

Appendix 3A
Traffic Assessment (July 2004)

HEYSHAM/M6 LINK – TRAFFIC ASSESSMENT (JULY 2004)

A traffic model for the morning peak (0700 – 1000) period has been developed, based largely on roadside interview surveys and traffic counts undertaken in the autumn of 2001.

Independent data has been used to achieve satisfactory base year (2001) validation of the trip matrix, assigned traffic flows and modelled journey times across the network of routes likely to be affected by the highway scheme proposals.

The method of computerised traffic assignment was based on the TRIPS suite of highway modelling programs and used the volume-averaging capacity restraint procedure on an all-or-nothing basis. For all-purpose links an overall generalised cost formulation of 'time + 0.29*distance' was assumed, whereas for motorway links the cost was assumed as 'time only'.

The base model output comprised hourly morning peak flows for October 2001. These were adjusted to daily (AADF) level by means of a local conversion factor, derived from continuous automatic traffic counts located across the study area. Growth from 2001 to the scheme opening year of 2010 was achieved through use of the Department for Transport's TEMPRO program to produce localised low growth factors. On application to the base matrix the overall trip end growth was 11.4%. (A low traffic and economic growth scenario was assumed to be the most appropriate reflection of the future Do Minimum (non-scheme) situation. By comparison the National Road Traffic Forecasts (NRTF) gives an equivalent general figure of 12.1%. However, for the Western and Northern Route Do Something situations the incorporation of a fully-developed site at Luneside West (see below) leads to a much higher overall trip end growth of 14.8%. This result is close to the equivalent general NRTF central estimate of 15.5%).

Opening year (2010) traffic forecasts have been undertaken for each of the Do Minimum, Western Route and Northern Route options (see attached spreadsheet and diagrams). In all cases the forecasts assume full development of: the Lancaster Business Park (at Cottam's Farm); Luneside East mixed-use site; housing areas at Royal Albert East, Lancaster Moor,

former Pye Feedmill, Mossgate and Pontins. Complete regeneration of the Luneside West development area is assumed integral to each of the Western Route and Northern Route options. Also, for both of these options, allowance is made for additional traffic that would be induced by the new highway scheme. In the case of the Western Route traffic calming measures are assumed to be in place on both B5273 Ovangle Road and the A6 through Galgate.

Do Minimum (no scheme)

The heaviest flows for this option are to be found on the M6 east of Lancaster. The next busiest areas of the network are the radial routes leading to and from the City Centre, together with the City Centre gyratory system. Significant flows are also evident on the A683 through White Lund and on the A6/A5105/A589 Coastal Route between Carnforth and Morecambe.

Forecast opening year (2010) flows on the M6, east of Lancaster, are 65,800 vehicles per day (vpd) south of Junction 34 and 58,300 vpd north of Junction 34.

For the existing route between M6 (Junction 34) and White Lund forecast flows (vpd) are as follows:

A683 Caton Road - 26,200;

A6 Skerton and Greyhound Bridges (combined) – 45,000;

A683 Morecambe Road – 29,200;

A683 north of Northgate – 14,400;

A683 south of Northgate – 5,500.

On the A6, between M6 Junction 33 and Carnforth, the predicted flows (vpd) are:

At Galgate – 18,100;

At the University – 17,400;

At Scotforth – 24,400;

City Centre Gyratory (one-way northbound on King Street) – 19,300;

North of Skerton – 6,200;

At Bolton-le-Sands – 22,900;

At Carnforth – 18,400.

On A588 Ashton Road, at The Greaves, the forecast flow is 9,600 vpd. On B5321 Torrisholme Road - which runs parallel to A683 Morecambe Road – the prediction is 8,700 vpd. On B5273 Ovangle Road – which parallels A683 at Northgate – the forecast flow is 19,500 vpd. On A589 Morecambe Road, west of A683, the predicted flow is 20,700 vpd. For the A5105 (Coastal Road) the forecast flow is 16,800 vpd and on A589 Marine Road East, Morecambe, the prediction is 11,900 vpd. Between Morecambe and Heysham – on A589 Heysham Road – the forecast flow is 9,400 vpd. On B5273 Oxcliffe Road, east of A589, a flow of 7,900 vpd is forecast.

Western Route plus Luneside West

On the main scheme links assumed as wide single carriageway forecast opening year (2010) flows are 23,000 vpd (between A6 and A588) and 27,000 vpd (between A588 and Luneside West). It should be noted that the recommended economic flow range for a wide single carriageway road, as set out in the Design Manual for Roads and Bridges (DMRB), is 6,000 – 21,000 vpd. These forecasts, therefore, are significantly above the advised upper limit. On the link between Luneside West and A683 (across the River Lune), assumed as dual 2-lane all-purpose carriageway with a 60 mph speed limit, the forecast is 34,500 vpd. This is within the recommended economic flow range of 11,000 – 39,000 vpd. Total traffic to and from the (assumed fully developed) Luneside West site is 13,000 vpd. It should also be noted that induced traffic adds up to 1,700 vpd and effects a 6.7% increase between A588 and Luneside West.

On the existing network forecast flows are detailed where the change from Do Minimum is greater than 10%.

On M6, between Junctions 33 and 34, the forecast is 57,000 vpd (13% reduction).

