

Proof of Evidence:

Traffic Modelling

**Presented to the Public Inquiry
in relation to
Lancashire County Council Planning
Application Reference: 11/05/1584
Completion of the Heysham to M6 Link**

**Planning Inspectorate Reference:
APP/Q2371/V/07/1200928 &
APP/Q2371/V/07/1200929**

**Submitted by Michael Porter and
Professor Phil Goodwin
on behalf of:**

Transport Solutions for Lancaster and Morecambe (TSLM)

Foreword

This document has been prepared primarily by Michael Porter. It also constitutes a substantial summary of the evidence of Professor Phil Goodwin, whose main separate statement is (owing to a misunderstanding about dates with the programme officer) not available yet.

Introduction

Statement by Michael Porter.

- 1 My name is Michael Porter and I am a local resident who strongly objects to the proposed Planning Application. The evidence that I present relates to the traffic appraisal for the proposed Heysham to M6 Link Road. Over the past two years I have contributed to the interpretation of traffic modelling documents associated with this Planning Application, and written various responses to them, submitted by, and on behalf of, Transport Solutions for Lancaster and Morecambe.
- 2 I have a BSc. in Ecology from the University of Lancaster and am an Associate Member of the Institute of Environmental Management and Assessment. My ability to comment on matters of traffic modelling stem from the comprehensive review of documentation put forward by LCC over the last 2 years, together with intense research into the published guidance for traffic modelling.
- 3 This evidence particularly refers to the Planning Application Environmental Statement Volume 1 Part A Report: Purposes of the Scheme together with the associated Appendices of Figures and Tables. The traffic modelling data that is presented is based on the original investigations that resulted in the Local Model Validation Report (LMVR) produced in July 2005. This was part of the Local Transport Plan Major Scheme Business Case submission of the same date. This appraisal considers a range of traffic issues arising from the proposal.

Statement by Phil Goodwin

4. I am Phil Goodwin, Professor of Transport Policy at the University of the West of England, and Emeritus Professor at University College London. I have a degree in economics and a PhD in civil engineering (transport studies). I was a member of the Standing Advisory Committee on Trunk Road Appraisal and co-author of its reports on environmental appraisal (1991), induced traffic (1994) and transport and the economy (1999). I have advised local and national governments on transport policy and project appraisal.
5. At the heart of the promoters' case is the proposition that the scheme's exceptional contribution to solving congestion and enabling economic regeneration makes it worth accepting the environmental damage it will cause. My evidence mainly relates to the claim that it will solve, or materially help to solve, congestion. I argue that the case for this is very doubtful, is internally inconsistent, and that there are better ways of doing so that are more in tune with policy thinking of the government and indeed of the authority.

Summary of Conclusions

- 6 Paragraph 2.3 of the LMVR explains that delays at junctions were not modelled explicitly and were catered for using link-by-link speed / flow relationships. While congestion at junctions in the model will, in principle, be represented by the speed / flow relationships, this approach is much less accurate than explicit junction modelling. Therefore, where the scheme significantly affects traffic using roads where junctions have not been modelled explicitly, inaccuracies in the modelled flows and the consequent benefits derived from them will occur.
- 7 Recently, the final version of the variable demand modelling advice has been posted on WebTAG. The advice in paragraph 1.2.3 of WebTAG Unit 3.10.3 is that: "pending further research, it is recommended that simple elasticity models are not used to model the full effects of variable demand". Elasticity models as used in the scheme model, have long been recognised as only an approximate way of modelling induced traffic, the changes in trip frequency, mode, and time period but will not realistically represent changes in destination or origin.
- 8 The LMVR shows that flows are not in accord with observed data and in some cases correlation is outside DRMB criteria. Significant discrepancies occur and the LMVR continues to comment that the modelled traffic speeds are too high, showing internal inconsistencies within the model. The systematic discrepancies in Tables 15 to 17 of the LMVR provide a detailed picture of the validation and from them it can be seen that there are 67 individual calculations where GEH values are Not Valid. They also show that there are 44 individual calculations where Validation Guidelines produce a result that is Not Acceptable.
- 9 The LMVR Forecasting Report explains that traffic growth rates have been derived from the DfT TEMPRO database, version 4.2. At no point does the report consider that updates to the TEMPRO datasets and the assumptions of growth occur at regular intervals. Indeed, TEMPRO 5.2 was published in July 2006 and includes the current position with regard to both the approved and emerging draft Regional Spatial Strategies, a point specifically mentioned in the Planning Inspectors "relevant matters".
- 10 The contention that congested urban roads can sustain traffic reduction after reassignment, for 15 years or more, flies in the face of all recent experience of induced traffic effects. It is futile for LCC to pretend that it can, uniquely, build its way out of congestion. Modelling does not factor in the effects of job creation on the peninsula, and increased opportunities for peninsula residents to access work elsewhere, claimed in the EIR. The latter alone would increase trips across the WCML "screenline" by almost 10,000 per day. These are "generated" not "induced" trips (as defined in SACTRA 1994) in terms of traffic assessment, so should not form part of the induced traffic calculation done by LCC.

