

Appendix A – Long List of Schemes

The following table presents the full long list of schemes put forward under the Coarse Appraisal process.

Table A.1: Long List of Potential Schemes

Pedestrian Schemes	<ul style="list-style-type: none"> ■ Pedestrian Signage and Information Strategy – particularly at key arrival points (e.g. Bristol Legible City). ■ Traffic-free centre/severance of through routes. ■ Creation of 20mph zones/Introduction of blanket urban area 20mph limit. ■ 20mph zone in Lancaster City Centre. ■ Further pedestrianisation and Shared Surface Schemes (e.g. Lancaster City Centre, Morecambe Centre, Morecambe Promenade, Market Street - Carnforth (CARP scheme)). ■ Pedestrian priority at key junctions. ■ Additional Home Zone schemes (or similar principles) (e.g. Poulton, Morecambe). ■ Safety audits (e.g. landscaping, lighting, surfacing etc). ■ DDA compliance (i.e. review station accessibility, pedestrian crossings etc). <p><i>Location specific schemes</i></p> <ul style="list-style-type: none"> ■ Market Street/Church Street enhancements. ■ Improved east-west pedestrian links across the one-way system.
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Cycling	<ul style="list-style-type: none"> ■ Canal/sustainable transport routes – potential for tourism and leisure. ■ District-wide cycle hire scheme with frequent pick-up and drop-off points (e.g. Velib 'Freedom bike', Paris; Oy Bike, London). ■ Secure cycle storage – swipe card technology. ■ Continued funding for the Economic Development Zone (EDZ) Cycling and Walking programme. ■ Park & Cycle schemes for leisure and commuting, utilising existing infrastructure (linked into proposed Park & Ride sites). ■ Provision of high quality, visible parking facilities at strategic locations including changing rooms, shower facilities and secure parking etc. ■ Cycle Signage Review (including consideration to using estimated journey times on signage, route branding etc). ■ Provision of residential cycling facilities (e.g. external storage units/secure parking). ■ 'Velo Rail' (linked to tourism). ■ Cycle rickshaws/'pedicab'/'velotaxi' (e.g. Amsterdam, London). ■ E-Bikes (electric bicycles). ■ Segregated cycleways. ■ Cycle proficiency/training. ■ Greater security on existing segregated routes (e.g. pruning/thinning of vegetation, CCTV cameras, help points, extra policing). ■ Improve east-west links to rural areas. ■ Enhance cycle links to Health Centres (e.g. hospitals/medical centres). ■ Marketing/promotion (e.g. direct targeting at employers, rail station, schools and City Centre car parks). ■ Greater Cycle route maintenance. <p><i>Location specific schemes</i></p> <ul style="list-style-type: none"> ■ Cycle infrastructure on the Heysham to M6 Link Road. ■ Upgrade the Lancaster Canal south of Lancaster City Centre to Garstang. ■ Enhance pedestrian/cycle facilities in and around Lancaster City Centre, particularly east-west links (tie in to Mayer Brown proposals and one-way system modification schemes). ■ Enhance Pedestrian/cycle facilities in and around Morecambe's town centre. In particular improve connection between the station, the retail core and the promenade. ■ Enhance links to the Port of Heysham and surrounding industrial estates. ■ Provision of a more direct link between Lancaster University and Lancaster City Centre. ■ Lune Valley Cycle route extension to Hornby, Wray and Wennington. ■ Further use and development of cycle network at Glasson Dock. ■ Better links from Lancaster Canal to Morecambe. ■ Provide missing links between Morecambe Promenade and Port of Heysham. ■ Increased cycle routes in and around Carnforth town centre and station links.
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Bus	<ul style="list-style-type: none"> ■ Accessibility Review (e.g. frequency/accessibility overlay, disabled person access). ■ Park & Ride (Bus based). ■ Morecambe. <ul style="list-style-type: none"> ➢ A683 Lancaster-Morecambe Bypass/M6 Heysham Link. ➢ Scale Hall waste tip. ■ Lancaster. <ul style="list-style-type: none"> ➢ A683 Caton Road (M6 junction 34) – 630 space Lancashire County Council scheme. ➢ A6 Lancaster Road (M6 junction 33) - Galgate/University. ➢ Williamson Park. ➢ Beaumont serving Hest Bank, Bolton-le-Sands and beyond. ■ Bus Priority Measures. ■ Review of Morecambe Road and existing bus priority. ■ Development of Whole Route Improvement Plans (WRIP) for Caton Road, Morecambe Road and Scotforth Road. ■ Lancaster City Centre 'Metro Shuttle' (linking rail & bus stations, interceptor car parks, tourist sites and key developments). ■ Demand Responsive Transport (DRT) expansion (particularly in rural areas – perhaps linking to proposed Park & Ride sites). ■ Consolidation and simplification of routes based upon a hierarchy including core routes, feeder services, rural scheduled routes and DRT. ■ City Centre Bus routeing review (including consideration to core bus route through the centre of Lancaster and reprioritising sections of the one-way system in favour of buses). ■ Express bus services between Lancaster and other key centres (e.g. Kendal, Preston and Manchester). ■ Real Time Passenger Information (RTPI) provision at bus stops and in new housing developments. ■ Reduced price/free bus-pass for children of secondary school age. ■ City Centre fare free zone (e.g. Calgary, Canada). ■ Increased evening and weekend provision. ■ Workplace provision review (i.e. catering for evenings, shift patterns etc). ■ Deregulation review (consider regaining certain powers to plan bus network/strategy). <p>Location specific schemes</p> <ul style="list-style-type: none"> ■ University underpass bus facility enhancements. ■ Extension of bus routes in Heysham to better serve the Ferry terminal. ■ Improved bus provision to Carnforth. ■ Increased frequency/bus provision beyond Heysham to Middleton serving Lancaster West Business Park and Heysham Industrial Estate. ■ Greater bus penetration of White Lund Industrial Estate.
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Rail	<ul style="list-style-type: none"> ■ Upgrades to rail station facilities (parking, waiting facilities, information provision etc), particularly Bare Lane, Heysham and Morecambe. ■ Park & Ride (rail-based). ■ Carnforth (proposal to develop further); ■ Review functionality/potential of Carnforth-Leeds Rail line possible alternative route to Clitheroe. Potential as a tourist route similar to Settle – Carlisle. ■ Continuation of rail service to Morecambe Promenade. ■ Creation of a direct chord to Heysham Port rail line which would bypass Morecambe and eliminate the turn-around time. ■ Signalling improvements between Bare Lane and Heysham to increase capacity. ■ Creation of an additional station between Morecambe and Heysham. ■ Creation of a new station at Lancaster University serving a Park & Ride site and used by local stopping services. ■ Consider reopening stations at Bolton-le-Sands or Hest Bank. ■ Increases in frequency on the Leeds to Carnforth line (clock faced services). ■ Consideration of Electrification of lines. ■ Increased evening and weekend provision (particularly to/from Preston, Lancaster, Manchester and Morecambe). ■ Carnforth Rail Chord scheme (LMV scheme - forwarded to Lancashire and Cumbria RUS).
Light Rail/ Intermediate Modes	<ul style="list-style-type: none"> ■ Potential routes: <ul style="list-style-type: none"> ➢ Morecambe – White Lund – Salt Ayre – Lancaster City Centre (utilising former railway route) and possible new bridge). ➢ Lancaster City Centre - University Link. ■ Park & Ride to City Links. ■ Park & Ride slip from M6 Northbound near university. ■ Tram-train style services from Heysham to Lancaster via Morecambe. ■ Light Rail network (e.g. Manchester, Sheffield). ■ Electric buses (e.g. Salzburg, Seattle). ■ Electric Trolley buses (e.g. Lyon). ■ Guided Busways (e.g. Nantes). ■ FTR Streetcar (e.g. Leeds, York). ■ Ultra Light Rail (e.g. Parry People Mover, West Midlands).