For the existing route between M6 (Junction 34) and White Lund forecast flows (vpd) are as follows:

A683 Caton Road – 23,200 (11% reduction);

A6 Skerton and Greyhound Bridges (combined) – 30,700 (32% reduction);

A683 Morecambe Road – 23,000 (20% reduction);

A683 north of Northgate – 24,400 (69% increase);

A683 south of Northgate – 24,100 (338% increase).

On the A6, between M6 Junction 33 and Carnforth, significant change is afforded at the following locations, resulting in forecast flows as detailed:

At Galgate – 9,400 vpd (48% reduction);

At the University – 7,200 vpd (59% reduction);

At Scotforth – 21,800 vpd (11% reduction);

City Centre Gyratory (one-way northbound) – 13,500 vpd (30% reduction);

North of Skerton – 7,000 vpd (13% increase).

On A588 Ashton Road the forecast flow is 7,700 vpd, a reduction of 20%, and on B5321 Torrisholme Road the forecast flow is 4,600 vpd, a reduction of 47%. On B5273 Overage Road the forecast flow is 15,700 vpd, a reduction of 19%, and on A589 Morecambe Road the forecast flow is 27,900 vpd, an increase of 35%.

Northern Route plus Luneside West

The forecast opening year (2010) flow between A683 and A6 is 39,500 vpd, and between A6 and M6 it is 34,900 vpd. The recommended economic flow range for a dual 2-lane all-purpose carriageway road, as set out in the DMRB, is 11,000 – 39,000 vpd. These forecasts, therefore, are respectively just above and below the advised upper limit. Again, total traffic to and from the Luneside West site is 13,000 vpd. In this case induced traffic adds up to 1,600 vpd and effects a 4.8% increase between A6 and M6.

On the existing network forecast flows are again detailed where the change from Do Minimum is greater than 10%.

On M6, between Junctions 34 and 35, the forecast is 71,500 vpd (23% increase).

For the existing route between M6 (Junction 34) and White Lund forecast flows (vpd) are as follows:

A683 Caton Road – 19,900 (24% reduction);

A6 Skerton and Greyhound Bridges (combined) – 33,200 (26% reduction);

A683 Morecambe Road – 26,000 (11% reduction);

A683 north of Northgate – 26,100 (81% increase);

A683 south of Northgate – 15,100 (175% increase).

On the A6, between M6 Junction 33 and Carnforth, significant relief is afforded at the following locations, resulting in forecast flows as detailed:

At the University – 15,000 vpd (14% reduction);

At Scotforth – 20,100 vpd (18% reduction);

City Centre Gyratory (one-way northbound) – 16,400 vpd (15% reduction);

At Bolton-le-Sands – 12,400 vpd (46% reduction);

At Carnforth – 7,700 vpd (58% reduction).

For A588 Ashton Road the forecast flow is 8,400 vpd, a reduction of 13%. On B5321 Torrisholme Road the forecast flow is 3,300 vpd, a reduction of 62%, and on A5105 Coastal Road the forecast flow is 4,600 vpd, a reduction of 73%. On A589 Morecambe Road the forecast flow is 29,100 vpd, an increase of 41%. On A589 Marine Road East, in Morecambe, the forecast flow is 8,100 vpd, a reduction of 32%, and on A589 Heysham Road the forecast flow is 6,100 vpd, a reduction of 35%. For B5273 Oxcliffe Road the forecast flow is 10,800 vpd, an increase of 37%.

Comparisons between the Western and Northern Routes

The Western Route relieves the A6 Skerton and Greyhound Bridges of more traffic (14,300 vpd) than the Northern Route (11,800 vpd). On the A6 City Centre Gyratory (one-way northbound on King Street) it provides twice (5,800 vpd) the amount of relief that the Northern Route can offer (2,900 vpd).

Between Lancaster and Morecambe, in the A683 Morecambe Road/B5321 Torrisholme Road corridor, the Western Route removes more traffic – 10,000 vpd as opposed to 8,600 vpd. And on A589 Morecambe Road the Northern Route attracts slightly more traffic (8,400 vpd) than the Western Route (7,200 vpd).

At White Lund, in the A683 /B5273 Ovangle Road corridor immediately south of Morecambe Road, the Western Route attracts 6,200 vpd, which is much less than the additional 12,100 vpd that results with the Northern Route in place. However, on the A683 south of Northgate, the Western Route attracts 18,600 vpd – nearly twice the 9,600 vpd that is attracted by the Northern Route.

For the A6 at Galgate there is no significant relief with the Northern Route, whereas the Western Route reduces flows by 8,700 vpd. Similarly, at the University, the Northern Route removes 2,400 vpd whilst the Western Route provides a reduction of 10,200 vpd. At both Bolton-le-Sands and Carnforth, however, this position is reversed: the Western Route provides only slight relief but the Northern Route gives, respectively, reductions of 10,500 vpd and 10,700 vpd. This is continued on A 5105 Coastal Road with the Northern Route removing some 12,200 vpd compared to no significant change with the Western Route.

In Morecambe, on A589 Marine Road East, the Northern Route reduces flows by 3,800 vpd whereas the Western Route affords only slight relief. The pattern is repeated further south on A589 Heysham Road, with the Northern Route removing 3,300 vpd whilst there is no significant reduction with the Western Route. However, on B5273 Oxcliffe Road there is an

increase of 2,900 vpd with the Northern Route, compared to a very slight increase with the Western Route.