- 11 Great significance is made of the fact that bus priority measures and park and ride would be part of the additional measures proposed that are linked to the scheme. This is not the case. Both bus priority and park and ride can quite adequately be provided independently of the scheme and are clearly part of the LTP. The possibility that bus priority and park and ride will reduce traffic, thereby freeing the system without the need for a road, is not considered. Public access to rail is discussed and recognises that existing stations are poorly connected to significant residential areas. However, the scheme fails to promote rail as an alternative form of commuter transport, and only discusses walking and cycling.
- 12 Proposed arrangements at the M6 should not pass unchallenged because it has few equals as a convoluted solution to a motorway junction. This is a significant element in the high scheme cost in excess of £156 million for a 4.8km length of road. The southbound M6 exit to the route, over the river, round a cloverleaf exit, under the motorway, turn right across a major stream of traffic coming out of Lancaster, back across the river, arriving 2.5km later at the roundabout 150m from the motorway, is especially contorted. When a design solution is as contrived as this, it is invariably not the best solution.
- 13 LCC continues to put forward a solution to change access from Morecambe Road and turn it to link with the McDonalds / Hadrian Road controlled junction. This proposal had been dismissed as inappropriate when put to the school previously by LCC Property Services. Traffic congestion is caused by mixing school traffic, residential traffic and McDonalds traffic into one stream before bringing it to a single controlled junction point. This has significant impacts on the A683. Substantial local traffic will mix with increased flows attempting to access the link road. Previous modelling will require complete revision.
- 14 The implications of Government policy for the development of solutions to traffic problems are that potential solutions be considered in the following order:
- Measures to reduce the number of motorised journeys, especially by car
 - Measures to increase use of alternatives to the car, including public transport improvements
 - Measures to make best use of the available road capacity; and, as a last resort,
 - Infrastructure schemes to provide new road capacity
- 15 Current Government policy documents support the idea that reducing the need to travel by car and promoting the use of alternatives should be considered before additional road capacity is considered. Traffic management should be considered before new infrastructure. The proposition that new road building should be a measure of last resort is supported by the Guidance on the Methodology for Multi-Modal Studies (GOMMMS), which was prepared by the DETR to guide the conduct of the programme of Multi-Modal and Roads-Based Studies initiated following the review of trunk road and motorway programmes.

- 16 A New Deal for Trunk Roads in England (DETR. July 1998) says:
“In seeking solutions to the problems to be addressed in the study, the contributions of all modes should be considered, including walking, cycling, air transport, shipping and pipelines, as well as roads, railways, buses and other forms of public transport. Solutions may also relate to non-transport policies, for example land-use, health and education. Although the genesis of the initial programme of Studies lies with problems on the trunk road network, the focus of the Studies will not primarily be on ways of providing additional road capacity”.

Suitability of the Traffic Model

- 17 The LMVR appears to have followed generally standard procedures. However, there are points to make about the way in which congestion has been modelled. Section 2.5 explains that the modelled network had two parts, a study area within which the restraining effects of capacity were modelled and an external area. Without evidence of the approach used, it is assumed that external area speeds remain fixed irrespective of assigned flows in relation to the capacity available. While this approach is often used, some aspects that might influence the accuracy of the benefit estimates and therefore the case for the scheme:
- a) the extent to which congestion on all reasonable alternatives to the existing A589/A683 roads and the proposed scheme has been represented
 - b) the way in which congestion has been modelled.
- 18 Figures 1 - 3 show the extended study area, which includes the Lancaster and Morecambe urban areas and therefore many (but possibly not all) of the routes on which traffic and congestion could be affected by the proposed scheme. Paragraph 2.3 of the LMVR explains that delays at junctions were not modelled explicitly and were catered for using link-by-link speed / flow relationships. The reality and acceptability of modelled congestion and, therefore, the reality and acceptability of modelled traffic forecasts, will depend on:
- Sufficiently wide junction modelling
 - Interactions between junctions
 - Accounting for flow effects of bottlenecks
 - Accuracy of speed / flow relationships
- 19 While congestion at junctions in the model will, in principle, be represented by the speed/flow relationships, this approach is much less accurate than explicit junction modelling. Therefore, where the scheme significantly affects traffic using roads where junctions have not been modelled explicitly, inaccuracies in the modelled flows and the consequent benefits derived from them will occur. Explicit modelling of junctions did not take place, however junction comparisons were undertaken and are described in Section 5.7 and 5.8, with reference to Figure 5 and Table 2, which indicate key junctions where turning counts had been conducted. Attempts to validate these modelled turning movements illustrate that key aspects are missing from the model.

- 20 Even assuming that junction comparisons were appropriate, key junctions are missing from the list, particularly, but not exclusively:
- Shrimp Roundabout
 - Greyhound Bridge
 - Skerton Bridge
 - Parliament Street
 - Lancaster Gyrotory System - to mention but a few
- 21 The TRIPS software used, in my opinion, does not model the key interactions between junctions properly, particularly flows downstream from a bottleneck junction and the blocking back of queues upstream from a bottleneck junction. This software, therefore, does not properly represent the way in which traffic would be held back in the network at critical junctions and so leads to an over-estimation of the delays and, as a result, the perceived benefits may also be significantly incorrectly estimated.

