 J7a</b>			
<b>Weighted Case:</b>		<b>59.6</b>	out of 100		
		Score	Weighted score		
<b>Case for Change</b>				<b>12.3</b>	out of 20.7
Strategic Case	Scale of impact / address identified problem	4.0	22.7		
	Fit with wider transport and government objectives	4.0	16.0		
	Fit with objectives of the overall project	4.0	18.7		
	Key Uncertainties	-1.0	-6.7		
	Consensus over outcomes	3.0	9.0		
<b>Value for Money</b>				<b>23.2</b>	out of 35.7
Economic Case	<b>Economic Growth</b>				
	Connectivity	1.0	13.0		
	Connectivity during construction	1.0	2.7		
	Reliability	1.0	10.0		
	Resilience	1.0	5.3		
	Delivery of Housing	1.0	13.3		
	Delivery of Jobs	0.6	4.6		
	<b>Carbon Emissions</b>	0.0	0.0		
	Carbon Emissions	0.0	0.0		
	<b>Socio-Distributional Impacts</b>	0.0	0.0		
	Social and Distributional	0.0	0.0		
	Regeneration	1.0	3.0		
	Regional imbalance	1.0	2.3		
	<b>Local Environment</b>	0.0	0.0		
	Air Quality	1.0	2.0		
	Noise	-1.0	-0.7		
	Natural environment and landscape	-1.0	-1.2		
	Streetscape and urban environment	-1.0	-0.8		
	<b>Well being</b>	0.0	0.0		
	Physical activity	0.0	0.0		
	Injury or death	0.0	0.0		
	Crime	0.0	0.0		
	Terrorism	0.0	0.0		
	Enable access to goods, services, people and places	0.3	1.9		
	Severance	-1.0	-2.0		
	Support environmentally sustainable travel	-1.0	-2.3		
	<b>Value for Money</b>	0.0	0.0		
	VfM	3.0	14.0		
<b>Commercially Viable</b>				<b>3.7</b>	out of 11.7
Commercial Case	Flexibility of options	1.0	31.7		
	Income generation	0.0	0.0		
<b>Financially Affordable</b>				<b>9.5</b>	out of 18.3
Financial Case	Affordability	3.0	14.0		
	Capital Cost	2.0	11.1		
	Revenue Costs	2.0	6.7		
	Cost profile / quality of estimates	1.0	6.7		
	Overall cost risk	2.0	13.3		
<b>Achievability</b>				<b>10.8</b>	out of 13.7
Management Case	Implementation time table from present to start of construction	2.0	11.1		
	Construction period	2.0	8.9		
	Public acceptability	4.0	16.0		
	Practical feasibility	4.0	17.3		
	Quality of supporting evidence	4.0	9.3		
	Key delivery risk	2.0	16.7		

## Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>M11 J7 Major</b>			
<b>Weighted Case:</b>		<b>25.1</b>	out of 100		
		Score	Weighted score		
<b>Case for Change</b>				<b>1.7</b>	out of 20.7
<b>Strategic Case</b>	Scale of impact / address identified problem	2.0	11.3		
	Fit with wider transport and government objectives	1.0	4.0		
	Fit with objectives of the overall project	0.0	0.0		
	Key Uncertainties	-2.0	-13.3		
	Consensus over outcomes	2.0	6.0		
<b>Value for Money</b>				<b>5.4</b>	out of 35.7
<b>Economic Case</b>	<b>Economic Growth</b>				
	Connectivity	0.0	0.0		
	Connectivity during construction	-2.0	-2.7		
	Reliability	0.0	0.0		
	Resilience	0.0	0.0		
	Delivery of Housing	1.0	13.3		
	Delivery of Jobs	0.4	3.2		
	<b>Carbon Emissions</b>	0.0	0.0		
	Carbon Emissions	0.0	0.0		
	<b>Socio-Distributional Impacts</b>	0.0	0.0		
	Social and Distributional	0.0	0.0		
	Regeneration	0.0	0.0		
	Regional imbalance	0.0	0.0		
	<b>Local Environment</b>	0.0	0.0		
	Air Quality	0.0	-2.0		
	Noise	0.0	0.0		
	Natural environment and landscape	-1.0	-1.2		
	Streetscape and urban environment	0.0	0.0		