Road/Traffic Management	<ul style="list-style-type: none"> ■ Heysham/Morecambe M6 Link Road – Complementary/Mitigatory Measures. ■ Western Bypass (in addition to Northern Link). ■ Construction of new Relief Road serving Luneside area. ■ Lancaster City Centre One-Way System Review. ■ Re-introduction of two-way traffic movements (e.g. two-way A6 loop, two-way Parliament Street, two-way Lune bridges). ■ Partial re-introduction of two-way traffic movements. ■ Morecambe One-Way System Review. ■ Construction of a new River Lune bridge (public transport only?). ■ Strategic signing review (tourist). ■ Gateway development at key centres (i.e. Carnforth, Heysham, Lancaster, Morecambe). ■ Urban Traffic Management Control (UTMC) (Preston example). ■ Selective Cycle Offset Optimisation Technique (SCOOT) review. ■ Network Management (e.g. Red Route designations). ■ Congestion charging (linked to investment in public transport infrastructure). ■ City Centre Cordon Charging. ■ Area Based Road Pricing. ■ Bridge Tolls. ■ High Occupancy Vehicle (HOV) lanes. ■ Motorcycle utilisation of Bus Lanes. ■ Green Vehicle Lanes. <p><i>Location specific schemes</i></p> <ul style="list-style-type: none"> ■ Morecambe Road/Carlisle Bridge bottleneck (e.g. creation of two westbound lanes). ■ Elongated Junction 33/Galgate Bypass. ■ Damside Street - Bridge height restriction limits HGV routeing options. ■ Morecambe Road/A6 junction – Box junction. ■ Owen Road – Addition of new northbound lane between Morecambe Road and Torrisholme Road). ■ Scale Hall – Replacement of complex signalised junction arrangement with roundabout.
Road Safety	<ul style="list-style-type: none"> ■ Killed or Seriously Injured (KSI) Analysis (continuous monitoring, addressed through Local Transport Plan). ■ Tackling collision ‘hot spots’ (continuous monitoring, addressed through Local Transport Plan). ■ Road Safety education – direct targeting of vulnerable groups.
Car Parking	<ul style="list-style-type: none"> ■ Lancaster City Centre Parking Strategy. ■ Zonal Parking Strategy. ■ Interceptor car parks (N & S). ■ Morecambe parking - Clarification/reuse of land (e.g. selected removal of Promenade parking, construction of multi-storeys, underground parking). ■ Utilisation of Intelligent Transport Systems to guide people to parking opportunities. ■ Coach Parking strategy (locations & strategy).

Freight/Servicing	<ul style="list-style-type: none"> ■ Freight/servicing of the retail centre (e.g. Freight Consolidation centre and environmentally sensitive delivery vehicles). ■ Lancaster City Centre co-ordinated home delivery service. ■ Strategic signing review (freight). ■ Creation of a rail freight terminus at Heysham possibly relocating the passenger station nearer to the ferry port. ■ Review feasibility of shifting proportion of freight traffic to rail. ■ Facilitate transfer of road freight transport to coastal/short sea shipping and inland waterway shipping. ■ Promotion of waterway servicing. ■ Promotion of 'Freight Bicycles'/Bicycle Couriers (e.g. London, Zurich). ■ Promotion of Freight on Trams / Buses - integration of uses.
Port	<ul style="list-style-type: none"> ■ Creation of a ferry port shuttle bus from Heysham town centre running either as a circular or as part of a larger route. ■ Align public transport services with ferry services.
Waterways	<ul style="list-style-type: none"> ■ Extension of Lancaster Canal to Kendal. ■ Lancaster Canal Waterbus extension both northwards and southwards. ■ River Lune integrated river frontage.
Travel Planning	<ul style="list-style-type: none"> ■ Continued funding of Personalised Travel Planning/Behavioural Research. ■ Promote the development of Workplace Travel Plans. ■ Travel Plan Review/Monitoring at following locations: <ul style="list-style-type: none"> ➢ Lancaster University ➢ University of Cumbria ➢ North Lancashire NHS/PCT ➢ Lancaster City Council ➢ White Lund Industrial Estate ➢ Others (City Centre retailers, new developments). ■ Car club/car sharing scheme (e.g. Whizz Go); ■ School Travel Planning Review/Monitoring. ■ Development of a district-wide Workplace Travel Plan with co-ordinator Meetings to share experiences, promote best practice and develop joint initiatives (involve PT operators and highway authority). ■ Sustainable Towns/Eco-Town agenda.
Highway & Land Use Planning	<ul style="list-style-type: none"> ■ Car-free/sustainable developments. ■ Parking Management/reduction of available parking spaces. ■ Preferential parking rates/locations for environmentally friendly vehicles (e.g. electric/hybrid/biodiesel). ■ Car pooling incorporated into new developments. ■ Location of new developments close to existing public transport links.
Other	<ul style="list-style-type: none"> ■ Hanging Monorail (e.g. Wuppertal Schwebbahn, Dortmund H-Bahn). ■ Conventional Monorail (e.g. Sydney, Seattle, Tokyo). ■ Miniature railways (e.g. Eskdale Valley). ■ Integrated Public Transport Ticketing. ■ Multi-Modal Public Transport System (e.g. London). ■ Off-vehicle public transport ticketing (e.g. London). ■ Bus Miles Loyalty scheme (e.g. Bus Miles, Bradford). ■ SMART cards (e.g. 'Oyster' - London). ■ Cable Car Link/Aerial Link Lancaster to Morecambe including over river. ■ Business Rate supplements for sustainable transport procedures. ■ Workplace parking levy.

Public Realm	<p><i>Lancaster</i></p> <ul style="list-style-type: none">■ Dalton Square enhancements.■ One-Way System Junction improvements.■ Public Realm Enhancements.■ Brock Street.■ Lucy Street.■ Penny Street.■ Chapel Street.■ North Road. <p><i>Morecambe</i></p> <ul style="list-style-type: none">■ Promenade improvements.■ Morecambe Strategy and Masterplan.■ Off-promenade route – creation of alternative all-weather route.■ Crossing point improvements.
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Appendix B – Coarse Appraisal & Technical Note

1. Introduction

This note accompanies the Lancaster and Morecambe Vision Coarse Appraisal document and provides guidance on the various assumptions and scoring systems used in appraising the stated schemes.

2. Timescale

Each scheme was appraised in terms of the expected timescale of delivery. These timescales have been grouped into the following three bands:

- Short Term = 0-5 years;
- Medium Term = 5-15 years; and
- Long Term = Greater than 15 years.

3. Lancaster and Morecambe Vision Objectives

Each scheme was scored according to its correspondence with the set of six Lancaster and Morecambe Vision Objectives. The scoring system used for this was as follows:

1. The scheme being appraised was reviewed in terms of each objective in turn. A number of ticks or crosses were placed next to each objective for each scheme;
2. Ticks represented good correspondence between the scheme and the objective with a maximum of three ticks showing the best level of correspondence. Crosses represented negative correspondence with the objectives i.e. the scheme would actually prove detrimental to the objective being fulfilled. A maximum of three crosses represented the worst level of negative impact produced by the scheme;
3. A zero represented neither a positive nor a negative correspondence between the scheme and the objective in question;
4. The numbers of ticks and crosses (and zeros) were totalled for each scheme with each tick counting as +1 and each cross counting as -1. The total found for each scheme was then compared with the ranges below to find the scheme's score out of 4.

- <4 ticks = 1;
- 4-7 ticks = 2;
- 8-11 ticks = 3; and
- >11 ticks = 4.

4. NATA Objectives

A similar system of ticks and crosses (and zeros) was used in calculating a score out of 4 for each scheme's correspondence with general NATA Objectives. In determining the number of ticks or crosses to ascribe to each scheme in relation to each objective, the following questions were asked as guidance:

Table B.1 - Coarse Appraisal Guidance

Category	Sub-Objective	Qualitative Impacts
Environment	Air Quality	<ol style="list-style-type: none"> 1. Does the scheme impact on air quality (emission of greenhouse gases)? 2. How does the scheme differ from the status quo?
	Landscape/Townscape	<ol style="list-style-type: none"> 1. Does the scheme enhance/complement the existing landscape/townscape?
	Physical Fitness	<ol style="list-style-type: none"> 1. Will the scheme encourage increased levels of activity (i.e. walking and cycling)?
	Journey Ambience	<ol style="list-style-type: none"> 1. Does the scheme enhance the journey to work/leisure route?
Safety	Accidents	<ol style="list-style-type: none"> 1. Will the scheme directly/indirectly reduce road traffic incidents?
	Security	<ol style="list-style-type: none"> 1. Is the scheme likely to benefit personal safety?
Economic	Reliability	<ol style="list-style-type: none"> 1. Will the scheme provide a reliable journey time? 2. Will the scheme contribute to reduced levels of congestion, thereby benefiting other modes?
	Wider Economic Impacts	<ol style="list-style-type: none"> 1. Will the scheme open up new areas of development? 2. Does the scheme enhance accessibility to existing/proposed employment sites? 3. Does the scheme have the potential to become a tourist feature in its own right?
Accessibility	Severance	<ol style="list-style-type: none"> 1. Is the scheme designed to reduce severance at key locations? 2. Will the scheme create new lines of severance that may need to be addressed in the future?
	Access to Transport System	<ol style="list-style-type: none"> 1. Does the scheme facilitate access to the Public Transport network?
Integration	Transport interchange	<ol style="list-style-type: none"> 1. Does the scheme facilitate integration between sustainable modes of transport (e.g. rail, bus, cycle, pedestrian)?
	Land-use Policy	<ol style="list-style-type: none"> 1. Does the scheme complement existing land use policy?