Modelling Used to Estimate Induced Traffic

- 22 Section 5.2 of the Forecasting Report explains the assessment undertaken of induced traffic. This report is dated July 2005 but given the reference to Section 12.2.2 of the Design Manual for Roads and Bridges, published February 1997, appears not to have taken on board the emerging advice of WebTAG. Revision of Units 2.9.1-2 and 3.10.1-4, each dated June 2005, would have been available for consultation at that time, but it appears that the Report failed to react to it.
- 23 The approach adopted was generally consistent with the guidance published at the time that the work was undertaken. At that time, elasticity methods, while recognised as being approximate, were still considered appropriate for schemes of this nature. During 2005, however, research revealed that these methods could produce misleading results, with the consequence that the June 2005 Units advised against their general use for variable demand modelling.
- 24 Recently, the final version of the variable demand modelling advice has been posted on WebTAG, in the same Unit numbers as previously, but now dated June 2006. The advice in paragraph 1.2.3 of WebTAG Unit 3.10.3 is retained (that "pending further research, it is recommended that simple elasticity models are not used to model the full effects of variable demand").
- 25 Elasticity models have long been recognised as only an approximate way of modelling induced traffic (Chapter 14. 1994 Report of the Standing Advisory Committee on Trunk Road Assessment on Trunk Roads and the Generation of Traffic), the changes in trip frequency, mode, and time period but will not realistically represent changes in destination or origin. People, when faced with a generalised cost change, are more likely to change their destination than their mode of travel, not only for social journeys but also for travel to and from work.

Traffic Assignment Model Validation

- 26 In justifying major remodelling of J34, LCC admits it is necessary because the scheme itself brings the additional traffic. The Local Model Validation Report shows that flows are not completely in accord with the observed data and in some cases correlation is outside DRMB criteria. Significant discrepancies occur and LMVR continues to comment that the modelled traffic speeds are too high, showing internal inconsistencies within the model.
- 27 The LMVR is far from reassuring that the model accords with observed flows. In some cases correspondence is not within the DMRB criteria (defined in DMRB Volume 12, Section 2, Part 1). In virtually every scenario tested some significant individual discrepancies of well over 10%, up to 40% occur (such as with the A6 Slyne southbound AM peak). The LMVR consistently comments that modelled traffic speeds are slightly too high.
- 28 Although it is rare for traffic models to show internal inconsistencies, it is difficult to see how there is enough reassigned / induced traffic at M6 J34 to provide 32,000 AADF on the first section of the Northern Route (2010 Do Something) west from J34. Extra traffic on the M6 North and South, and the A683 East of J34, plus the reassigned (reduced flow) traffic from A683 West of J34, is 27,700, and not all of this would necessarily end up on the Northern Route.
- 29 Some forecast flows appear anomalous in the light of local knowledge, with the 42.7% jump in forecast flows East of J34 in the 2010 Do Something compared with Do Minimum particularly so. It is also disquieting to see that environmental effects on villages along the A683 have not been factored into the scheme appraisal. As with all matrix-generated modelling, there is a need to be descriptive with the analysis of what is happening and why if lay people are to be persuaded that the model is a reasonable representation of their real world.
- 30 On 27th January 2006 Highways Agency (as Statutory Consultee) formally advised LCC of the appointment of Mouchel Parkman (MP) to review the planning application, despite their previous extensive discussions, because of the "need to be satisfied that the proposal will not have a detrimental effect on the M6". One of the first elements to that review was a communication from MP to LCC on 15th Feb 2006 with a substantial list of queries and observations on the VISSIM traffic model applied to the area immediately around J34 of the M6.
- 31 LCC Highways and Environmental Management Department responded on 20th February. However many aspects failed to address the issues raised and demonstrated a systematic distortion of the VISSIM model producing a false appraisal of the projected journey time saving benefits. A prime example of this occurs with the very first query presented, which questions how the HGV acceleration and power distribution functions are applied to the model. Type 1 functions are shown to be used, but these are more attributable to cars and LGV performance characteristics and do not account for a HGV component.

- 32 It would be more realistic to utilise Type 2 functions, as pointed out by MP, so that a realistic HGV traffic composition might be applied to the flow projections, especially considering that LCC continually promote the notion that HGV traffic between the Port of Heysham, other industrial areas and the M6 is one of the main reasons for the proposal.
- 33 Comment from LCC relating to exclusion of Type 2 functions is that "Early observations of the model with Type 2 distributions seemed to show a high proportion of these vehicles with low acceleration capabilities and poor power/weight ratios, hence the use of Type 1 functions". Low acceleration observations are a realistic appraisal of what might be expected from HGVs, given the convoluted and complex nature of approaches to the motorway. The model includes a large roundabout, a series of light controlled intersections and steep inclines for motorway slip roads to both north and south directions.
- 34 Similarly, there are omissions or distortions within the model, which are highlighted by MP, but not corrected by LCC. Issues still outstanding are:
- failure to include bus stop dwell times
 - distorted red/amber sequencing to traffic lights
 - omission of pedestrian crossing delay times
 - missing roundabout prioritisation rules
 - distorted HGV traffic behaviour on the M6
 - unrealistic vehicle input intervals to the model
 - peak period queues stretching across signalised junctions
- 35 Additional observations from MP relate to demonstrating actual stability of the model and suggest a minimum undertaking of six runs and comparing each of these against each other. LCC merely say, "Agreed. Not done originally due to time constraints." This suggests that substantial inaccuracies remain in the VISSIM traffic model as presented and the response from LCC to address MP queries is inadequate.
- 36 LCC provide a dismissive response to MP Additional Observations stating "All valid points relating to the appearance of the models. These will be addressed during any future work" (my emphasis). Each element is a singular failure to address a minor inconsistency within the VISSIM traffic model. However, the substantial individual inconsistencies accumulate and magnify to the point where significant errors in the overall modelling process appear. Overall effects of accumulated inaccuracy are that any time savings for a journey, and the claimed financial benefits, are substantially exaggerated.