	<b>Well being</b>	0.0	0.0		
	Physical activity	0.0	0.0		
	Injury or death	0.0	0.0		
	Crime	0.0	0.0		
	Terrorism	0.0	0.0		
	Enable access to goods, services, people and places	0.0	0.0		
	Severance	0.0	0.0		
	Support environmentally sustainable travel	-1.0	-2.3		
	<b>Value for Money</b>	0.0	0.0		
	VfM	2.0	9.3		
<b>Commercially Viable</b>				<b>3.7</b>	out of 11.7
<b>Commercial Case</b>	Flexibility of options	1.0	31.7		
	Income generation	0.0	0.0		
<b>Financially Affordable</b>				<b>6.7</b>	out of 18.3
<b>Financial Case</b>	Affordability	4.0	18.7		
	Capital Cost	2.0	11.1		
	Revenue Costs	2.0	6.7		
	Cost profile / quality of estimates	0.0	0.0		
	Overall cost risk	0.0	0.0		
<b>Achievability</b>				<b>7.7</b>	out of 13.7
<b>Management Case</b>	Implementation time table from present to start of construction	2.0	11.1		
	Construction period	2.0	8.9		
	Public acceptability	2.0	8.0		
	Practical feasibility	3.0	13.0		
	Quality of supporting evidence	3.0	7.0		
	Key delivery risk	1.0	8.3		



# Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>M11J7a with J7 Major</b>		
<b>Weighted Case:</b>		<b>44.5</b>	out of 100	
		Score	Weighted score	
<b>Case for Change</b>				<b>11.9</b> out of 20.7
<b>Strategic Case</b>	Scale of impact / address identified problem	4.0	22.7	
	Fit with wider transport and government objectives	4.0	16.0	
	Fit with objectives of the overall project	5.0	23.3	
	Key Uncertainties	-2.0	-13.3	
	Consensus over outcomes	3.0	9.0	
<b>Value for Money</b>				<b>18.2</b> out of 35.7
<b>Economic Case</b>	<b>Economic Growth</b>			
	Connectivity	1.0	13.0	
	Connectivity during construction	-2.0	-2.7	
	Reliability	1.0	10.0	
	Resilience	1.0	5.3	
	Delivery of Housing	1.0	13.3	
	Delivery of Jobs	0.6	4.5	
	<b>Carbon Emissions</b>	0.0	0.0	
	Carbon Emissions	0.0	0.0	
	<b>Socio-Distributional Impacts</b>	0.0	0.0	
	Social and Distributional	0.0	0.0	
	Regeneration	1.0	3.0	
	Regional imbalance	1.0	2.3	
	<b>Local Environment</b>	0.0	0.0	
	Air Quality	0.0	-2.0	
	Noise	-1.0	-0.7	
	Natural environment and landscape	-2.0	-2.3	
	Streetscape and urban environment	-1.0	-0.8	
	<b>Well being</b>	0.0	0.0	
	Physical activity	0.0	0.0	
	Injury or death	0.0	0.0	
	Crime	0.0	0.0	
	Terrorism	0.0	0.0	
	Enable access to goods, services, people and places	0.7	3.8	
	Severance	0.0	0.0	
	Support environmentally sustainable travel	-1.0	-2.3	
	<b>Value for Money</b>	0.0	0.0	
	VfM	2.0	9.3	
<b>Commercially Viable</b>				<b>3.7</b> out of 11.7
<b>Commercial Case</b>	Flexibility of options	1.0	31.7	
	Income generation	0.0	0.0	
<b>Financially Affordable</b>				<b>4.2</b> out of 18.3
<b>Financial Case</b>	Affordability	3.0	14.0	
	Capital Cost	1.0	5.6	
	Revenue Costs	1.0	3.3	
	Cost profile / quality of estimates	0.0	0.0	
	Overall cost risk	0.0	0.0	
<b>Achievability</b>				<b>6.5</b> out of 13.7
<b>Management Case</b>	Implementation time table from present to start of construction	2.0	11.1	
	Construction period	1.0	4.4	
	Public acceptability	3.0	12.0	
	Practical feasibility	3.0	13.0	
	Quality of supporting evidence	3.0	7.0	
	Key delivery risk	0.0	0.0	

# Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>Northern Bypass with J7a</b>		