Following the ascribing of ticks and crosses up to a maximum of three for each objective, the total number of ticks (again counting ticks as +1 and crosses as -1) were evaluated and compared to the ranges set out below to determine the scheme's score out of four:

- <7 ticks = 1;
- 7-12 ticks = 2;
- 13-19 ticks = 3; and
- >19 ticks = 4.

5. Deliverability

Schemes were then assessed for deliverability using the four sub-categories of Acceptability, Constraints, Policy Fit, and Ongoing Viability. For each of these, a tick, a cross, or a zero was noted for each scheme. A tick indicated a positive impact, a cross indicated a negative, and a zero indicated no significant impact on deliverability. A score out of 4 was again determined for each scheme by totalling the number of ticks and crosses with ticks counting as +1, and crosses counting as -1 as before.

6. Cost

The estimated cost of each scheme was then similarly scored out of 4 using the price ranges noted below: -

- £0-£200,000 = 4;
- £200,000 - £1m = 3;
- £1m – £5m = 2;
- >£5m = 1.

7. Impact

The final component of the appraisal was the predicted total impact of each scheme on the Lancaster and Morecambe Transport system. This quantity was also ascribed a score out of 4 using the more qualitative definitions of 'Low Impact' (1 point), 'Medium Impact' (2 points), 'High Impact' (3 points), and 'Very High Impact' (4 points).

8. Decision on whether to proceed

As a final step, the decision on whether to progress each scheme to a short list of schemes was made based upon the total score out of 20 ascribed to each. As a realistic cut-off point, a score of 13 out of 20 was chosen to represent the minimum required for a scheme to proceed based upon this analysis. The final column in the table states whether each scheme should progress or not based upon this appraisal system.

Appendix C – City Centre TRIPS Model Analysis

Select Link Analysis

Table: C.1: Skerton Bridge

Area Summary	Trips From		Trips To	
	Trips	%	Trips	%
Lancaster University	0	0%	315	20%
Morecambe: Central & West (inc Heysham)	645	41%	0	0%
Morecambe: East	269	17%	0	0%
White Lund Industrial Estate	210	14%	0	0%
Lancaster City	20	1%	1,080	69%
South of Region (Fylde Coast)	0	0%	18	1%
South of Region (Preston & South)	0	0%	5	0%
South of Lancaster (Galgate - Garstang)	0	0%	63	4%
Morecambe: North (Hest Bank, Carnforth)	112	7%	0	0%
North of Region, (N of Carnforth)	14	1%	7	0%
Lancaster: north (Lancaster - M6 J34)	0	0%	25	2%
East of Lancaster (Quernmore)	0	0%	42	3%
North of River Lune (Skerton, Scale Hall)	286	18%	0	0%

Table: C.2: Greyhound Bridge

Area Summary	Trips From		Trips To	
	Trips	%	Trips	%
Lancaster University	29	3%	0	0%
Morecambe: Central & West (inc Heysham)	0	0%	297	33%
Morecambe: East	0	0%	134	15%
White Lund Industrial Estate	0	0%	272	31%
Lancaster City	771	87%	1	0%
South of Region (Fylde Coast)	6	1%	6	1%
South of Region (Preston & South)	0	0%	3	0%
South of Lancaster (Galgate - Garstang)	57	6%	0	0%
Morecambe: North (Hest Bank, Carnforth)	0	0%	41	5%
north of Region, (N of Carnforth)	0	0%	58	7%
Lancaster: north (Lancaster - M6 J34)	8	1%	15	2%
East of Lancaster (Quernmore)	19	2%	0	0%
North of R Lune (Skerton, Scale Hall)	0	0%	65	7%

Table: C.3: King Street

Area Summary	Trips From		Trips To	
	Trips	%	Trips	%
Lancaster University	44	3%	0	0%
Morecambe: Central & West (inc Heysham)	92	7%	142	11%
Morecambe: East	41	3%	68	5%
White Lund Industrial Estate	55	4%	151	12%
Lancaster City	609	46%	847	64%
South of Region (Fylde Coast)	119	9%	0	0%
South of Region (Preston & South)	34	3%	0	0%
South of Lancaster (Galgate - Garstang)	104	8%	0	0%

Morecambe: North (Hest Bank, Carnforth)	19	1%	22	2%
North of Region, (N of Carnforth)	120	9%	30	2%
Lancaster: north (Lancaster - M6 J34)	31	2%	17	1%
East of Lancaster (Quernmore)	19	1%	0	0%
North of River Lune (Skerton, Scale Hall)	28	2%	37	3%

Table C.4: Thurnham Street

Area Summary	Trips From		Trips To	
	Trips	%	Trips	%
Lancaster University	0	0%	278	22%
Morecambe: Central & West (inc Heysham)	350	27%	0	0%
Morecambe: East	148	11%	0	0%
White Lund Industrial Estate	120	9%	0	0%
Lancaster City	125	10%	875	68%
South of Region (Fylde Coast)	0	0%	36	3%
South of Region (Preston & South)	0	0%	7	1%
South of Lancaster (Galgate - Garstang)	0	0%	86	7%
Morecambe: North (Hest Bank, Carnforth)	91	7%	0	0%
north of Region, (N of Carnforth)	221	17%	3	0%
Lancaster: north (Lancaster - M6 J34)	73	6%	0	0%
East of Lancaster (Quernmore)	0	0%	0	0%
North of R Lune (Skerton, Scale Hall)	157	12%	0	0%

Origin & Destination Pairs

Table C.5: Skerton Bridge

Origin	Destination	No.
White Lund Industrial Estate	Lancaster: The Greaves	36
Skerton/Barley Cop Lane	Lancaster University	35
Heysham: Village	Lancaster University	33
Morecambe: Sandylands	Lancaster University	29
Morecambe: Westgate	Lancaster University	29
White Lund Industrial Estate	Lancaster: Marsh	22
Torrisholme Road/Morecambe Road	Lancaster University	22
Lansil Industrial Estate	Lancaster University	21
Morecambe: Stuart Ave	Lancaster University	20
White Lund Industrial Estate	Lancaster: St. Georges Quay	20

Table C.6: Greyhound Bridge: Origin-Destination Pairs

Origin	Destination	No.
Lancaster: The Greaves	White Lund Industrial Estate	54
Lancaster: Marsh	White Lund Industrial Estate	47
Lancaster: Bowerham	White Lund Industrial Estate	21
Lancaster: Scotforth	White Lund Industrial Estate	19
Lancaster: St Georges Quay	North/M6 Junction 36	15
Lancaster: Abraham Heights	Morecambe: Central	15
Lancaster: Regent St	White Lund Industrial Estate	15
Lancaster: Derwent Rd	White Lund Industrial Estate	15
Lancaster: Aldcliffe Rd	White Lund Industrial Estate	14
Lancaster: Regent St	White Lund Industrial Estate	13

Table C.7: King Street - Origin-Destination Pairs

Origin	Destination	No.
Lancaster: The Greaves	White Lund Industrial Estate	54
North/M6 Junction 36	Lancaster: St Georges Quay	37
Lancaster: The Greaves	Lancaster: St Georges Quay	25
White Lund Industrial Estate	Lancaster: Marsh	22
White Lund Industrial Estate	Lancaster: St Georges Quay	20
Lancaster: The Greaves	Lancaster: Marsh	19
Lancaster: Scotforth	White Lund Industrial Estate	19
North/ M6 Junction 36	Lancaster: Industrial Estate	19
Lancaster: Bowerham	White Lund Industrial Estate	17
Lancaster: Scotforth	Lancaster: St Georges Quay	15

