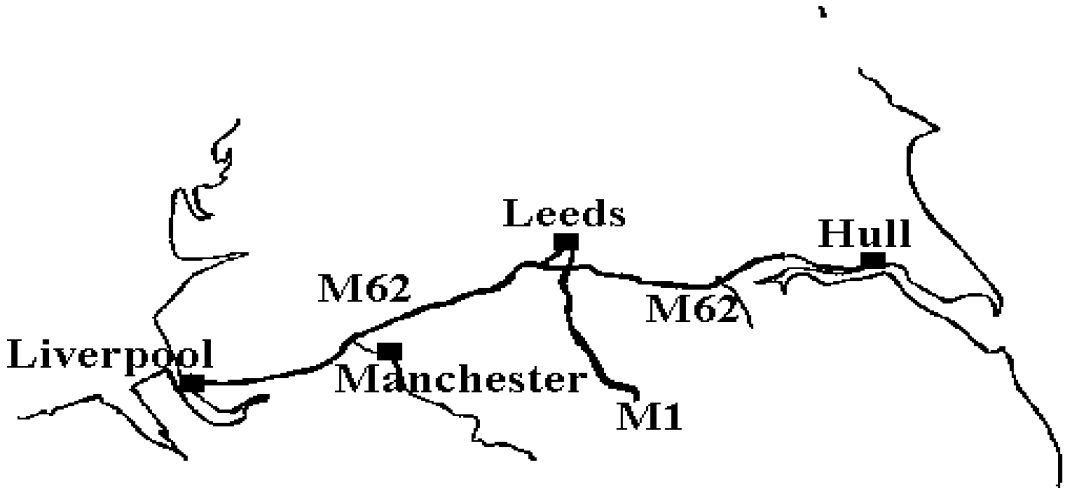
ANNEX B

CASE STUDY: M62 MOTORWAY



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1 INTRODUCTION

1.1 The project

1:01 The M62 Motorway extends 107 miles (approximately 175Km) across Northern England from Liverpool on the west coast nearly to Hull on the east coast. The first two-mile section was opened in 1966, and the final section in 1976. The key section over the Pennines providing the first motorway-standard link between Lancashire and Yorkshire opened in 1971. The detailed chronology of the different sections is given in Judge (1983) Table 4.1.

1.2 Relationship to other projects

1:02 The M62 was planned as a key part of the UK inter-regional motorway network. However, it also serves as an urban motorway within the West Yorkshire conurbation and, to an even greater degree, within the Greater Manchester conurbation, where it forms the northern side of the soon-to-be-completed Manchester Motorway Box.

1:03 The eastern extremity of the M62 runs along the north bank of the Humber. The relationship (or lack of it) between this and the Humber Bridge is noted in the Case Study on the Humber Bridge.

1.3 Available studies

1:04 Analyses of the impact of the M62 have been carried out mainly by a number of academic researchers, all of them from institutions within the M62 corridor. The most widely referenced is that by Dodgson (1974). Although this is often quoted as an ex post study, it was largely completed in 1972, before the motorway itself, and Dodgson's model-based analysis made no use of post-motorway survey data.

1:05 A true ex post study, making use of before-and-after data (mainly on traffic flows) was carried out by Gwilliam and Judge (1978). Our review is based largely on the version of that material published as Judge (1983). This makes reference to two detailed studies on firms in particular areas (Chymera, 1976, and Thornton, 1978).

1:06 Finally, Cambridge Economic Consultants' (1987) review for the Department of Transport made use of these sources and made their own estimates of impacts, using broadly the same method as for the Severn Bridge/M4 but without carrying out a "full case study" (p273).

2 PURPOSE, CONTEXT, FUNDING AND TIMING

2.1 History and purpose

2.01 The aims of the M62 were

- to provide an all-weather route across the Pennines linking the conurbations of West Yorkshire and South-East Lancashire, and
- by extensions to the west coast at Liverpool and the east coast at Hull, to link all three conurbations and Humberside to each other and to major west and east coast ports (Dodgson, 1974, p75).

2.2 Cost and funding

2:07 The motorway was funded by central government as part of the national roads programme. Use of the motorway has always been free, though the possibility of charging tolls on this and other motorways has been discussed and studied in recent years.

2:08 CEC (1987) estimated that the capital cost of the motorway was "of the order of £412 million at 1985 prices" (p275).