- 37 Further queries were presented on 17th February 2006, generally in respect of the wider TRIPS traffic assessment model, and were responded to on 24th February 2006. One aspect related to the way in which traffic generation from the industrial areas of White Lund, Mellishaw Lane and the Port of Heysham had been dealt with. LCC confirmed these sites had been considered through an induced traffic procedure, as defined in Section 5.0 of their Forecasting Report. This means that generated traffic arising as a consequence of regeneration projections has not been addressed in the traffic modelling provided. The predicted take-up of land in these sites (75%-90% by 2020) brings with it very substantial traffic movement both from the commercial activity and commuter traffic.
- 38 Additional traffic will occur from within the local population, but substantially more from outside the district due to projected job creation exceeding the availability of suitable people in the local work force. There is direct conflict with Government aims and objectives to reduce the need to travel, especially by car, as stated in PPG13. Correspondence from MP also asked for clarification of the grounds for assuming that almost all traffic will divert to the new road. LCC response to this stated that a consideration of network distances and journey-times had enabled the assumptions. Previous comment regarding inaccuracies, distortions and omissions from such calculations continues to be of relevance.
- 39 Working on behalf of the HA, Mouchel Parkman undertook additional model validation investigations of the failure to address generated traffic flows. This resulted in the report M6 - Heysham Link Technical Note 2, September 2006 which includes the conclusion that:
- "The methodology used by LCC to estimate additional trips generated by induced developments is generally considered to underestimate the number of trips".***
- 40 The Technical Note 2 report then goes on to define how the use of averaged data by LCC is inappropriate by saying:
- "The trip generation figures for the actual peak hour are considerably higher than for the average peak hour used by LCC. The conclusions reached in the Mouchel Parkman Transport Document review, June 2006, relating to the effect of the use of average hourly figures, are re-iterated".***

- 41 These conclusions are exemplified by Table 5 of the MP Technical Note 2 which gives a comparison of the Average Peak Hour and Peak Hour Trip Generation. Whilst providing a detailed breakdown of individual industrial sites in the report, the table totals only are included for clarity:

		AM (8-9)	PM (5-6)
Departures	LCC Average Peak Hour	192	561
	MP calculated Peak Hour	266	1009
Arrivals	LCC Average Peak Hour	669	176
	MP calculated Peak Hour	1183	226
Total Flow	LCC Average Peak Hour	861	737
	MP calculated Peak Hour	1449	1235
	Percentage underestimation	40.5%	40.3%

- 42 Item 14 of the 17th February communication discusses the accessibility function used in the model and notes that it is calculated using trip times that are affected by commuter parking. It asks LCC to expand on what the assumption that only 30% of commuters pay for parking has been based. LCC comments that this assumption was based on anecdotal evidence provided by an officer of Lancaster City Council and that "the perception was that well over half of commuters into the city centre do not pay to park". The vague definition "well over half" has been transformed into 70% when applied to the model, an extremely subjective and inappropriate approach.
- 43 On 24th February 2006 MP refer again to representative average hours taken from the 3 hour peak data, which is then noted as potentially underestimating effects of the busiest peak hour on the network. LCC respond by saying that combined flows from 9 monitoring sites suggests no more than 4% variation for any individual hour from the 3 hour average. The suggestion that flows are near constant during peak periods is flawed. Firstly, traffic flow data is combined from all indicative sites before assessing deviation from the average. The spread of monitoring sites between the A683 and M6 would suggest that their diversity shows individual traffic flow patterns not necessarily replicated by other sites.
- 44 Secondly, data is extracted from a relatively small number of monitoring sites, which are determined to be the critical sections of the network. This is then applied across the whole of the model network, which compounds the assumptions and inaccuracies for routes that feed traffic into or across the A683 to M6 corridor. The LCC validation of junction modelling was questioned, mainly because it was not modelled explicitly. Mouchel Parkman expressed a fear that the model is not responsive to increased traffic volumes, resulting in future underestimation of junction congestion and delay. LCC response says that link-by-link speed / flow relationships were considered to be a sufficient level of detail, "given the strategic nature of the models".