Table C.8: Thurnham Street – Origin-Destination Pairs

Origin	Destination	No.
North/ M6 Junction 36	Lancaster: St Georges Quay	30
Skerton/Barley Cop Lane	Lancaster University	29
Heysham: Village	Lancaster University	27
Morecambe: Sandylands	Lancaster University	23
Morecambe: Westgate	Lancaster University	23
White Lund Industrial Estate	Lancaster: The Greaves	22
White Lund Industrial Estate	Lancaster: Marsh	20
Bolton Le Sands	Lancaster University	19
Torrisholme Rd/Morecambe Rd	Lancaster University	18
Lansil Industrial Estate	Lancaster University	17

Appraisal of Modification Options

Option A

Scheme Description	Option A involves changes to the Lune and Kingsway gyratories, including converting the River Lune bridges to two-way flow and converting Kingsway/Parliament Street/Caton Road to two-way flows. No changes to the City Centre one-way system were modelled in this option.
Modelling Assumptions	<ul style="list-style-type: none"> ▪ Capacity on Kingsway reduced from 2,631 to 1,754 to account for two-way flow. ▪ Speed on Greyhound Bridge reduced from 64kph to 49kph, capacity reduced from 3,783 to 2,631. ▪ Caton Road (between Bulk Road and Kingsway) converted to two-way. ▪ Skerton Bridge converted to two-way flow. ▪ Morecambe Road (between Greyhound Bridge and Skerton Bridge) converted to two-way flows.
Modelling Results	<ul style="list-style-type: none"> ▪ Trips using Greyhound Bridge are from/to A683 Morecambe Road. ▪ Skerton Bridge is mainly used by trips heading from/to A6 Owen Road and not trips using A683 Morecambe Road. ▪ A683 Morecambe Rd (between Greyhound Bridge and Skerton Bridge), used by local trips and a handful of trips to/from Morecambe Road. ▪ Extremely low flows northbound on Caton Road (between Bulk Road and Kingsway). ▪ Significant reduction in northbound flows on Kingsway (between Skerton Bridge and Caton Road). This is due to the removal of the Kingsway one-way system, trips travelling southbound over the bridges into the city will make a right-turn after crossing the Lune instead of using Kingsway/Caton Road. ▪ Minimal effect on the City Centre one-way system, some local variations between minor routes within the city.

Option B

Scheme Description	This option proposes significant changes routing in the City Centre, in particular converting the current City Centre gyratory system into two-way flow, allowing two-way flow on Skerton Bridge, which will allow for improved bus priority to/from Morecambe and Halton via Greyhound Bridge.
Modelling Assumptions	<ul style="list-style-type: none"> ■ The introduction of bus lanes on Greyhound Bridge, will reduce traffic speeds similar to Skerton Bridge, an assumption of speeds would be reduced from 64kph to 37kph capacity reduced from 3,783 to 2,631. ■ No capacity constraints have been applied to the Lune Crossings. ■ City Centre one-way system converted to allow two-way flows, link speeds remains unchanged.
Modelling Results	<ul style="list-style-type: none"> ■ For City Centre options see Option H, a similar trend in results occurs. ■ Only a small number of trips transfer to Skerton Bridge, the majority of these are trips that continue along the A6 north of Lancaster. Flows on Greyhound Bridge reduce because of the new northbound flow on Skerton Bridge. This suggests no wider redistribution of trips as a result of the option. ■ Slight redistribution of trips around the City Centre, this is mainly attributed to changes to the City Centre one-way system.

Option C

Not modelled.

Option D

Scheme Description	This option involves converting Skerton Bridge and Morecambe Road to two-way flow with a bus contraflow on Greyhound Bridge. The City Centre gyratory was reverted to two-way flow, with general traffic permitted on King Street, Thurnham Street and North Road, with the exception of a contraflow bus lane on Cable Street between North Road and Meeting House Lane.
Modelling Assumptions	<ul style="list-style-type: none"> ■ Changes to the junction of Cable Street and North Road (to permit a contraflow bus lane on Cable Street and two-way flow on North Road). ■ A reduction in speed was assumed on Greyhound Bridge to account for the contraflow bus lane, speeds were reduced from 64kph to 49kph, capacity reduced from 3,783 to 2,631. ■ A contraflow bus lane was created on Kingsway, speeds were assessed (no change in modelling was undertaken for this bus lane, capacity reduced from 2,631 to 1,754).
Modelling Results	<ul style="list-style-type: none"> ■ The effects on the Lune one-way system are similar to Option B, in that trips using the Skerton Bridge in the northbound direction are heading towards A6 Owen Road and not A683 Morecambe Road. ■ The changes to the City Centre one-way system have resulted in changes in the routings of general traffic around the City Centre. <ul style="list-style-type: none"> - Northbound flows on King Street are reduced due to increase in northbound flows on Thurnham Street, these flows are reasonably matched by route. With around 600 northbound trips on Thurnham Street. - Southbound trips are much lower on King Street than Thurnham Street, this is because King Street does not allow through movements for general traffic in the southbound direction. - Significant increase in eastbound flows on Meeting House Lane. This is due to the improved accessibility offered by reverting the one-way system to two-way flow. - Eastbound increases in flows on Meeting House Lane are offset by reductions in St. Georges Quay and Aldcliffe Road. - Variations in flows on the east of the one-way system with local variation. This is likely to be due to the improved accessibility two-way flows on Thurnham Street offer.

Option E

Not modelled.

Option F

Scheme Description	This radical option, involves the conversion of all sections of the gyratory to two-way flows.
Modelling Assumptions	<ul style="list-style-type: none"> ■ Capacity on Kingsway reduced from 2,631 to 1,754 to account for two way flow. ■ Greyhound Bridge speeds reduced from 64kph to 49kph, capacity reduced from 2,631 to 1,754. ■ As per Option G, though with modifications to the below. <ul style="list-style-type: none"> - Caton Road/Bulk Road/Kingsway junction – will require redesigning to account for two-way flows on Caton Road. - Morecambe Road/Greyhound Bridge junction – will require changes to the junction to account for two-way flow on Greyhound Bridge. - No routeing restrictions applied (no signing strategies, no restricted movements).
Modelling Results	<ul style="list-style-type: none"> ■ Slight increase in trips using the bridges (not significant). ■ Significant reduction in trips using Caton Road (79% reduction), very few northbound trips on this route. ■ Greyhound Bridge – primarily used by trips to A683 Morecambe Road (10% reduction in northbound flows). ■ Skerton Bridge – primarily used by trips between Lancaster and A6 Owen Road. ■ Extremely low usage of A683 Morecambe Road (between Greyhound Bridge and Skerton Bridge), mainly used for local trips (no right turning traffic from Greyhound Bridge). ■ Significant reduction in the number of trips on Kingsway northbound. ■ For City Centre changes (see Option H).

Option G

Scheme Description	This option involves the conversion of the main gyratory to two-way flows and introducing two-way flows on Skerton Bridge. All other flows will remain unaffected, with the exception of a bus contraflow on Greyhound Bridge.
Modelling Assumptions	<ul style="list-style-type: none"> ■ Redesign of the junction of Caton Road/Bulk Road/Kingsway, this was to include two-way flow on Kingsway. ■ Greyhound Bridge – reduced speed to account for the introduction of a contraflow bus lane, capacity reduced from 3,783 to 2,631. ■ Traffic from Greyhound Bridge to Morecambe Road (westbound) will be able to merge into Morecambe Road when leaving Greyhound Bridge. ■ The right turning movement from Greyhound Bridge into Morecambe Road will remain. ■ No new capacity constraints have been included on either of the River Lune crossings. ■ It is likely that a number of restricted movements and signing strategies may be implemented for the different bridges. This has not been modelled.
Modelling Results	<ul style="list-style-type: none"> ■ No significant changes in flows on Morecambe Road. ■ Increased flow on Owen Road (A6) north of Skerton Bridge. ■ Skerton Bridge provides northbound access to A6 north of Lancaster, there are few trips heading to Morecambe Road on Skerton Bridge (approx 20 – 30). ■ Greyhound Bridge – provides northbound access to Morecambe Road westbound only. Only 2 trips use the right turn into Morecambe Road from Greyhound Bridge. ■ City Centre Changes – for general trend see Option H ■ Two-way Kingsway and Parliament Street provide improved access to/from Skerton Bridge. The majority of trips from the north still remain on Caton Road. Trips travelling southbound on Skerton Bridge turn right into Parliament Street, this is marked by a 50% reduction in trips on Caton Road. ■ Caton Road southbound section (Kingsway between Parliament Street)