For M6 south of Junction 34 the schemes again have opposite effects – the Western Route removes 8,800 vpd whilst the Northern Route adds 6,600 vpd.

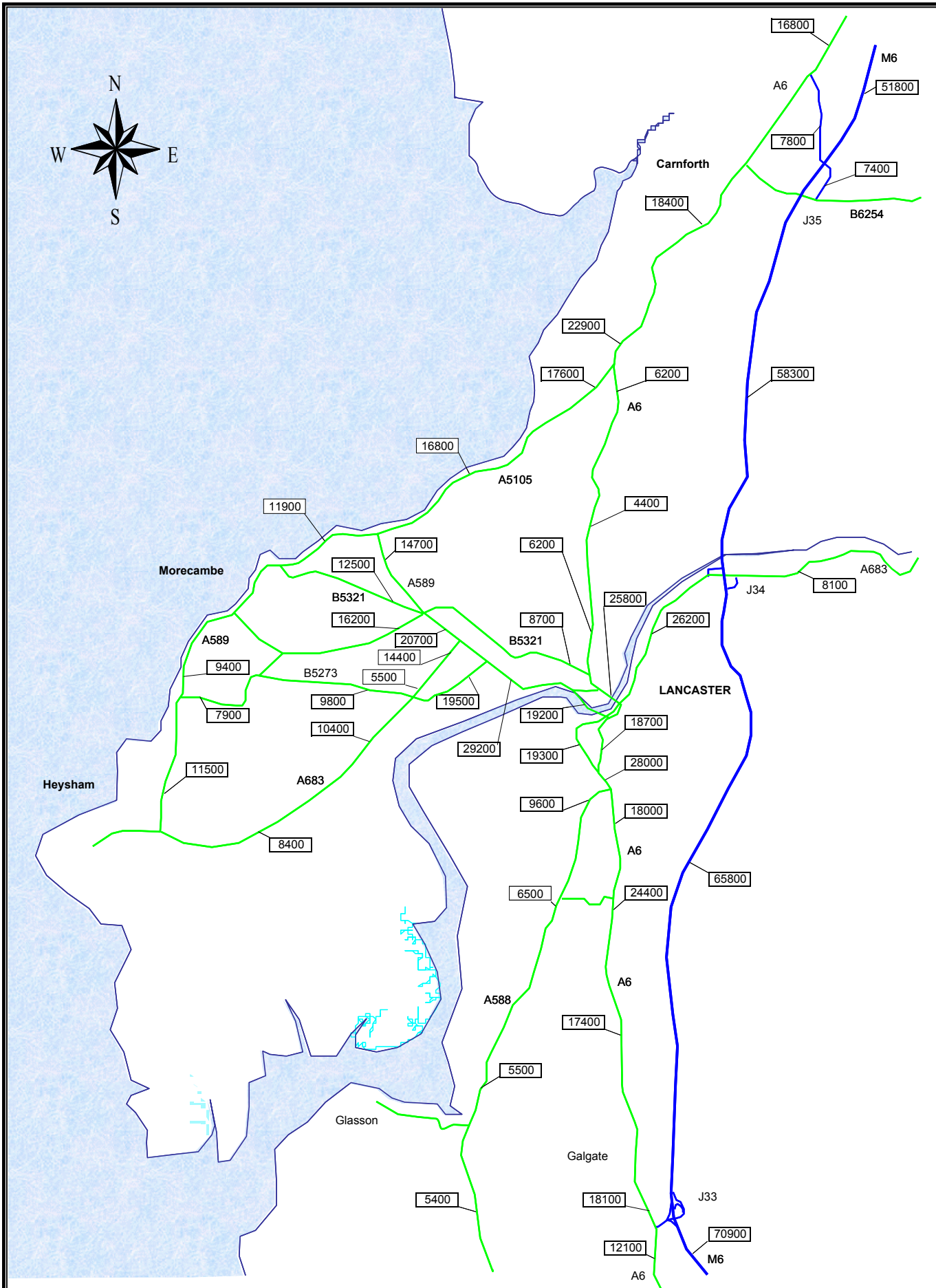
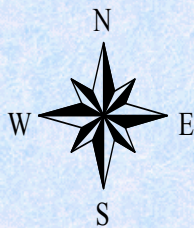
On M6 north of Junction 34 the effect of the Northern Route is to add 13,200 vpd whilst a much more modest increase, of 1,800 vpd, results with the Western Route.

On A683 Caton Road the Northern Route (6,300 vpd) affords more than double the relief of the Western Route (3,000 vpd).

