	Luton & South Bedfordshire Joint Committee ***29th July 2011*** ***Agenda Item No. 8***
AUTHOR	**Joint Officer Team: Paul Cook**
SUBJECT	**Central Bedfordshire and Luton Transport Model (CBLTM).**
PURPOSES	**To inform the Joint Committee of the development of the transport evidence base to support the Core Strategy.**
RECOMMENDATIONS	**That the Report be noted.**
REASON FOR RECOMMENDATIONS	**To inform Committee of the results of revised transport modelling.**

1.0 BACKGROUND

1.1 A transport model is a computer programme which enables the assessment of the operation of a transport network. Transport models can be produced to cover various different scales from small volumes of movement at individual junctions, to the dispersal of traffic across an entire region.

1.2 In each case a model allows the analysis of current conditions and how these may change as a result of development or new transport schemes being implemented in any given location.

1.3 In September 2007, the then Bedfordshire County Council, Luton Borough Council and South Bedfordshire District Council appointed transport consultants Halcrow to develop a transport model to inform the Luton and South Bedfordshire Local Development Framework (LDF).

1.4 The modelling work completed in March 2009 assessed the transport related impacts of the emerging Core Strategy. This model was robust enough for the purpose of assessing the transportation implications arising from the Core Strategy and was used to inform decisions on the direction of growth and development to be accommodated within the Plan area, together with the mitigating measures through which such growth could be accommodated.

1.5 There were a number of issues which emerged after the publication of the model, mostly reflecting changes to updated thinking about modelling and changes to local

Government. These included a desire for it to cover a wider geographical area and the ability to test transport conditions in the evening as well as the morning peak period. As a consequence an updated version of the model was commissioned in October 2010, and completed in June 2011 in line with the latest Government requirements for transport models.

1.6 This report summarises the findings of the updated model and draws out the similarities and differences of both versions in terms of their characteristics and the outputs they have produced.

2.0 CHARACTERISTICS OF THE UPDATED MODEL

2.1 The Central Bedfordshire and Luton Transport Model (CBLTM) is a strategic model which allows an overarching review of traffic movements across a wide area, in this case Luton and the whole of Central Bedfordshire.

2.2 The work undertaken to develop and update the CBLTM from the original 2007 version has included:

- Expanding the geographical coverage of the model to cover the whole of Central Bedfordshire as opposed to just the southern part of the authority.
- Updating traffic counts, road side interviews and public transport data sets.
- Removing land to the east of Luton from the assessment.
- Amending the “Do Something” scenario to no longer include a road connecting the A6 with the A505, in the period up until 2026.
- The inclusion of a PM peak period in the model scenarios tested.
- Ensuring that the model is in accordance with the latest guidelines from Government as at March 2011.

2.3 The model has both built upon existing data sets and gathered additional information on traffic flows across the area covered by the local authorities and beyond to ensure that an accurate reflection of a baseline network is established, and is capable of accurately reflecting current and future trends in travel behaviour. This has involved undertaking:

- A comprehensive set of roadside surveys at a cordon around Luton and Dunstable.
- Extensive traffic counts at key relevant points across the highway network.
- Reviewing bus patronage and boarding / alighting surveys in the town centres and at other key trip attractors.
- Updating and reviewing the attributes of the network such as the capacity of particular routes (often referred to as network coding) used within the model, and ensuring that is fit for purpose.
- Updating forecast scheme, planning and population growth assumptions.
- Regular meetings and collaborative working with the Highways Agency and its consultants, AECOM, to agree data sets, processes and assumptions to be applied within the model.

3.0 SCENARIO TESTING

3.1 The baseline year for the updated model is 2009. From this starting point a number of different scenarios have been tested to demonstrate the anticipated comparative performance of the network in different circumstances in 2026. These scenarios are:

- **Do Nothing:** The model highlights changes in flows and delays on the basis of the delivery of no growth other than that already permitted, and with only already committed transport schemes to be implemented to mitigate the changes in travel demand, notably:-

    - Luton Dunstable Busway
    - M1 Hard Shoulder Running between junctions 10 and 13
    - Luton Airport Parkway Station Northern Access

- **Do Minimum:** This scenario assumes that all growth in the Core Strategy is delivered, whilst the transport schemes in the "Do Nothing" scenario are provided alongside the implementation of:-