<b>Weighted Case:</b>		<b>38.4</b>	out of 100	
		Score	Weighted score	
<b>Case for Change</b>				<b>9.5</b> out of 20.7
<b>Strategic Case</b>	Scale of impact / address identified problem	4.0	22.7	
	Fit with wider transport and government objectives	3.0	12.0	
	Fit with objectives of the overall project	4.0	18.7	
	Key Uncertainties	-2.0	-13.3	
	Consensus over outcomes	2.0	6.0	
<b>Value for Money</b>				<b>17.0</b> out of 35.7
<b>Economic Case</b>	<b>Economic Growth</b>			
	Connectivity	1.0	13.0	
	Connectivity during construction	-1.0	-1.3	
	Reliability	1.0	10.0	
	Resilience	1.0	5.3	
	Delivery of Housing	1.0	13.3	
	Delivery of Jobs	0.6	4.6	
	<b>Carbon Emissions</b>	0.0	0.0	
	Carbon Emissions	0.0	0.0	
	<b>Socio-Distributional Impacts</b>	0.0	0.0	
	Social and Distributional	0.0	0.0	
	Regeneration	1.0	3.0	
	Regional imbalance	1.0	2.3	
	<b>Local Environment</b>	0.0	0.0	
	Air Quality	1.0	2.0	
	Noise	-1.0	-0.7	
	Natural environment and landscape	-2.0	-2.3	
	Streetscape and urban environment	-1.0	-0.8	
	<b>Well being</b>	0.0	0.0	
	Physical activity	0.0	0.0	
	Injury or death	-1.0	-2.3	
	Crime	0.0	0.0	
	Terrorism	0.0	0.0	
	Enable access to goods, services, people and places	0.3	1.9	
	Severance	0.0	0.0	
	Support environmentally sustainable travel	-1.0	-2.3	
	<b>Value for Money</b>	0.0	0.0	
	VfM	1.0	4.7	
<b>Commercially Viable</b>				<b>3.7</b> out of 11.7
<b>Commercial Case</b>	Flexibility of options	1.0	31.7	
	Income generation	0.0	0.0	
<b>Financially Affordable</b>				<b>2.5</b> out of 18.3
<b>Financial Case</b>	Affordability	1.0	4.7	
	Capital Cost	1.0	5.6	
	Revenue Costs	1.0	3.3	
	Cost profile / quality of estimates	0.0	0.0	
	Overall cost risk	0.0	0.0	
<b>Achievability</b>				<b>5.7</b> out of 13.7
<b>Management Case</b>	Implementation time table from present to start of construction	2.0	11.1	
	Construction period	1.0	4.4	
	Public acceptability	1.0	4.0	
	Practical feasibility	3.0	13.0	
	Quality of supporting evidence	4.0	9.3	
	Key delivery risk	0.0	0.0	

# Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>Northern Northern</b>			
<b>Weighted Case:</b>		<b>12.5</b>	out of 100		
		Score	Weighted score		
<b>Case for Change</b>				<b>-1.0</b>	out of 20.7
<b>Strategic Case</b>	Scale of impact / address identified problem	1.0	5.7		
	Fit with wider transport and government objectives	0.0	0.0		
	Fit with objectives of the overall project	0.0	0.0		
	Key Uncertainties	-2.0	-13.3		
	Consensus over outcomes	1.0	3.0		
<b>Value for Money</b>				<b>3.2</b>	out of 35.7
<b>Economic Case</b>	<b>Economic Growth</b>				
	Connectivity	0.0	0.0		
	Connectivity during construction	-1.0	-1.3		
	Reliability	0.0	0.0		
	Resilience	0.0	0.0		
	Delivery of Housing	1.0	13.3		
	Delivery of Jobs	0.0	0.0		
	<b>Carbon Emissions</b>	0.0	0.0		
	Carbon Emissions	0.0	0.0		
	<b>Socio-Distributional Impacts</b>	0.0	0.0		
	Social and Distributional	0.0	0.0		
	Regeneration	0.0	0.0		
	Regional imbalance	0.0	0.0		
	<b>Local Environment</b>	0.0	0.0		
	Air Quality	0.0	-2.0		
	Noise	-1.0	-0.7		
	Natural environment and landscape	-2.0	-2.3		
	Streetscape and urban environment	-1.0	-0.8		