(NJC 15/7/04)

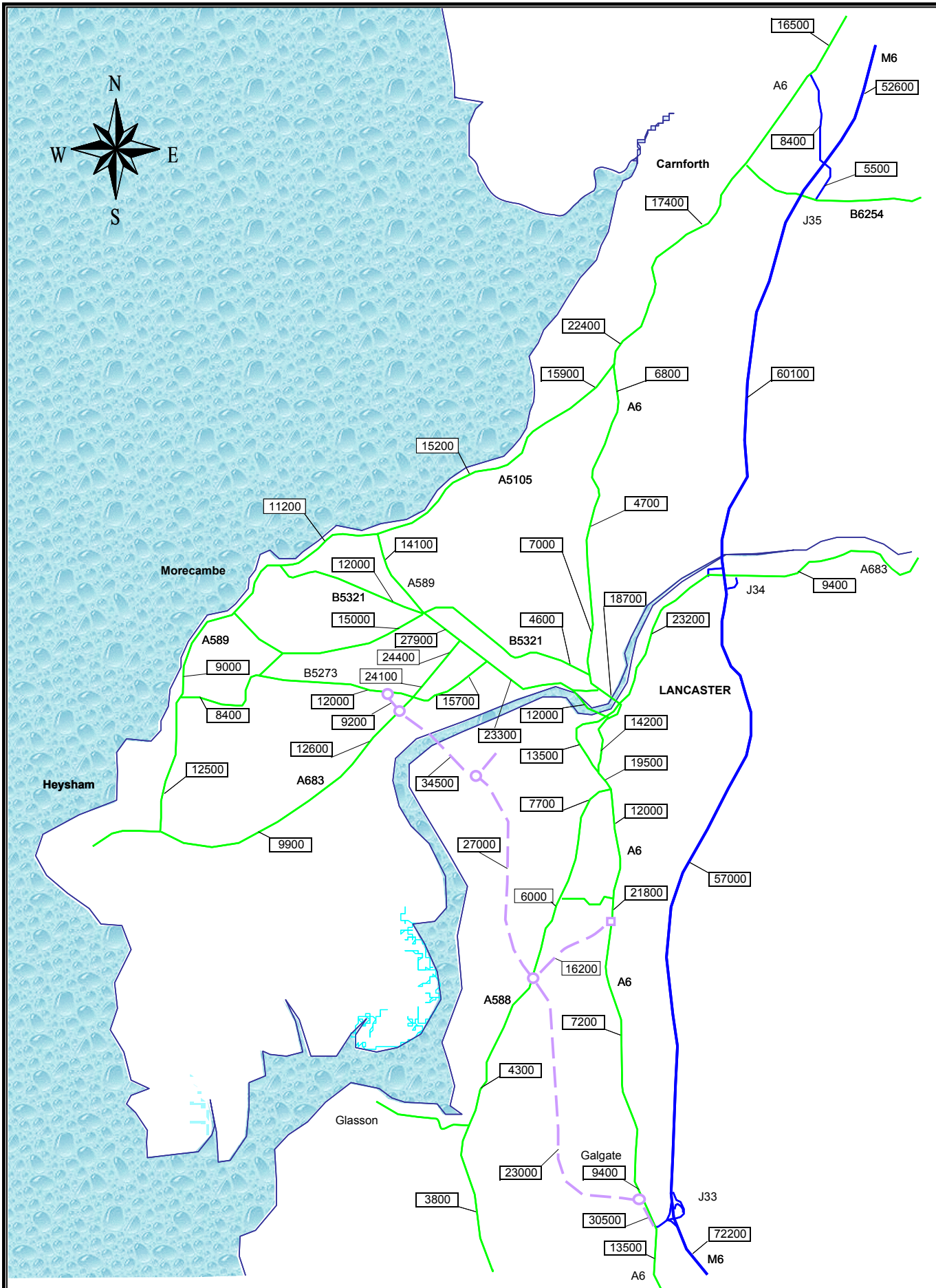
HEYSHAM TO M6 LINK - FINAL MODELLED TRAFFIC FLOWS (2010 AADF)

LINK	DO MINIMUM	WESTERN ROUTE	% change	NORTHERN ROUTE	% change
A683 Caton Road	26,200	23,200	-11%	19,900	-24%
A6 Skerton & Greyhound Bridges (combined)	45,000	30,700	-32%	33,200	-26%
A683 Morecambe Road	29,200	23,300	-20%	26,000	-11%
A683 north of Northgate	14,400	24,400	+69%	26,100	+81%
A683 south of Northgate	5,500	24,100	+338%	15,100	+175%
M6 Junction 33 - 34	65,800	57,000	-13%	72,400	+10%
M6 Junction 34 - 35	58,300	60,100	+3%	71,500	+23%
A6 at Galgate	18,100	9,400	-48%	18,000	-1%
A6 at the University	17,400	7,200	-59%	15,000	-14%
A6 at Scotforth	24,400	21,800	-11%	20,100	-18%
A6 City Centre Gyratory (one-way northbound)	19,300	13,500	-30%	16,400	-15%
A6 north of Skerton	6,200	7,000	+13%	6,100	-2%
A6 at Bolton-le-Sands	22,900	22,400	-2%	12,400	-46%
A6 at Carnforth	18,400	17,400	-5%	7,700	-58%
A588 Ashton Road at The Greaves	9,600	7,700	-20%	8,400	-13%
B5321 Torrisholme Road	8,700	4,600	-47%	3,300	-62%
B5273 Ovangle Road	19,500	15,700	-19%	19,900	+2%
A589 Morecambe Road	20,700	27,900	+35%	29,100	+41%
A5105 Coastal Road	16,800	15,200	-10%	4,600	-73%
A589 Marine Road East	11,900	11,200	-6%	8,100	-32%
A589 Heysham Road	9,400	9,000	-4%	6,100	-35%
B5273 Oxcliffe Road	7,900	8,400	+6%	10,800	+37%