	<p>reduction in trips due to changed routeings:</p> <ul style="list-style-type: none"> - Trips to A6 Owen Road from A683 Caton Road – can now use Kingsway and Skerton Bridge to reach the A6 instead of using the one-way system via Greyhound Bridge. - Southbound trips on Skerton Bridge to the City Centre can make a right-turn into Parliament Street, this reduces the number of trips on Caton Road. - Access to Bulk Road is now greater from the south at Parliament Street. Access from Bulk Road is greater at the north on Caton Road/Kingsway. <ul style="list-style-type: none"> ■ The reduction of speed as a result of introducing a contraflow bus lane on Greyhound Bridge has not had a significant impact on the distribution of flows.
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Option H

Scheme Description	Option H involves the conversion of the main gyratory to two-way flows. All other sections remain unaltered.
Modelling Assumptions	<ul style="list-style-type: none"> ■ Modifications to the junction of Cable Street/North Road to accommodate two way traffic on Cable Street and North Street. ■ Capacity constraints and link speeds were assessed. ■ One way streets within the existing city centre gyratory (Meeting House Lane, Common Garden Street) will remain unchanged.
Modelling Results	<ul style="list-style-type: none"> ■ Distribution of flows between major routes. ■ Major changes in the numbers using routes from/to A6 through the City Centre. ■ Significant eastbound increases in flows on George Street and Nelson Street, possibly due to improved accessibility via northbound Thurnham Street, matched by reduction in the westbound direction (towards the one-way system), suggesting new improved routes from this area of the City Centre. ■ Increased flows westbound on St. Georges Quay, decreases in eastbound flows (towards the one-way system). ■ The City Centre one-way system <ul style="list-style-type: none"> - 50-60% reduction in northbound flows on King Street, around 400 – 500 new southbound trips. - 40–50% reduction in southbound flows on Thurnham Street, around 500 – 600 new northbound trips. ■ Use of Bulk Road increases in the eastbound direction, decreases to the west, impacts on Parliament Street northbound. ■ High flow locations on the route: <ul style="list-style-type: none"> - North Road (Moor Lane to Church Street) 681 northbound, 797 southbound. - King Street (Common Garden Street to Meeting House Lane) 411 northbound, 695 southbound). - Thurnham Street (South Road to George Street) 570 northbound, 695 southbound. - Cable Street (North Road to St. Georges Quay) 518 northbound, 673 southbound. ■ Wider area – slight changes in flows on the edge of the City Centre, these are only slight, with a 4% increase in trips northbound on South Road, 11% reduction in trips on A683 Caton Road leaving the City, minimal change on the River Lune bridges.

Option I

Scheme Description	This option involves retaining the eastern section of the main gyratory and the Lune gyratory as existing. Kingsway will be altered to provide a bus contraflow. In addition, the north west section of the main gyratory will be converted to two-way flow.
Modelling	<ul style="list-style-type: none"> ■ Modifications to the junction of Cable Street/North Road to accommodate two way traffic on Cable Street and North Street.

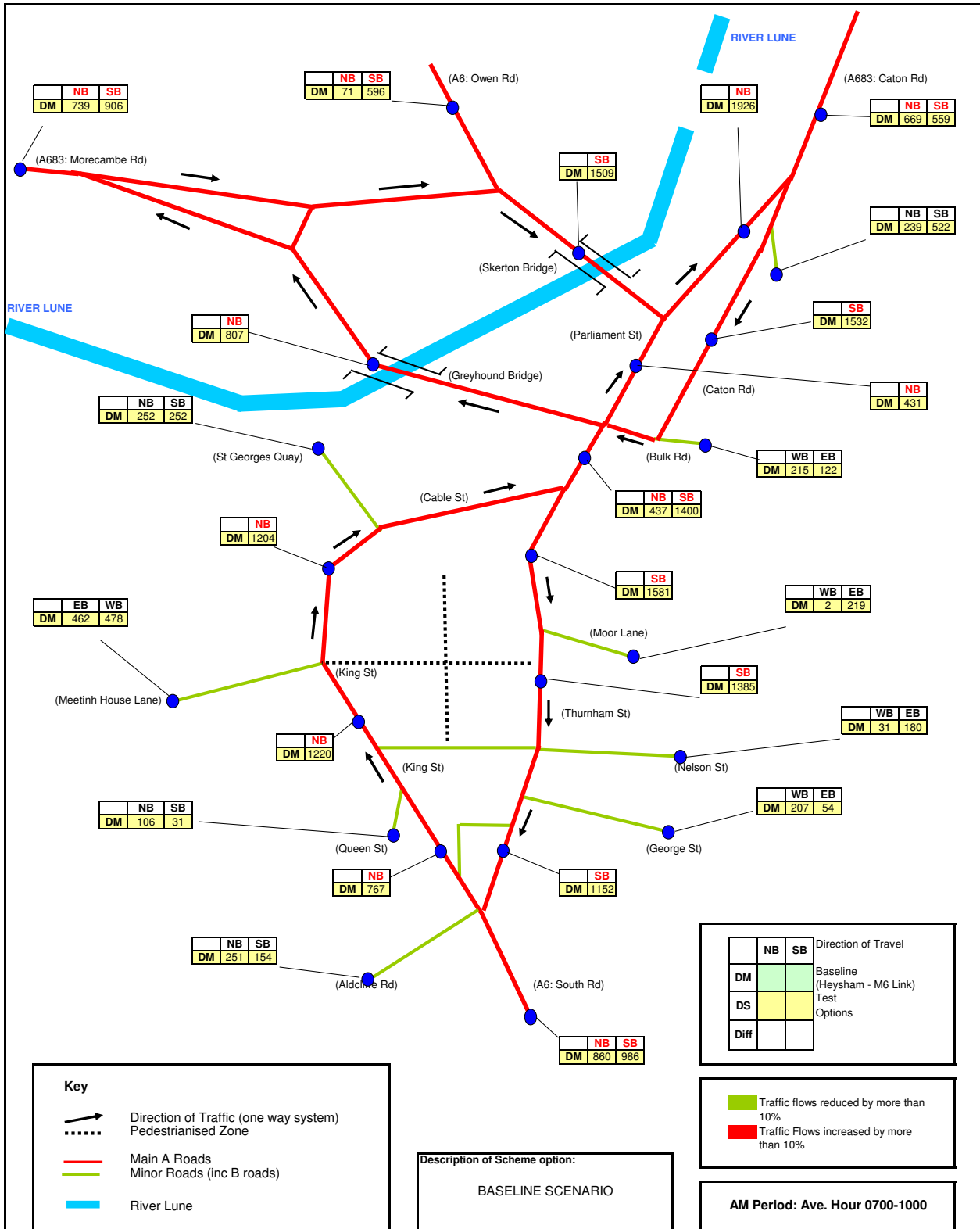
Assumptions	<ul style="list-style-type: none"> ■ Capacity constraints and link speeds were assessed. ■ One way streets within the existing city centre gyratory (Meeting House Lane, Common Garden Street) will remain unchanged.
Modelling Results	<ul style="list-style-type: none"> ■ Cable Street – direct access to St. Georges Quay and Meeting House Lane from north ■ King Street – northbound 40% reduction in flow between Common Garden Street and Meeting House Lane. This represents the redistribution of trips onto Cable Street. At present trips from the north of the City Centre to Meeting House Lane and St. Georges Quay area have to use the City Centre one-way system to access these areas, the introduction of two-way Cable Street eliminates this. ■ North Street – 35% reduction in trips, directly relating to converting Cable Street to two-way flow. ■ Transfer of a small number of trips onto Bulk (northbound only) the reduction in the number of northbound lanes results in a small number of trips diverting via Bulk Road. ■ Capacity issues: Can the reduction in northbound capacity still cope with the required northbound A6 demand?