	<b>Well being</b>	0.0	0.0		
	Physical activity	0.0	0.0		
	Injury or death	-1.0	-2.3		
	Crime	0.0	0.0		
	Terrorism	0.0	0.0		
	Enable access to goods, services, people and places	0.0	0.0		
	Severance	0.0	0.0		
	Support environmentally sustainable travel	-1.0	-2.3		
	<b>Value for Money</b>	0.0	0.0		
	VfM	2.0	9.3		
<b>Commercially Viable</b>				<b>3.7</b>	out of 11.7
<b>Commercial Case</b>	Flexibility of options	1.0	31.7		
	Income generation	0.0	0.0		
<b>Financially Affordable</b>				<b>2.5</b>	out of 18.3
<b>Financial Case</b>	Affordability	1.0	4.7		
	Capital Cost	1.0	5.6		
	Revenue Costs	1.0	3.3		
	Cost profile / quality of estimates	0.0	0.0		
	Overall cost risk	0.0	0.0		
<b>Achievability</b>				<b>4.1</b>	out of 13.7
<b>Management Case</b>	Implementation time table from present to start of construction	1.0	5.6		
	Construction period	1.0	4.4		
	Public acceptability	0.0	0.0		
	Practical feasibility	3.0	13.0		
	Quality of supporting evidence	3.0	7.0		
	Key delivery risk	0.0	0.0		

# Harlow Access Study: Options Appraisal Sifting - Weighted Evaluation

		<b>Southern RR</b>			
<b>Weighted Case:</b>		<b>11.7</b>	out of 100		
		Score	Weighted score		
<b>Case for Change</b>				<b>0.2</b>	out of 20.7
<b>Strategic Case</b>	Scale of impact / address identified problem	2.0	11.3		
	Fit with wider transport and government objectives	0.0	0.0		
	Fit with objectives of the overall project	0.0	0.0		
	Key Uncertainties	-2.0	-13.3		
	Consensus over outcomes	1.0	3.0		
<b>Value for Money</b>				<b>1.2</b>	out of 35.7
<b>Economic Case</b>	<b>Economic Growth</b>				
	Connectivity	1.0	13.0		
	Connectivity during construction	-1.0	-1.3		
	Reliability	-1.0	-10.0		
	Resilience	0.0	0.0		
	Delivery of Housing	1.0	13.3		
	Delivery of Jobs	0.0	0.0		
	<b>Carbon Emissions</b>	0.0	0.0		
	Carbon Emissions	0.0	0.0		
	<b>Socio-Distributional Impacts</b>	0.0	0.0		
	Social and Distributional	0.0	0.0		
	Regeneration	0.0	0.0		
	Regional imbalance	0.0	0.0		
	<b>Local Environment</b>	0.0	0.0		
	Air Quality	0.0	-2.0		
	Noise	-2.0	-1.3		
	Natural environment and landscape	-2.0	-2.3		
	Streetscape and urban environment	-1.0	-0.8		
	<b>Well being</b>	0.0	0.0		
	Physical activity	0.0	0.0		
	Injury or death	-1.0	-2.3		
	Crime	0.0	0.0		
	Terrorism	0.0	0.0		
	Enable access to goods, services, people and places	0.0	0.0		
	Severance	0.0	0.0		
	Support environmentally sustainable travel	0.0	0.0		
	<b>Value for Money</b>	0.0	0.0		
	VfM	0.0	0.0		
<b>Commercially Viable</b>				<b>3.7</b>	out of 11.7
<b>Commercial Case</b>	Flexibility of options	1.0	31.7		
	Income generation	0.0	0.0		
<b>Financially Affordable</b>				<b>2.5</b>	out of 18.3
<b>Financial Case</b>	Affordability	1.0	4.7		
	Capital Cost	1.0	5.6		
	Revenue Costs	1.0	3.3		
	Cost profile / quality of estimates	0.0	0.0		
	Overall cost risk	0.0	0.0		
<b>Achievability</b>				<b>4.1</b>	out of 13.7
<b>Management Case</b>	Implementation time table from present to start of construction	1.0	5.6		
	Construction period	1.0	4.4		
	Public acceptability	0.0	0.0		
	Practical feasibility	3.0	13.0		
	Quality of supporting evidence	3.0	7.0		
	Key delivery risk	0.0	0.0		