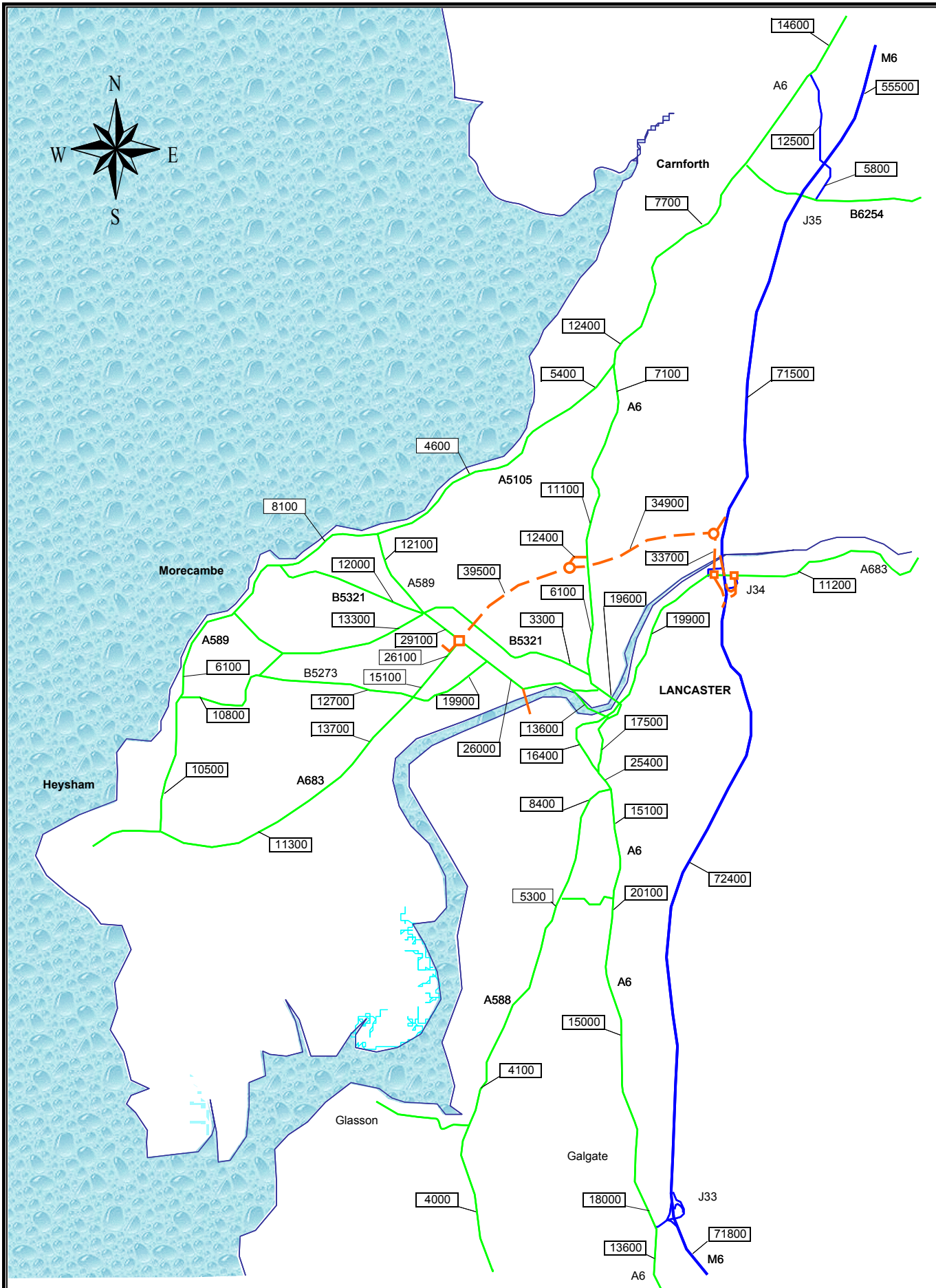
HEYSHAM/M6 LINK STUDY - DO MINIMUM 2010 (AADF)