Option I

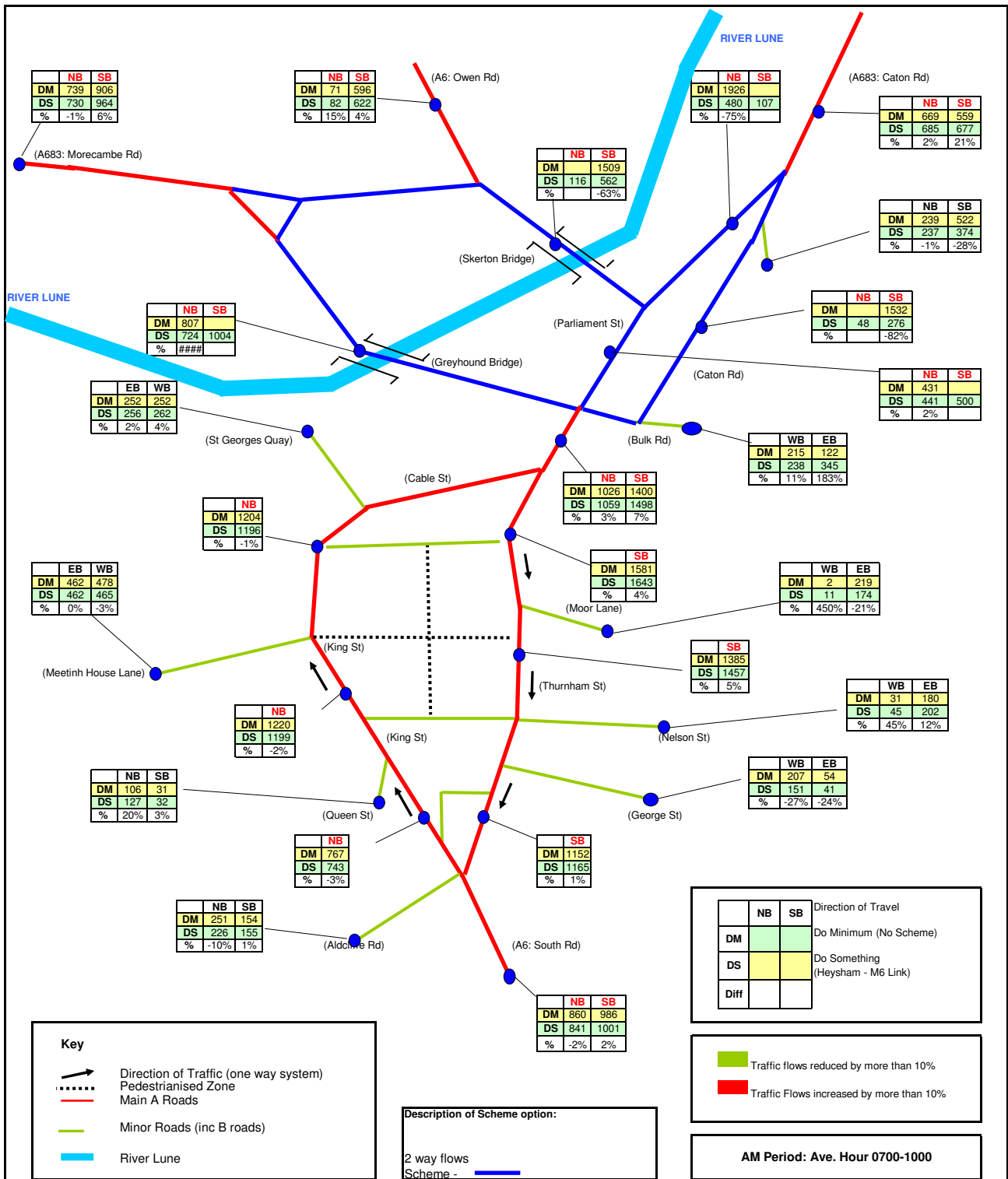
Not modelled.

Option J

Not modelled.



Client: Lancashire County Council	Title: LINK FLOWS: BASELINE (Includes Heysham - M6 Link Rd)	FABER MAUNSELL AECOM Lynnfield House, Church Street Altrincham, WA14 4DZ Tel: +44 (0) 161 927 8200 Fax: +44 (0) 161 927 8499 www.fabermaunsell.com	Scale N.T.S
Project: Lancaster District Transport Vision and Strategy			Date: 29/01/2008



Client: **Lancashire County Council**

Project: **Lancaster District Transport Vision & Strategy**

Title: **OPTION A**

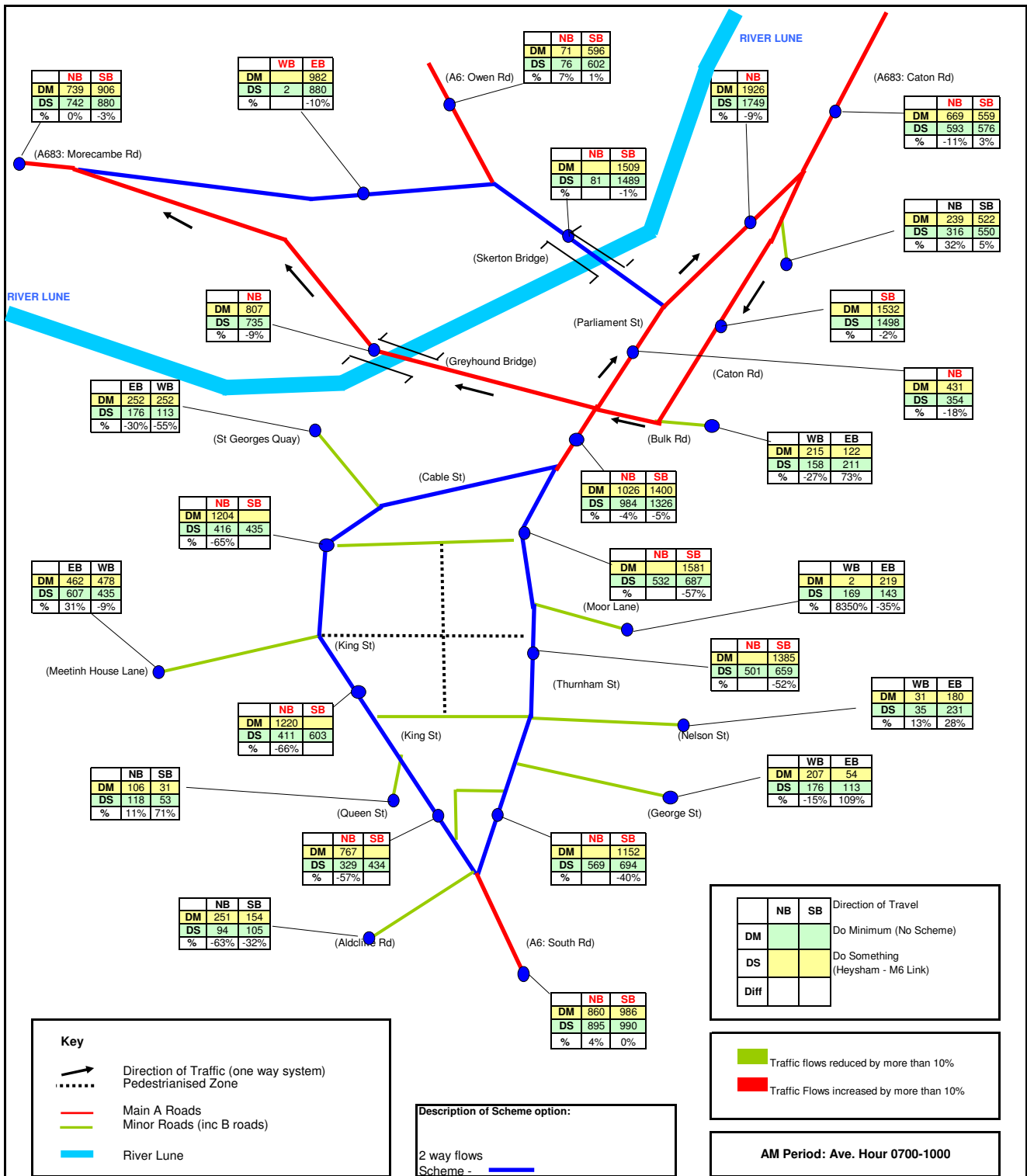
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Date: **29/01/2008**