- 45 VISSIM modelling for Junction 34 was of sufficient detail (although flawed) for the signal controlled junctions on Caton Road and for the slip roads. Other junctions have not been modelled with the same level of detail. Reliance on strategic modelling alone rather than detailed modelling at this advanced stage of any Planning Application is totally inadequate. This has serious adverse consequences on future projections.
- 46 MP also questions the attachment of the words "good" and "acceptable" to the model when the assignment validation fails to meet DRMB criteria. Major discrepancies are seen to occur at many locations with some GEH values showing significant variation between modelled and observed flows. The LMVR submitted with the MSBC in July 2005 consistently comments that modelled speeds are slightly too high.
- 47 LCC response to this refers back to LMVR text that discusses the location of the links showing the greatest discrepancies. The response states, "In total, 20 (out of 29) such discrepancies were found to be within or south of the city centre, i.e. the majority are in areas least important to the current scheme". This disguises the systematic discrepancies that can be seen across all areas of the network when moderate and minor variations are taken into account. Tables 15 to 17 of the LMVR provide a detailed picture of the validation and from them it can be seen that there are 67 individual calculations where GEH values are Not Valid. They also show that there are 44 individual calculations where Validation Guidelines produce a result that is Not Acceptable.

Growth Factors in Traffic Forecasts

- 48 Section 4.6 of the Forecasting Report (July 2005) explains that traffic growth rates have been derived from the DfT TEMPRO database, version 4.2. This was probably the most up-to-date source of traffic growth forecasts available at the time, although it is understood that version 4.3 was in existence at that time. At no point does the report consider that updates to the TEMPRO datasets and hence the assumptions of growth occur at regular intervals. This means that over the life of the Scheme there are likely to be further revisions. Indeed, TEMPRO 5.2 was published in July 2006, since the appraisal being reviewed here was undertaken and this update of TEMPRO includes the current position with regard to both the approved and emerging draft RSS.
- 49 This inclusion is specifically mentioned in the Inspectors "relevant matters"...

a) Whether the proposed development accords with the development plan for the area (in this instance the emerging draft replacement RSS for the North West, the Joint Lancashire Structure Plan, and the Lancaster Local Plan), having regard to the provisions of Section 38(6) of the Planning and Compulsory Purchase Act 2004.

It will therefore be appropriate to revise the traffic forecasts using the latest version of the TEMPRO traffic growth data.

Road Pricing and Locking In Benefits

- 50 While it may be appreciated that the local authority is not yet ready to promote congestion charging in Lancaster district, the Government is considering moves towards a national road pricing system, as is made clear in paragraph 3.31 of The Future of Transport: A Network for 2030, published by the DfT in July 2004. In the light of this policy interest by Government, it would be prudent to consider the impacts of a road pricing system on the case for the proposed scheme.
- 51 Infrastructure that may, in the event of road pricing, prove to be unnecessary, could and should be avoided. This would be consistent with the undertaking given by the Government in relation to road schemes emerging from the Multi-Modal Studies: "We will ensure that the case for road schemes taken forward following the Multi-Modal Studies is robust even if a decision is taken to introduce road user charging in the future." (see The Government's Response to the Transport Select Committee's Report Jam Tomorrow?: The Multi-Modal Study Investment Plans, June 2003, page 7)
- 52 DfT recently published guidance (July 2006) on WebTAG regarding the design, modelling and appraisal of road pricing schemes (Units 2.12 and 3.12.1-4). One of the significant statements says:
- "Sensitivity tests of the impact of road pricing may also be required as part of the analysis of some major highway and other schemes."***
- Unit 3.12.2 specifies the way in which a system should be modelled and appraised.
- 53 The concept of 'locking in' the benefits of new road capacity is confirmed in The Future of Transport (Paragraph 3.10), which says: "We do not want to lose the benefits of this extra capacity, so we have started to consider how best to implement demand management policies". While this statement in this White Paper applies specifically to the Highways Agency's roads programme, it might be expected that the Government would also apply the concept to local authority major highway schemes, such as the Heysham to M6 Link proposal.
- 54 The idea is not to restrict all future growth necessarily, but to control how the capacity may be used. For instance, it may be decided that road capacity is intended to provide fairly permanent improved levels of public transport service as opposed to allowing people to travel further and more often by private vehicles. One effective way of providing this kind of control is through area-wide road user charging. However, for an area such as the Lancaster District, an area-wide road-user charging scheme is some way off in the future.

Concerns Regarding Traffic Flows

- 55 The contention that congested urban roads can sustain traffic reduction after reassignment, for 15 years or more, flies in the face of all recent experience of induced traffic effects. It is futile for LCC to pretend that it can, uniquely, build its way out of congestion. Modelling does not factor in the effects of job creation on the peninsula, and increased opportunities for peninsula residents to access work elsewhere, claimed in the EIR. The latter alone would increase trips across the WCML "screenline" by almost 10,000 per day. These are "generated" not "induced" trips (as defined in SACTRA 1994) in terms of traffic assessment, so should not form part of the induced traffic calculation done by LCC.
- 56 There are inconsistencies between analysis of the preferred route and Low Cost Alternative (LCA). For example, the LCA is said to increase traffic accidents because reassigning traffic would be travelling longer distances, and being partly on faster roads (M6) the severity of accidents would increase. Both these statements apply equally to the Preferred Option but with the additional complication that there would be at least 15% more traffic on the network.
- 57 Halton-with-Aughton Parish Council makes objections across a range of issues related to how various impacts would affect residents at the eastern edge of the scheme. Accuracy of traffic predictions was a particular concern, but LCC merely refers back to original data and insists that the traffic model prevails. This assumes large numbers of vehicles are attracted away from the Halton area, onto the Link Road and M6 via the remodelled Junction 34.
- 58 However, this contravenes the HA objectives of discouraging local commuter traffic. It also becomes a one-way argument, ignoring the increased eastern-bound traffic that will leave the system at Shefferlands roundabout, diverting from the convoluted route across the Lune and through the remodelled junction and proceeding directly through the ancient streets of Halton.