3 TRANSPORT AND ACCESSIBILITY EFFECTS

3.1 Travel time and costs

3.01 Judge's paper (p66) includes a table of journey time changes for selected zone pairs, obtained from an unspecified computer model. Not surprisingly, the greatest time savings are for Liverpool-Hull journeys which benefit from the whole length of the motorway. The calculated time for this 129 mile trip fell from 233 minutes on the 1970 network to 189 minutes on the 1973 network (and presumably fell further when the remaining sections of the motorway were completed in the following years). However, similar absolute time savings are reported for a number of shorter journeys, and suggest that much of the time saving came from the higher motorway speeds in the urban areas, particularly around Manchester.

3.02 We have no particular information on cost effects, though it should be noted that savings would relate to the avoidance of slow and congested urban roads in the conurbations and of slow and hilly rural roads across the Pennines.

3.2 Accessibility

3.03 Dodgson calculated an indicator of the saving in the average cost of transporting a one-hundredweight (approx 50Kg) consignment of a neutral commodity to the destinations likely to be served from each origin. The effect of the M62 (shown in Dodgson, 1974, Table 3, p 87) was to reduce this indicator by a small percentage.

The greatest reductions were around 3.5% for towns close to the Pennines and to the mid-point of the M62.

3.3 Traffic

3.01 Judge (pp69-72) includes results from screenline traffic counts on trans-Pennine roads from 1970 to 1977. These are summarised here as Table 1.

	1970	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**
Northern routes	168.9	173.0	176.3	163.7	161.7	164.2	161.9	158.9
M62	**0.0**	**43.1**	**174.0**	**179.4**	**195.6**	**285.8**	**286.2**	**286.7**
Other Central routes	205.7	172.6	112.8	100.8	121.3	102.9	102.9	106.2
Southern routes	69.6	70.0	55.1	50.3	49.5	42.3	48.6	44.6
Total, all routes	**444.2**	**458.7**	**518.2**	**494.2**	**528.1**	**594.2**	**599.6**	**596.4**
All routes excluding M62	444.2	415.6	344.2	314.8	332.5	308.4	312.9	309.7

Table 1 Trans-Pennine screenline weekly flows 1970-77

Source: from Judge (1983), Table 4.3 (p71)
Unit: Two-way automatic counts (axles/2)
NB "Northern routes" are from West Yorkshire to Central Lancashire and points further north-west; Central Routes are from West Yorkshire to Greater Manchester; Southern Routes are from South Yorkshire to Greater Manchester.

3.02 The total line shows that over the seven-year period, Trans-Pennine traffic grew by 28%. Judge quotes figures from the Department of Transport's Rural Roads Traffic Index which showed a 25% growth over the same period. This suggests either

- that the M62 had a fairly small effect on traffic generation and distribution, or
- that the Index reflected substantial generation and redistribution (to longer journeys) as a result of motorway and other main road building throughout the country.

3.03 Further analysis would be needed to establish which of these was the case. However, Judge quotes results from interview surveys on the screenline in 1970 and 1973 (p72) which showed that

- average journey time fell only marginally, from 86.9 minutes to 85.1 minutes, whilst
- average journey distance increased from 46.6 miles to 61.6 miles.

3.04 These figures tend to suggest a very significant generation or redistribution effect.

3.05 Judge and Gwilliam estimated traffic models based on the partial matrices obtained from the Pennine screenline, and attempted to use these to disaggregate post-opening traffic changes into diverted and generated effects. Their intention

was apparently to deduce land-use or economic impacts from the traffic generation effects. Not surprisingly, given that they had data only for the cross-screenline traffic, their analysis was inconclusive, though it tended to suggest that any development effects were small (see CEC, p287).

4 ECONOMIC AND EMPLOYMENT IMPACTS

4.1 Direct effects

4.06 CEC (1987, pp 275-6) estimated the direct employment generation effect from the construction of the motorway as 18000 person years of employment over the 10-year period.

4.07 They also estimated that the annual maintenance of the M62 generated about 127 net additional jobs, after allowing for displacement of traffic and hence of maintenance from other local roads.

4.2 Short-term induced impacts

4.04 Dodgson used a model to estimate the "absolute maximum" impacts of the M62 over a five-year period, for each of 30 areas[1]. The total effect is quoted (p88) as approximately +2900 jobs per year over 5 years, or +14500 jobs in total. This would amount to an increase of 0.4% over the base total employment population of 3400000. Comparison of Dodgson's Table 3 and Appendix 1 (summarised in our Table 2) suggests that his local forecasts show largest absolute increases in the main urban centres – Liverpool, Manchester, Bradford and Leeds – but slightly larger percentage increases in smaller towns even closer to the mid-point of the M62, such as Huddersfield.