    - Completion of Luton 20mph zones
    - Proposed busway extensions to serve developments to the north of Dunstable and Houghton Regis, and the north of Luton
    - Distributor roads to serve urban extensions

- **Do Something:** The final scenario the model has examined again assumes all growth set out in the Core Strategy is delivered in addition to the transport interventions contained within the "Do Minimum" scenario together with:-

    - A5-M1 Link including a new M1 junction 11a
    - Leighton Buzzard Eastern Distributor Road between Heath Road and Stanbridge Road
    - Woodside Connection
    - Luton Northern Bypass, between the M1 and A6

3.2 Through the analysis of these different scenarios it is possible to see the extent to which the transport network has the ability to cope with the expected growth within the area and what further works and investment may be required to further mitigate any adverse impacts on current levels of operation.

4.0 OUTPUTS OF THE MODEL

4.1 The CBLTM assesses the performance of the transport network in 2026 in terms of changes in actual traffic growth, the average speed of traffic, the number of junctions operating at capacity, and against a number of other criteria from the 2009 baseline.

4.2 The outputs this assessment has produced are summarised below whilst the tabulated statistics generated are contained within Appendix A.

- **Traffic Growth:** Under the "Do Nothing" scenario, traffic is predicted to grow by some 14% in the morning peak period and 13% in the evening peak period between 2009 and 2026, as a result of committed development and changes in travel behaviour. This growth will be accentuated in the "Do Minimum" scenario with increases of 18% in the morning peak and 15% in the evening peak, respectively, and further still in the "Do Something" scenario as a result of 20% and 17% increases in traffic flows.

- **Average Traffic Speeds:** The "Do Nothing" scenario will see average traffic speeds reduce by 7% in the morning peak period and 5% in the evening peak period. Again, the "Do Minimum" scenario compounds this forecast with speed

decreasing by 10% and 8% respectively. The "Do Something" scenario however ensures that deterioration in travel speeds is checked, with speed reductions of 7% in the morning peak period and 5% in the evening peak period, indicating that the network is accommodating the increased volumes of traffic through the provision of increased capacity and through operating more efficiently.

- **Nodes with Potential Issues:** The number of nodes set to be operating at, or close to their full capacity will increase by 5 in the morning peak and 6 in the evening peak in the "Do Nothing" scenario, from the 2009 baseline. This increases to 13 in the morning and 6 in the evening peaks under the "Do Minimum" scenario. The "Do Something" scenario will result in 17 nodes operating at saturation point in the morning peak and 10 nodes in the evening peak.

  As a consequence, consideration is being given to undertaking a more detailed corridor study between Houghton Regis, Luton town centre and the airport to seek to resolve these more localised issues.

4.3 Subject to changes in growth trajectories or any other variables which have been factored into the modelling process, future "runs" of the model may be undertaken to assess changes in the relative impacts on the network.

4.4 It should also be noted that the development of the transport evidence to support the Core Strategy is an ongoing process that will culminate in detailed mitigation proposals, to accompany planning applications for individual sites.

4.5 In seeking to draw comparisons with the results of the original model produced in 2007 in as much as this can be done, it is clear that the impacts of growth in the morning peak period appear to be broadly similar.

5.0 STATEMENT OF COMMON GROUND

5.1 The authorities have drawn up a Statement of Common Ground with the Highways Agency, who with responsibility for the Strategic Road Network (the M1 and A5 in the Plan area), have an important role to play in agreeing the validity of the transport model to be used to assess the impact of growth.

5.2 To ensure that they were content with the inputs and assumptions factored into the model and the resultant outputs of the modelling results, the Agency commissioned consultants to check the work of the authorities' consultants Halcrow. This has provided an assurance as to the quality of the modelling process and of the outputs arising from it.

5.3 A Statement of Common Ground was subsequently signed on behalf of Central Bedfordshire Council, Luton Borough Council and the Highways Agency in May 2011 and is included in Appendix 2 of this report.

5.4 The Statement reflected the current position agreed by all parties with regard to the impact that the development proposals contained within the Core Strategy would have on the Strategic Road Network, and as such those roads managed by the Agency. The key element of the Statement iterated that:

"*Initial outputs from these three scenarios…… broadly support the conclusions of the previous modelling work reported in 2009. Specifically, they show that, with the*

transport mitigation measures included in the LDF, predicted traffic levels can be accommodated in a sustainable way."