Client: Lancashire County Council

Project: Lancaster District Transport Vision & Strategy

Title: **OPTION B**

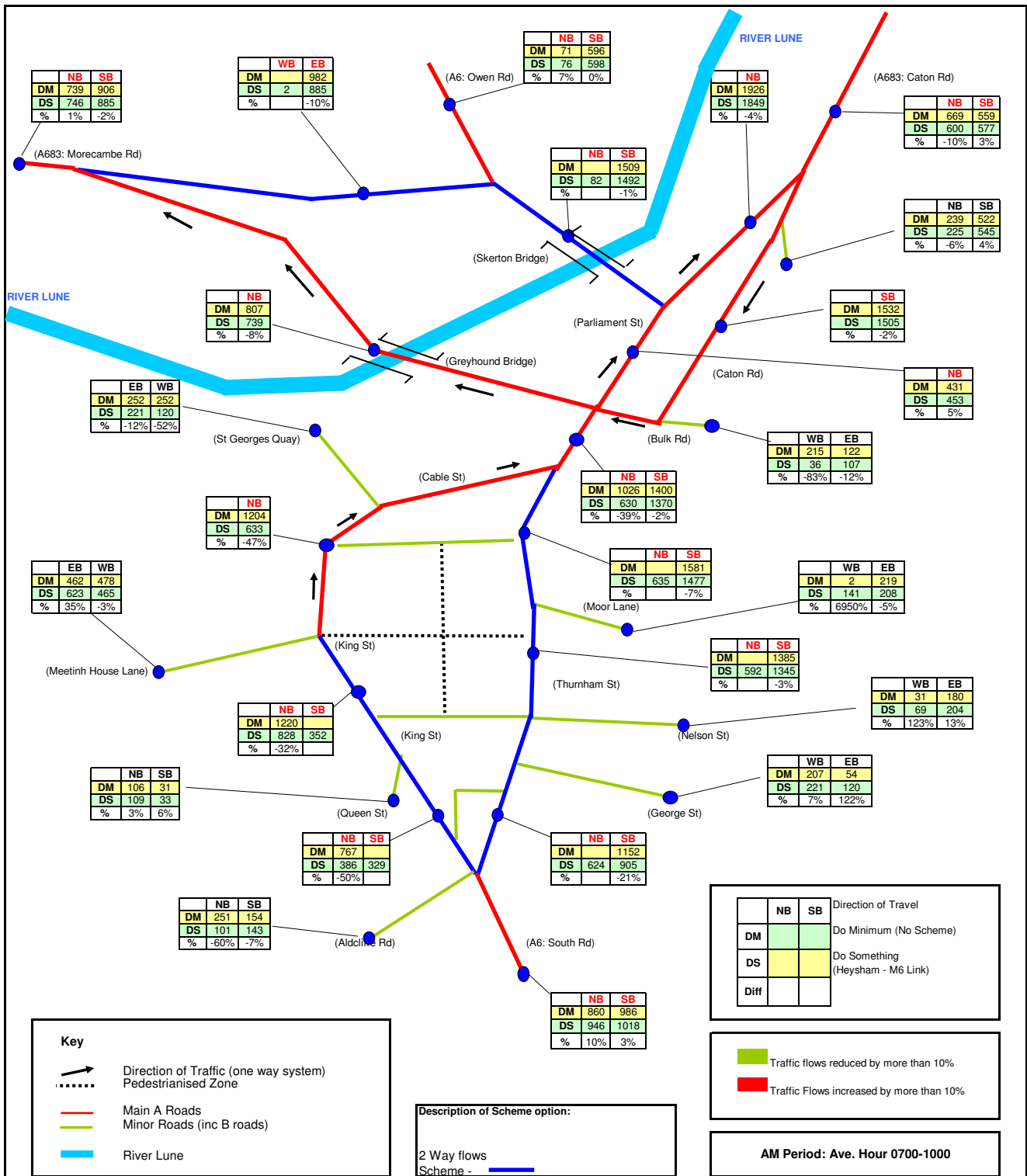
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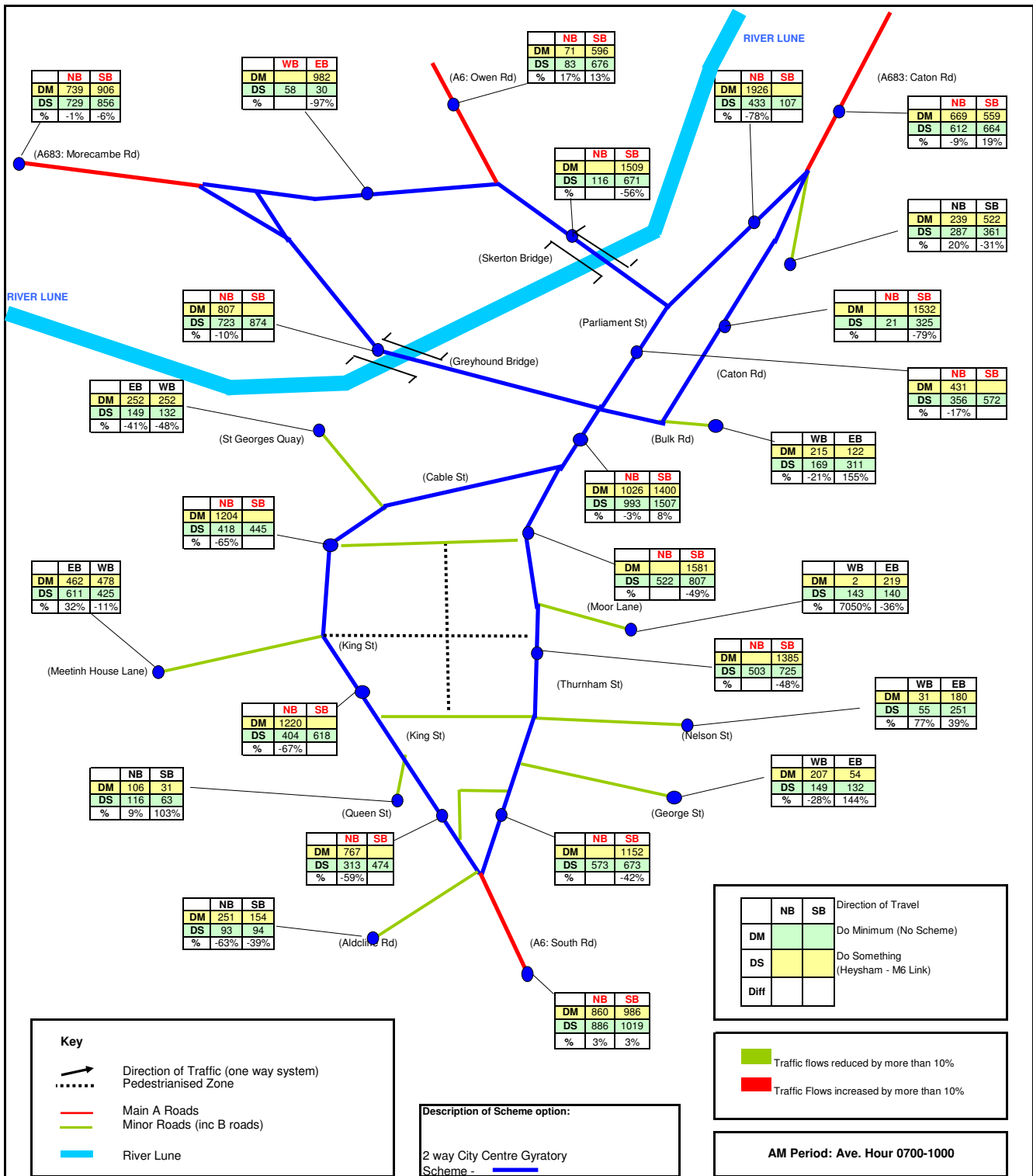


Client: Lancashire County Council
 Project: Lancaster District Transport Vision & Strategy