4.05 Limited empirical evidence was obtained by Chymera (1976) and Thornton (1978). According to the summaries in Judge (pp67-68), Chymera studied the experience of the Euroway Industrial Estate in Bradford, adjoining the M606 which links Bradford to the M62 proper. This was intended to accommodate businesses to employ some 2500 people. By 1976 it had attracted some 20 firms but total employment of only about 300 people, mostly in retailing and warehousing. Thornton looked at new firms located in the Bradford area over the period 1973-77. Only five firms were identified, whose reasons for location were mainly to do with labour factors rather than with transport. Indigenous firms which had expanded were also surveyed; they reported that transport was generally a minor factor in their decisions.

4.3 Longer term effects

4.08 CEC considered longer-term induced effects in several categories.

[1] Somewhat curiously, Dodgson's zones extended as far north as Carlisle but not as far east as Hull.

4.09 For indigenous manufacturing industry, they applied the same cost-elasticity based approach as in South Wales, with different assumptions as to the scale of cost reduction, giving an estimate of +3670 additional jobs due to cost savings and resulting increases on competitiveness.

4.10 For industrial relocation, they drew on survey results to estimate the significance of the motorway network as an influence on relocation, and applied this to known data on the number of firms moving into the regions in question. This gave a result of about 1500 newly located manufacturing jobs attracted by the M62 over 10 years.

Area	Access costs (new pence)			Total 1961 employment (,000s)	Possible employment increase due to the M62 (5-year period)	% change in employ-ment
	Pre-M62	Post-M62	% change			
Leeds	97.5	95.0	-2.56	287	1380	0.5
Bradford	97.5	94.0	-3.59	238	1520	0.6
Wakefield	96.5	94.5	-2.07	63	250	0.4
Halifax	96.5	94.0	-2.59	86	480	0.6
Huddersfield	96.0	92.5	-3.65	101	650	0.6
Dewsbury	97.0	94.0	-3.09	87	560	0.6
Five Towns	99.0	96.5	-2.53	56	270	0.5
Barnsley	96.5	96.5	0	114	0	0
Sheffield	96.0	96.0	0	355	0	0
Doncaster	98.5	98.5	0	128	0	0
Stockport	94.0	92.5	-1.60	83	200	0.2
Ashton	94.0	91.5	-2.66	82	330	0.4
Oldham	94.0	91.5	-2.66	124	490	0.4
Rochdale	95.0	92.0	-3.16	64	360	0.6
Manchester	92.0	90.5	-1.63	680	2180	0.3
Bury	94.5	92.5	-2.12	54	220	0.4
Bolton	95.0	93.5	-1.58	118	380	0.3
Leigh	96.0	94.0	-2.08	68	270	0.4
Wigan	96.5	94.0	-2.59	73	350	0.5
Warrington	95.5	93.0	-2.62	78	370	0.5
Blackburn	99.0	99.0	0	115	0	0
Burnley	99.0	99.0	0	118	0	0
Preston	100.0	99.0	-1.00	143	230	0.2
Blackpool	106.5	106.0	-0.47	93	150	0.2
Barrow	119.0	119.0	0	43	0	0
Lancaster	106.5	106.5	0	47	0	0
Liverpool	97.5	95.0	-2.56	671	3220	0.5
Birkenhead	98.0	96.0	-2.04	116	460	0.4
Workington	121.5	121.5	0	62	0	0
Carlisle	116.5	116.5	0	63	0	0

Table 2 The impact of the M62 on access costs and employment growth

Source: Dodgson (1974), Table 3 (p 87) and Appendix I (pp 90-91)

4.11 CEC found no evidence that the M62 had encouraged development in either the wholesale or retail distribution. They therefore arrived at a total of just over 5000 jobs directly generated or induced, which was then almost doubled by application of multipliers and other long-term consequential effects (see Table 3).

	Number of jobs
Employment generated by maintenance (gross)	190
Displacement from rest of road network	63
Net additional jobs	127
Impact on indigenous manufacturing firms	3670
Impact on location of new manufacturing firms	1500
Sub-total	5297
Total after application of	
Short term regional income multiplier (1.35)	7151
Longer term impact on employment in house-building, public services and infrastructure	2860
Grand Total	**10011**

Table 3 Summary of employment impact of M62 on the North West and Yorkshire and Humberside regions

Source: CEC

4.12 CEC's note included as an Appendix "a summary of previous work on the impact of the M62 motorway". This describes the Dodgson study as "...relevant despite its concentration on a mainly theoretical evaluation", but does not comment on the comparison between the two sets of results. It seems only fair to add that parts of CEC's analysis are just as "theoretical" as Dodgson's, if not more so.

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