6.0 SUMMARY

6.1 The updated transport model provides a robust basis upon which to assess the transport impacts of the growth envisaged to be delivered within the Luton and South Central Bedfordshire Core Strategy.

6.2 It builds upon the findings of the original 2007 model to demonstrate that the housing and employment allocations contained within the Strategy are able to be accommodated without significant adverse impacts on the network subject to the implementation of the "Do Something" scenario.

6.3 The Statement of Common Ground signed by the authorities and the Highways Agency confirms that there is agreement that the issues which are deemed to arise from growth can be mitigated, subject to identified infrastructure requirements being implemented.

6.4 The model will form an invaluable tool for the authorities for use in assessing future planning applications beyond those set out in the LDF and any potential changes to the LDF itself. The model will be kept model updated to facilitate this requirement.

7.0 EQUALITIES IMPLICATIONS

7.1 There are no equalities implications relating to the use of the transport model.

8.0 FINANCIAL IMPLICATIONS

8.1 The authorities will have to fund future use of the model if and when additional "runs" are required to test alternative scenarios. A contract is set to be drawn up to direct the organisation responsible for holding the model and the process through which additional runs will be commissioned.

9.0 LEGAL IMPLICATIONS

9.1 There are no explicit legal implications of the transport model.

Background Documents

Luton and South Bedfordshire Local Development Framework Transport Appraisal; Halcrow Group Limited, March 2009 (http://www.shapeyourfuture.org.uk/documents/TransportAssessmentFinalreport-030409.pdf)

Appendices

Appendix 1: Model Output Summary Table
Appendix 2: Statement of Common Ground

Appendix 1: Model Output Summary Table

Traffic Growth - veh-kms				
Modelled Hour	2009 Base	2026 DN net + DN dev	2026 DM net + DS dev	2026 DS net + DS dev
AM	848,419	+14.0%	+18.2%	+19.5%
IP	632,417	+15.0%	+19.2%	+20.4%
PM	901,741	+12.5%	+15.2%	+16.6%
Average Travel Speeds - km/hr				
Modelled Hour	2009 Base	2026 DN net + DN dev	2026 DM net + DS dev	2026 DS net + DS dev
AM	55.3	-6.5%	-9.7%	-7.1%
IP	60.5	-2.3%	-4.2%	-1.8%
PM	56.4	-5.3%	-7.6%	-5.1%
Network Queuing - pcus				
Modelled Hour	2009 Base	2026 DN net + DN dev	2026 DM net + DS dev	2026 DS net + DS dev
AM	23,493	+99.1%	+143.0%	+129.2%
IP	4,548	+155.7%	+175.7%	+168.2%
PM	25,562	+75.7%	+101.8%	+93.9%
No. Stops				
Modelled Hour	2009 Base	2026 DN net + DN dev	2026 DM net + DS dev	2026 DS net + DS dev
AM	226,997	+34.1%	+55.3%	+47.2%
IP	105,119	+30.3%	+44.1%	+33.7%
PM	199,637	+48.5%	+63.4%	+49.0%
No. Nodes with Potential Issues (V/C>0.8)				
Modelled Hour	2009 Base	2026 DN net + DN dev	2026 DM net + DS dev	2026 DS net + DS dev
AM		5	13	17
IP		1	2	4
PM		6	6	10

Appendix 2: Statement of Common Ground

Statement of Common Ground
Updated: 18 May 2011

On 3rd of March 2011 a Statement of Common Ground (SoCG) was signed on behalf of Central Bedfordshire Council, Luton Borough Council and the Highways Agency to reflect the then current position agreed by all parties with regard to the impact that the development proposals contained within the Luton and southern Central Bedfordshire Local Development Framework (LDF) Core Strategy (hereinafter referred to as the Core Strategy) would have upon the Strategic Road Network (SRN), both cumulative and individually, together with the process and work to be undertaken to resolve the issues raised.

It was agreed between the parties that the statement should set out the then current position in the understanding of the impact of the strategy on the SRN and what extra work needed to be undertaken to develop a greater understanding of the infrastructure delivery requirements. This information was to be developed from existing transport studies, as well as a further programme of work.