LCC Response to Objections

- 59 LCC Highways response to continuing traffic concerns has now introduced another element to the traffic model used. Paragraph 5.24.2 suggests the lack of reduction in gyratory flow is because traffic using side roads to the east would gravitate back to the system. This includes the statement "significant volumes of rat-running traffic". "Significant" implies that volumes are known but not used, which suggests traffic flow modelling is substantially flawed by omission.
- 60 This new inclusion of an argument not previously presented gives cause for concern. While the principle of addressing the issue is recognised, inclusion of it at this stage suggests that the problem has not included in the parameters of the original traffic modelling. Either, information is available, in which case it has been withheld from public consultation, or it is not, which means that comments made are naive at best, bordering on deliberately misleading.

- 61 Great significance is made of the fact that bus priority measures and park and ride would be part of the additional measures proposed that are linked to the scheme. This is not the case. Both bus priority and park and ride can quite adequately be provided independently of the scheme and are clearly part of the LTP. The possibility that bus priority and park and ride will reduce traffic, thereby freeing the system without the need for a road, is not considered.
- 62 Public access to rail is discussed in Paragraph 5.24.9 of the response, and this recognises that existing stations are poorly connected to significant residential areas. The response fails to promote inclusion of rail as an alternative form of commuter transport, and only discusses the benefits of walking and cycling. Links to stations through current initiatives such as the "Carnforth Connect" project appear tenuous with fluctuating financial support from the LTP.
- 63 Tables attempt to clarify concerns about forecast flows. However, figures and explanations presented merely add to the confusion. Tables insist that 2010 projections should be used in comparisons with and without the scheme. Other tables show flows on some major routes have peaked, but at a level below projections, and cast doubt on the accuracy of the traffic model.
- 64 The confidence placed in the model is not in doubt, with LCC proposing to undertake "sensitivity testing" of projections, especially the "Do Something" 2025 scenario. The effects of predicted job creation have also been omitted, and are quoted to be part of the revision. These seemingly minor changes have dramatic consequences, with generated traffic causing congestion, changing traffic journey times and adversely affecting BCR.
- 65 There is an attempt to trivialise LMVR errors that are evident in the data. By attempting to dismiss certain links as unimportant, there are assumptions about $\frac{2}{3}$ of the errors and dismisses them as insignificant. It then ignores the remaining $\frac{1}{3}$ by suggesting the modelled differences are small. Even though the differences in modelled speeds are less than 5%, this still has significant effects on journey times and the financial calculations dependent on them.

Convoluting Highway Design

- 66 Proposed arrangements at the M6 should not pass unchallenged because it has few equals as a convoluted solution to a motorway junction. This is a significant element in the high scheme cost in excess of £156 million for a 4.8km length of road. The southbound M6 exit to the route, over the river, round a cloverleaf exit, under the motorway, turn right across a major stream of traffic coming out of Lancaster, back across the river, arriving 2.5km later at the roundabout 150m from the motorway, is especially contorted. With a design solution as contrived as this, it is invariably not the best solution.

- 67 Modifications proposed in relation to McDonalds' concerns are considered alongside reported comments from residents in the Hadrian Road area. These are suggested as being resolved by the single act of redesigning the access point for those residents and including the business entrance point together with it. This configuration produces three sets of traffic lights, all within close proximity to each other, creating a stop / start flow for the major thoroughfare to and from the port and commercial areas. This adversely affects individual cost benefits calculated for traffic, small on an individual scale, but with significant adverse impacts on economic justification when taken as a whole.
- 68 Accumulative minor responses and modifications ultimately have a "ripple effect" which then produces dramatic economic consequences. Changes to McDonalds' entrance route will adversely change their customers' views on accessibility to purchase. Substantial disruption to main traffic flows by 3 sets of traffic lights will dramatically increase congestion and compromise journey times between that point and the M6. The whole process of economic justification must be recalculated in order to have any acceptability.
- 69 Proposed acquisition of buildings and land is now being extended to include Woodend and Cottams / Croskells Farm, together with land holdings outside the Planning Application boundary. This exceeds the original land acquisition indication and will have additional consequences in relation to land purchase costs. The "ripple effect" of this, and other modifications, is not taken into account, especially for effects on BCR, VfM and other scheme justifications.
- 70 Design at J34 is a convoluted solution that can have few equals, with the exception of Spaghetti Junction further down the M6. The contrived design, especially the southbound exit, produces contorted flows that proceed in a strange manner through T-junctions, traffic lights and roundabouts. This has consequences on calculations of time saved for traffic using the scheme. Time saved (and any subsequent cost calculations) has been measured only between the start point at Heysham Port or White Lund and the perceived end point at the Caton Road junction once over the bridge. Time lost because of the extended exit route for traffic suggests that cost benefits are optimistic.
- 71 Concerns were expressed about the impact of McDonalds' traffic flow on the amenity of local residents, particularly the way it affected access to Hadrian Road. The response suggests redesign of the access with vehicular free flow to McDonalds drive-through restaurant, making residential access subservient to restaurant customers' right of way, failing to address residents' concerns. This is compounded by suggestions about access to Morecambe Road School.
- 72 LCC continues to put forward a solution to change access from Morecambe Road and turn it 90 degrees to link with the McDonalds / Hadrian Road controlled junction. This proposal had been dismissed as inappropriate when put to the school previously by LCC Property Services. No further solutions have been identified in this response document and LCC continues to present the school with serious access issues because of the scheme.