update of newnetS, dmam10LRa, T + 0.29D
(mw T only) maxitr 25



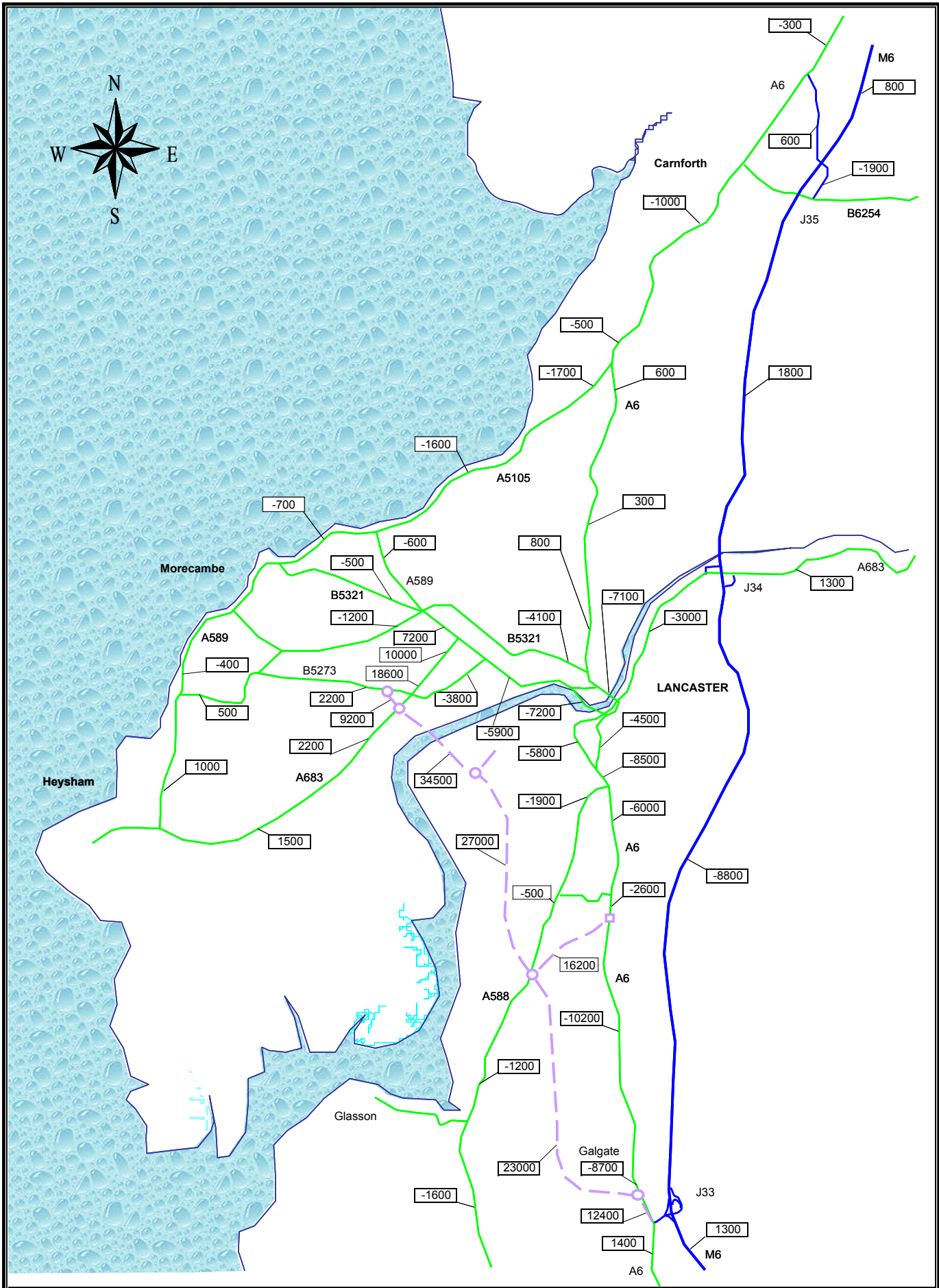
HEYSHAM/M6 LINK STUDY - WESTERN ROUTE OPTION (Lune Bridge D2 60mph) 2010 (AADF)

GRAM10L.mat 0.29D mw T
includes induced traffic



HEYSHAM/M6 LINK STUDY - NORTHERN ROUTE OPTION 2010 (AADF)

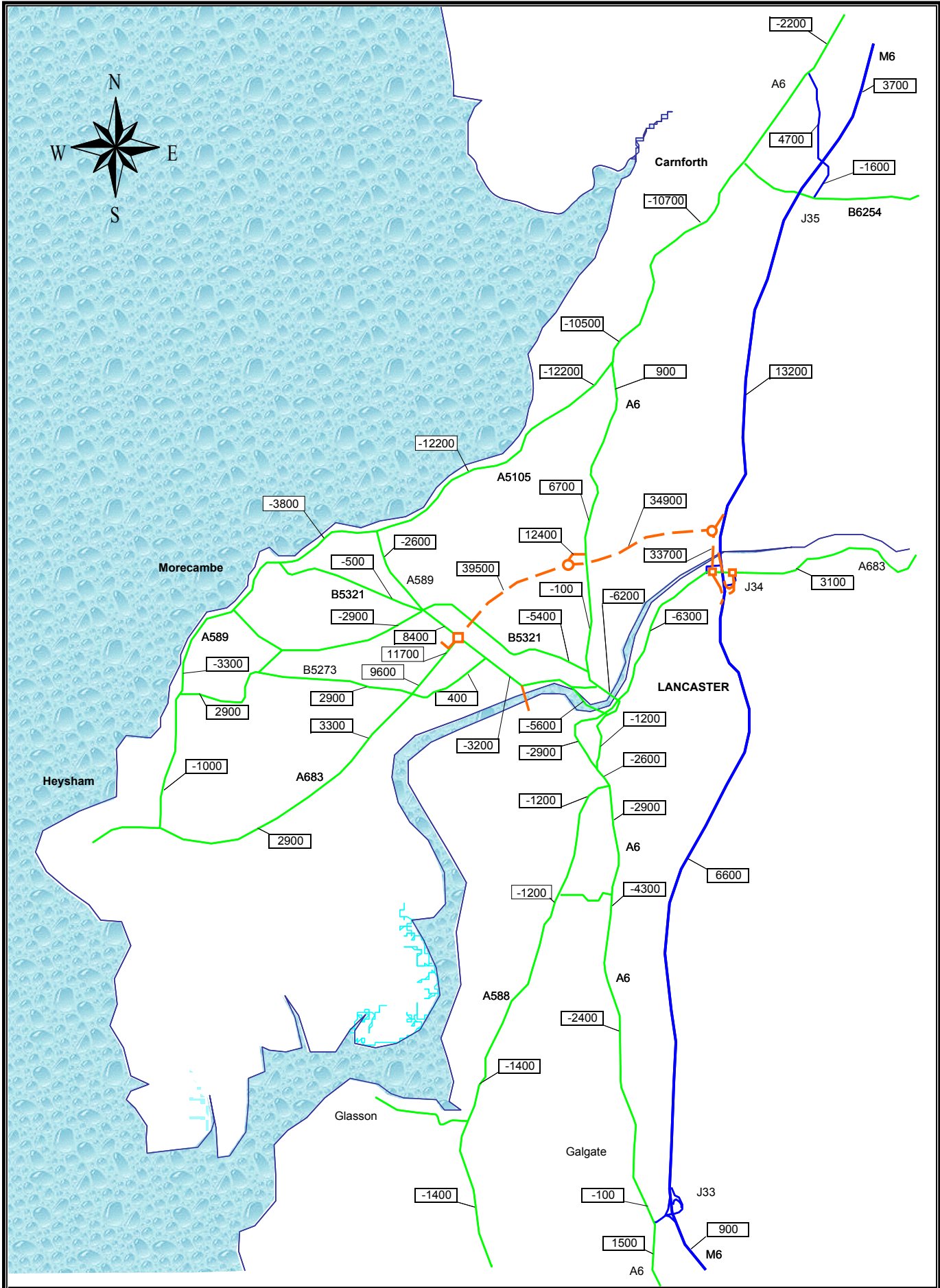
ORAM10L.mat, t+0.29d mw t only
noramupd2. Includes induced traffic