A key aim of the 3rd March SoCG was to notify the Inspector of the development of an updated Transport model (the CBLM), to be agreed between the Highways Agency (HA), Luton Borough Council (LBC) and Central Bedfordshire Council (CBC), to assess the impacts of the Core Strategy. In addition, it listed the following statements regarding which all three parties are in agreement:

- In order to deliver the growth, there will need to be an enhancement of public transport measures in and around the Luton and Dunstable growth area together with strategic highway improvements .
- The implementation of sustainable travel plan interventions will contribute to reducing travel demand by private car,
- Based on the level of information appropriate for this stage of LDF development, there appears to be feasible and technical solutions for providing the additional required infrastructure upgrades.

The basis for arriving at an agreed position was predicated on the development of a suitable tool to assess the impact of the Luton and southern Central Bedfordshire Core Strategy in the geographical area of interest.

The proposed growth areas and transport schemes have changed since the previous LDF Strategy submission in 2009. As a result, in 2010 Central Bedfordshire Council and Luton Borough Council jointly commissioned a multi-modal transport model, developed in accordance with WebTAG guidelines to test the ability of proposed strategic and local transport infrastructure to facilitate the

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Central Bedfordshire Council
and Luton Borough Council
working together

levels of growth set out within the Core Strategy and to help us gauge the effectiveness of the proposed schemes to mitigate any adverse implications of such growth.

Transport consultancy Halcrow was commissioned to update and expand the existing transport model the key elements of which are set out below.

- Base year: 2009
- Forecast year: 2026
- Coverage: Luton and the whole of Central Bedfordshire
- Outputs: Provides understanding of traffic flows in the morning and evening peak periods

Significant effort has been undertaken to ensure that the updated model is fit for purpose and capable of accurately reflecting current and future trends in travel behaviour. This has involved:

- Undertaking a comprehensive set of roadside (RSI) surveys at a cordon around Luton and Dunstable
- Undertaking comprehensive traffic counts at key relevant points across the highway network
- Undertaking a review of bus patronage and boarding/alighting surveys in the town centres and other key trip attractors
- Updating and reviewing the network coding used within the model and determining is fit for purpose
- Updating forecast scheme assumptions, planning and population growth assumptions
- Regular meetings and collaborative working with the Highways Agency and its consultants, AECOM, to agree data sets, process and assumptions to be applied within the model

The Highways Agency is able to sign up to the Base Year Model as a suitable evidence base for the Core Strategy EiP replicating present traffic conditions with a focus towards the SRN within the Central Bedfordshire and Luton locality. The Highways Agency acknowledges that the base model provides an overall indication of traffic flows and stresses, whilst noting that detailed assessment of the base year representation of traffic within the urban area of Luton and individual junctions on the SRN may require additional analyses, using more refined modelling procedures and tools.

Work is on-going on the Future Year CBLM models and associated outputs, as presented within this SoCG. The Highways Agency is working collaboratively with Central Bedfordshire Council and Luton Borough Council with the aim of reaching the point where the Highways Agency is also able to sign up to the Future Year

Models, to provide an EiP evidence base for the likely traffic impacts associated with the Core Strategy.

Outputs from the Model

Base and future year CBLM models have now been developed and 2026 forecasts prepared for the morning and evening peak periods, to assess the impacts of the Core Strategy and its associated infrastructure improvements.

The Core Strategy development assumes 23,000 homes and 28,300 jobs between 2011 and 2026. A total of 9,450 of homes are planned within urban extension areas East of Leighton Linslade, North of Houghton Regis and North of Luton

The following development scenarios have been modelled:

- Do Nothing (DN): committed transport improvements and allocated planning completions
- Do Minimum (DM): as DN but with additional growth assumptions as defined by the Core Strategy, together with minimum transport interventions to facilitate access to the proposed Core Strategy urban extension areas
- Do Something (DS): planning growth assumptions as DM, together with additional transport improvements to accommodate the Core Strategy growth areas

Initial outputs from these three scenarios are now available. They broadly support the conclusions of the previous modelling work reported in 2009. Specifically, they show that, with the transport mitigation measures included in the LDF, predicted traffic levels can be accommodated in a sustainable way.