- 73 Traffic congestion is caused by mixing school traffic, residential traffic and McDonalds traffic into one stream before bringing it to a single controlled junction point. This has significant impacts on the A683. Substantially busier local traffic will mix with increased flows attempting to access the link road. Previous modelling will be in error, requiring complete review of the data. LCC do not address concerns over the extreme size of Beaumont Junction / A6 configuration. Section 5.6.5 of the response says that a priority junction is insufficient given predicted traffic flows. This is confusing when considered against changes at the new junction by McDonalds, going from a roundabout to controlled junction even though flows exceed those at the A6 intersection.
- 74 LCC, as scheme promoter, makes much of the fact that Green Lane bridge must be on a skew in order to generate the best option. TSLM do not support the construction in any way, but recognise this to be an inefficient design option. Moving the northern skew to the east rather than the west of Green Lane, it is possible to present the lane at a 90 degree angle to the Link Road, making greater use of the existing topography and needs a shorter bridge crossing.
- 75 The southern return to the original lane uses the design area set aside for the cycle link, but allows a cycle link to be formed at the direct intersection of the lane. LCC justifies the skew on grounds of vehicle speed. No evidence is presented that vehicle speed problems exist on Green Lane, which is rather obvious given that it is an un-surfaced right of way. The need for a "skewed" bridge is unfounded and would appear to be cost based.
- 76 Response to concerns over possible alternative designs was answered with the comment that Kellet Lane is a fairly important highway where bridge design would not have to "detrimentally affect the existing alignment of this highway". This approach is inconsistent, with the A6 being substantially amended, both in alignment and height, despite being a major highway rather than noted as only "fairly important".
- 77 Many design elements, that adversely affect overall cost and viability of the scheme, are dismissed offhand. LCC comment says they are being "ascertained with a Consultant Contractor who would be brought on board at the detailed design stage". TSLM contend that such detailed consultation should have taken place before the scheme was ever put to consultation, not left until almost past the Planning Application stage.
- 78 Shefferlands roundabout cross sections have been provided in response to Development Control's comments on lack of appropriate information and detail over structures. This highlights that the intersection will be low-lying in relation to the surrounding topography, consequently acting as a sump for rainwater runoff. Figure 5.9.1 gives the plan showing the two cross sections given and also includes a new SUDS pond not previously included.

- 79 It leads to significant concerns over the drainage proposals for this area. In a location so close to the River Lune, there is insufficient explanation for any mitigation of potentially polluted run-off from what is a singular pond with no overspill capacity. The relatively small size and shallow depth shown on the cross section suggest that substantial further investigation is needed to clarify impacts. EA will no doubt need to be consulted.
- 80 In response to development Control and English Heritage concerns Figure 4.3.6.2 shows the more detailed proposals relating to Shefferlands Retaining Wall. Amendments to the facing treatments for the structures are duly noted, both to Shefferlands and Foundry Lane Retaining Walls, but they still lack any attempt to quantify the economic impact of these changes.
- 81 Shefferlands Retaining Wall will be an imposing structure some 230m long and up to 9.5m high. Concrete wall footings will intrude a considerable depth below road surface level. Hydro-geological changes and the implications to run-off and groundwater are not considered, even though the eventual sump in this area will be Shefferlands roundabout, with no SUDS pond.
- 82 M6 Junction 34 could indeed be modified to improve safety of access and exit without major cost implications. Improvements might be achieved by simple changes to signing and road marking. Using the outer 2 of 3 lanes for through traffic releases the inner lane to be cordoned for exit and access, very much in the way of J32 of the M6. This effectively separates J34 traffic on inclines until appropriate vehicle speeds allow the safe merging of traffic.
- 83 Paragraph 5.11.3 of the response again shows that there will be significant induced traffic by the proposed Link Road, contrary to existing Government transport objectives. Failure to consider a range of design possibilities for the junction, even ones such as described above, shows an inadequate approach to consultation. It supports the perception that LCC Highways will pursue a desired road-based design at all costs and to the exclusion of all alternatives.
- 84 The A683 farm access road adjacent to J34 southern access requires an extra 500m of road not previously accounted for. Costing for additional construction, safety barriers, headlight deflectors and protective fencing is not presented. Sheet 2 of drawing WD300, which shows the long section of access road with alignments, is missing from both the paper and digital versions of the report.