HEYSHAM/M6 LINK STUDY - WESTERN ROUTE OPTION (Lune Bridge D2 60mph) 2010 (AADF)

Flows with scheme - do min flows

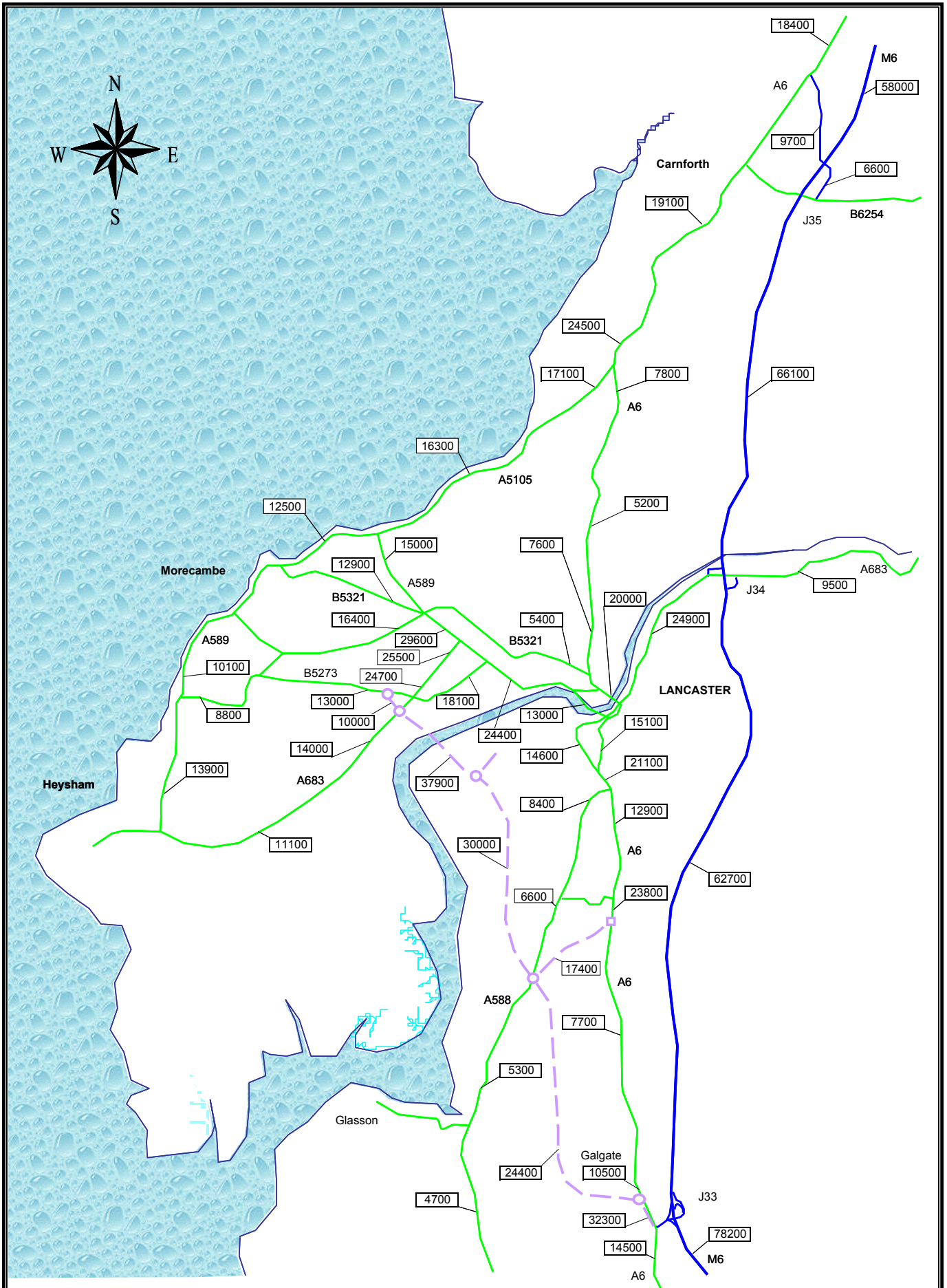
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includes induced traffic