The proposed delivery of the transport schemes is as set out in Table below:

Expected Year of Completion	Do Nothing	Do Minimum	Do Something
		As Do Nothing plus	As Do Minimum plus
December 2009	Completion of Bedford Western bypass (A421-A428)		
December 2010	Completion of A421 dualling (M1 Jct.13-Bedford)		

Expected Year of Completion	Do Nothing	Do Minimum	Do Something
		As Do Nothing plus	As Do Minimum plus
2013	Luton – Dunstable Guided Busway		
2013	M1 hard shoulder running (Jcts. 10-13)		
2013	Luton Airport Parkway Station northern access		
2014			Luton Town Centre Transport Scheme
2014			M1 Junction 10a grade separation
2015		Luton 20mph zones	
2016		Distributor roads to serve potential urban extensions to the north of Dunstable and Houghton Regis, and the north of Luton.	

Expected Year of Completion	Do Nothing	Do Minimum	Do Something
		As Do Nothing plus	As Do Minimum plus
2016		Proposed busway extensions mainly using aforementioned distributor roads but with short busway sections to serve potential urban extensions (detail not yet agreed)[1].	
2016			A5-M1 Link (Dunstable Northern Bypass) including M1 Junction 11a
2017			The Leighton Buzzard Eastern Distributor Road between Heath Road and Stanbridge Road
2018			Dunstable Woodside Connection (to M1 Jct. 11a) Option 1.
2021			Luton Northern Bypass (M1-A6 section) based on WSP preferred Route – similar to Alternative Route C (referred to as Cv) from the 2006 Halcrow Luton Northern Bypass Feasibility Study.

Key issues arising from the initial model outputs are as follows:

- Taking the expected traffic growth resulting from the Core Strategy into consideration for 2026, together with the DS transport improvements,

[1] Assuming 2016 for north east of Houghton Regis, north west of Houghton Regis in 2021, and north of Luton in 2021.

average traffic speeds and the number of stops over the whole network area, will remain broadly the same as the committed growth scenario (the DN situation).

- There is a marked deterioration in network performance in the DM scenario, compared to that of the DS, indicating the vital importance of the strategic transport infrastructure proposed, including the A5-M1 link road.
- There remain some specific areas where the Core Strategy indicates greater congestion as a result of Core Strategy growth, particularly along the corridor from the growth areas in Houghton Regis through to the centre of Luton. These increases, which are similar to those indicated by the previous model, will be addressed by further studies, now being agreed with LBC and the HA. The types of measures required include promotion of more sustainable modes, together with local highway improvements. These are smaller scale measures which do not need to be considered in detail as part of this LDF.

The development of the transport evidence to support the Core Strategy is an ongoing process that will culminate in detailed mitigation proposals, to accompany planning applications for individual sites.

Conclusion

The new modelling work carried out has shown that the transport issues arising are broadly the same as those previously shown by the modelling submitted as part of the LDF in 2009. Specifically, they show that the transport measures proposed within the LDF are essential to ensure sustainable growth in transport terms and that, the growth itself can be achieved sustainably

Future Work

The authorities are exploring the possibility of undertaking a more in depth corridor based study of the potential impacts and mitigating measures required to facilitate growth. This will use more refined modelling to enable the authorities to identify junction specific concerns and solutions on the local road network. These corridor studies will include further assessment of the proposed Park and Ride sites identified in the Core Strategy

Funding Sources

A number of sources of funding have been identified through which to ensure the deliverability of the schemes, both in terms of the essential, critical and desirable strategic infrastructure drawn out within this Paper and also with the implementation

of smaller scale schemes to be delivered through the Local Transport Plans themselves.

The DfT, developers, and European funding pots all provide opportunities to capitalise upon for the delivery of the measures required to facilitate growth.

Central Bedfordshire Council and Luton Borough Council will continue to work with partners, to develop a sustainable transport strategy for Luton and southern Central Bedfordshire growth area. The aim of the strategy is to influence travel behaviour and provide alternatives to the car for many local journeys.

Signed on behalf of:

Central Bedfordshire Council

Signed by: PAUL COOK
Date: 18.5.11

Luton Borough Council

Signed by: KEITH DOVE
Date: 18.5.11

The Highway Agency

Signed by:
Date: 18th May 2011

Central Bedfordshire Council
and Luton Borough Council
working together