Government Policy

- 85 Implications of Government policy for developing solutions to traffic problems are that potential solutions should be considered in the following order:
- reduce the number of motorised journeys, especially by car
 - increase use of car alternatives, including public transport improvements
 - make best use of the available road capacity; and, as a last resort,
 - infrastructure schemes to provide new road capacity

- 86 Planning Policy Statement No 1 (PPS1): Delivering Sustainable Development, published by the Office of the Deputy Prime Minister in 2005 is a source of the idea of generally "**reducing the need to travel**", as following quotations show.
- 87 Paragraph 13 (ii) of PPS1 under "Key Principles" says:
"Regional planning bodies and local planning authorities should ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change – through policies which reduce energy use, reduce emissions (for example, by encouraging patterns of development which reduce the need to travel by private car, or reduce the impact of moving freight), promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development".
- 88 Paragraph 23 (vii) of PPS1 under "Sustainable Economic Development" says:
"Ensure the provision of sufficient, good quality, new homes (including an appropriate mix of housing and adequate levels of affordable housing) in suitable locations, whether through new development or the conversion of existing buildings. The aim should be to ensure that everyone has the opportunity of a decent home, in locations that reduce the need to travel".
- 89 Paragraph 27 (v) and (vii) of PPS1 under "Delivering Sustainable Development" introduces the idea of promoting the use of alternatives to the car, as well as reinforcing the idea of reducing the need to travel. It says:
"(v) Provide improved access for all to jobs, health, education, shops, leisure and community facilities, open space, sport and recreation, by ensuring that new development is located where everyone can access services or facilities on foot, bicycle or public transport rather than having to rely on access by car, while recognising that this may be more difficult in rural areas".
- 90 **"(vii) Reduce the need to travel and encourage accessible public transport provision to secure more sustainable patterns of transport development. Planning should actively manage patterns of urban growth to make the fullest use of public transport and focus development in existing centres and near to major public transport interchanges"**.
- 91 Planning Policy Guidance Note 13 (PPG13): Transport, published in March 2001 also has advice about the need to reduce travel. Paragraphs 3 and 4 say:
"Land use planning has a key role in delivering the Governments integrated transport strategy. By shaping the pattern of development and influencing the location, scale, density, design and mix of land uses, planning can help to reduce the need to travel, reduce the length of journeys and make it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling. Consistent application of these planning policies will help to reduce some of the need for car journeys (by reducing the physical separation of key land uses) and enable people to make sustainable transport choices".

- 92 **"These policies are therefore part of the Governments overall approach to addressing the needs of motorists, other road and public transport users, and business by reducing congestion and pollution and achieving better access to development and facilities. They will also help to promote sustainable distribution. In this way, planning policies can increase the effectiveness of other transport policies and help maximise the contribution of transport to improving our quality of life."**
- 93 The objectives of this guidance are to integrate planning and transport at the national, regional, strategic and local level to:
- **Promote more sustainable transport choices for both people and for moving freight;**
 - **Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and**
 - **Reduce the need to travel, especially by car.**
- 94 These quotations from current Government policy documents support the idea that reducing the need to travel by car and promoting the use of alternatives to the car should be considered before additional road capacity is considered. That traffic management should be considered before new infrastructure is supported by Paragraph 3.123 in A New Deal for Transport: Better for Everyone, published by the DETR in July 1998. This says: "**The days of 'predict and provide' are over – we will give top priority to improving the maintenance and management of existing roads before building new ones.**"
- 95 The proposition that new road building should be a measure of last resort is supported by the Guidance on the Methodology for Multi-Modal Studies (GOMMMS) which was prepared by the DETR to guide the conduct of the programme of Multi-Modal and Roads-Based Studies initiated following the review of the trunk road and motorway programme in 1998 (A New Deal for Trunk Roads in England, DETR, July 1998).
- 96 The relevant paragraph is 1.1.7, which says:
"In seeking solutions to the problems to be addressed in the study, the contributions of all modes should be considered, including walking, cycling, air transport, shipping and pipelines, as well as roads, railways, buses and other forms of public transport. Solutions may also relate to non-transport policies, for example land-use, health and education. Although the genesis of the initial programme of Studies lies with problems on the trunk road network, the focus of the Studies will not primarily be on ways of providing additional road capacity".

97 Paragraph 74 of PPG13 links the idea of providing better public transport with reducing the need to travel by car. It says:

“In preparing their development plans and determining planning applications, local authorities, in conjunction with work on the local transport plan, should:

- 1. Identify the key routes for bus improvements and priority measures, and the measures that will be taken;***
- 2. Ensure, so far as is practicable, that traffic management measures do not impede the effectiveness of public transport services;***
- 3. Explore the potential, and identify any proposals, for improving rail travel, in liaison with the SRA, including the reopening of rail lines, or creation of new stations on existing rail lines, light rail or guided bus routes;***
- 4. Identify the potential for improved interchange between different transport services and between public transport and walking and cycling;***
- 5. Negotiate for improvements to public transport as part of development proposals, in order to reduce the need to travel by car and the level of parking at such sites, and;***
- 6. Work with transport operators and other organisations to improve personal security across the whole journey.”***

98 The implications of this paragraph are that the provision of additional road capacity is, in principle, a legitimate outcome, but only providing that other non-road building options have been considered first.

**Michael Porter
BSc (Hons), AIEMA.
7 Holbeck Avenue
Torrisholme
Morecambe
LA4 6NP**

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