HEYSHAM/M6 LINK STUDY - NORTHERN ROUTE OPTION 2010 (AADF)

Flows with scheme - do min flows

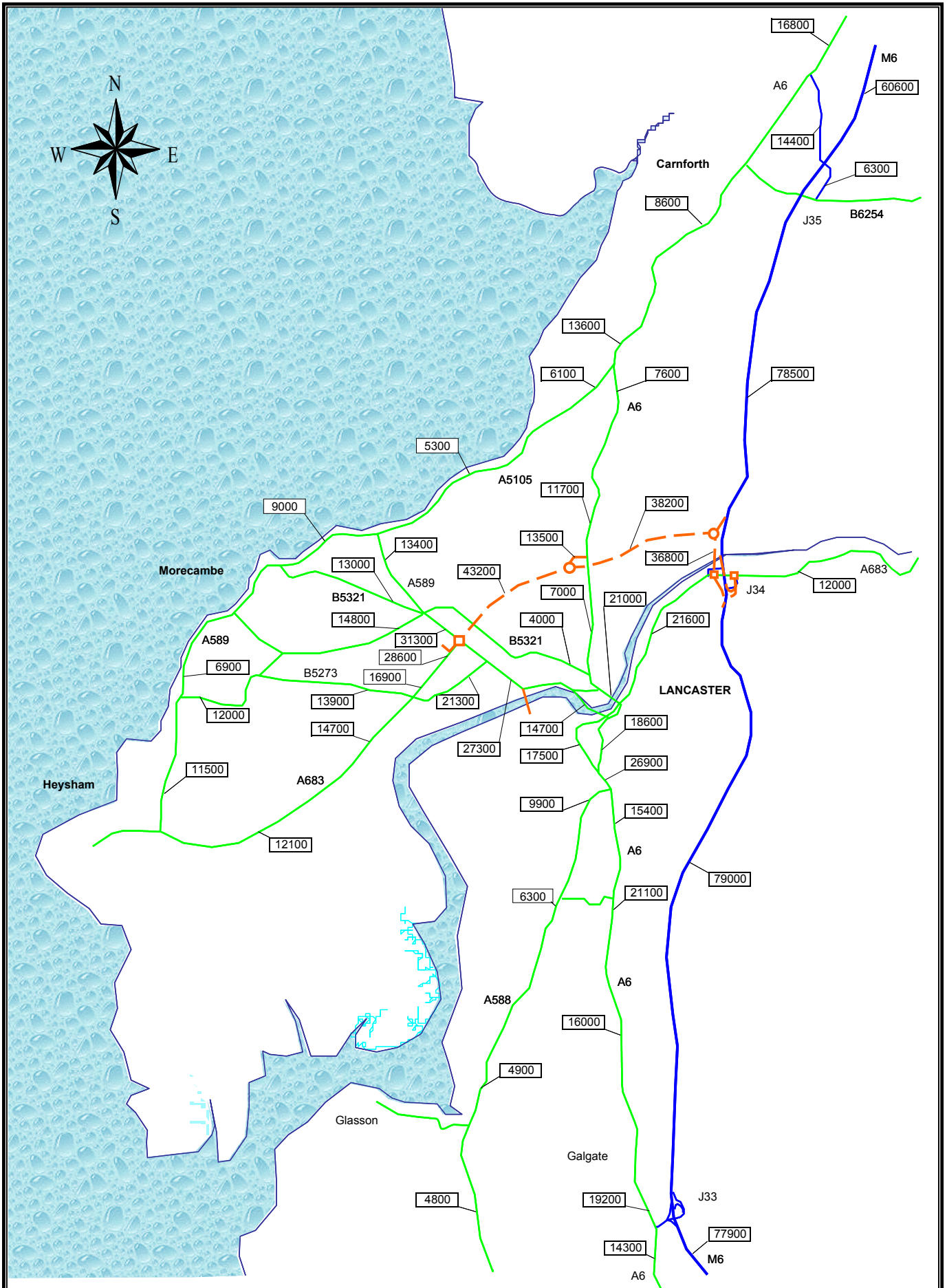
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noramupd2. Includes induced traffic



HEYSHAM/M6 LINK STUDY - WESTERN ROUTE OPTION 2025 (AADF)

LUNE BRIDGE D2 STANDARD

GRAM25L.mat (inc. induced)
T+ 0.29D mw T



HEYSHAM/M6 LINK STUDY - NORTHERN ROUTE OPTION 2025 (AADF)

ORAM25L.mat (inc. induced)
T+0.29D mw t only, noramupd2