Title: **OPTION D**

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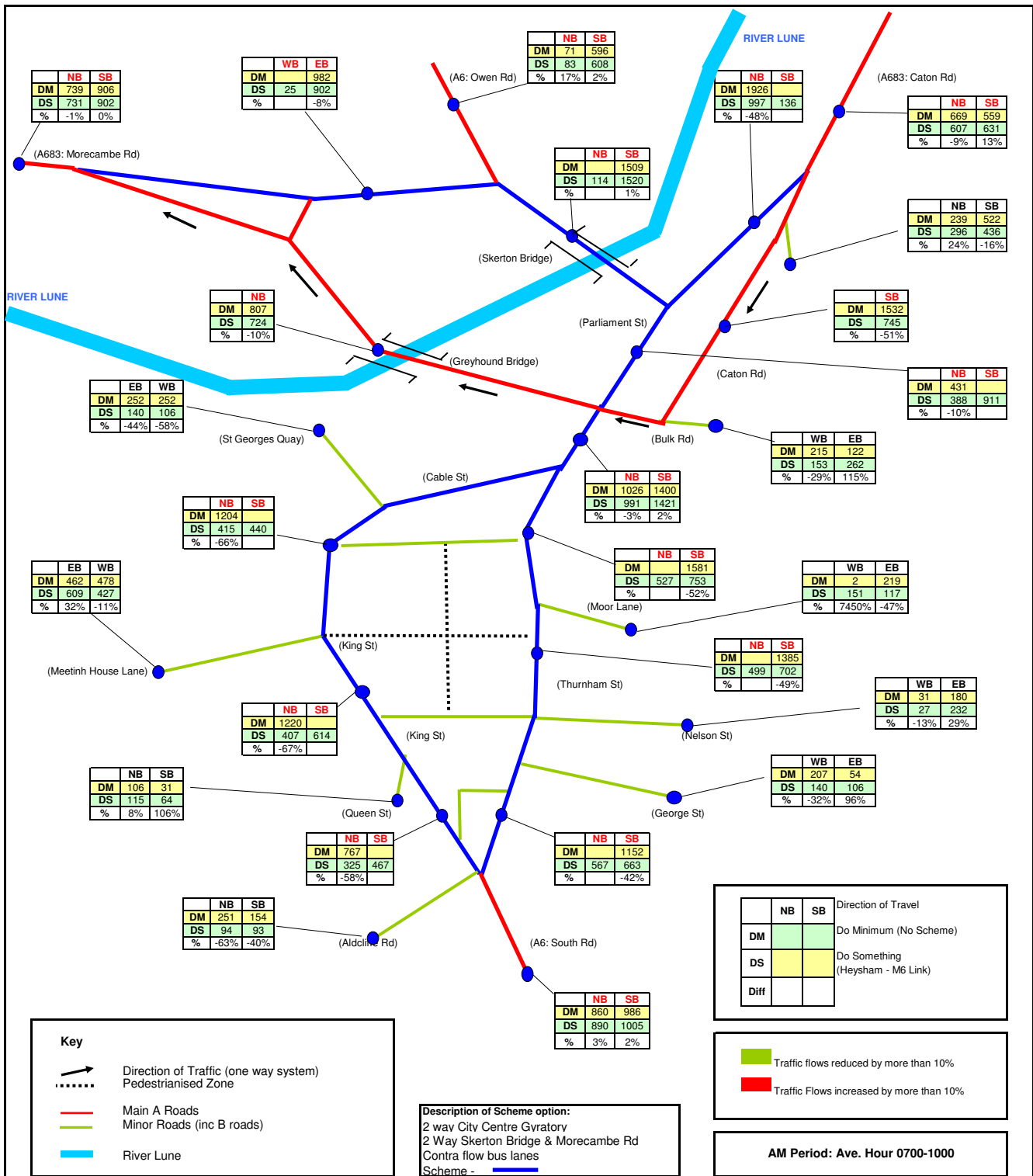


Client: Lancashire County Council
 Project: Lancaster District Transport Vision & Strategy

Title: **OPTION F**

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 Date: 29/01/2008



Key

- Direction of Traffic (one way system)
- Pedestrianised Zone
- Main A Roads
- Minor Roads (inc B roads)
- River Lune

Description of Scheme option:
 2 way City Centre Gvratory
 2 Way Skerton Bridge & Morecambe Rd
 Contra flow bus lanes
 Scheme -

	NB	SB	Direction of Travel
DM			Do Minimum (No Scheme)
DS			Do Something (Heysham - M6 Link)
Diff			

■ Traffic flows reduced by more than 10%
■ Traffic Flows increased by more than 10%

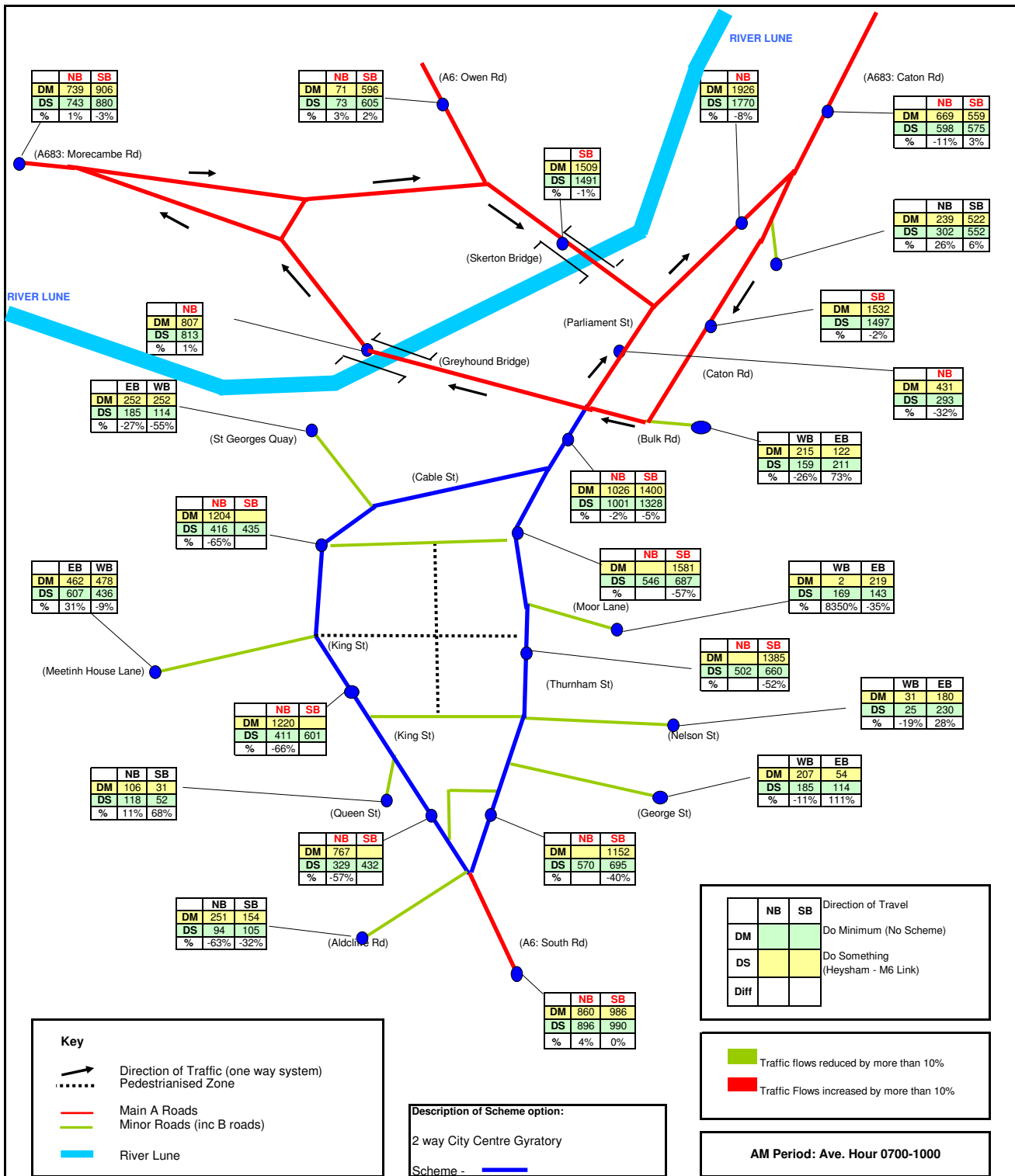
AM Period: Ave. Hour 0700-1000

Client: **Lancashire County Council**
 Project: **Lancaster District Transport Vision & Strategy**

Title: **OPTION G**

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Client: **Lancashire County Council**

Project: **Lancaster District Transport Vision & Strategy**

Title: **OPTION H**

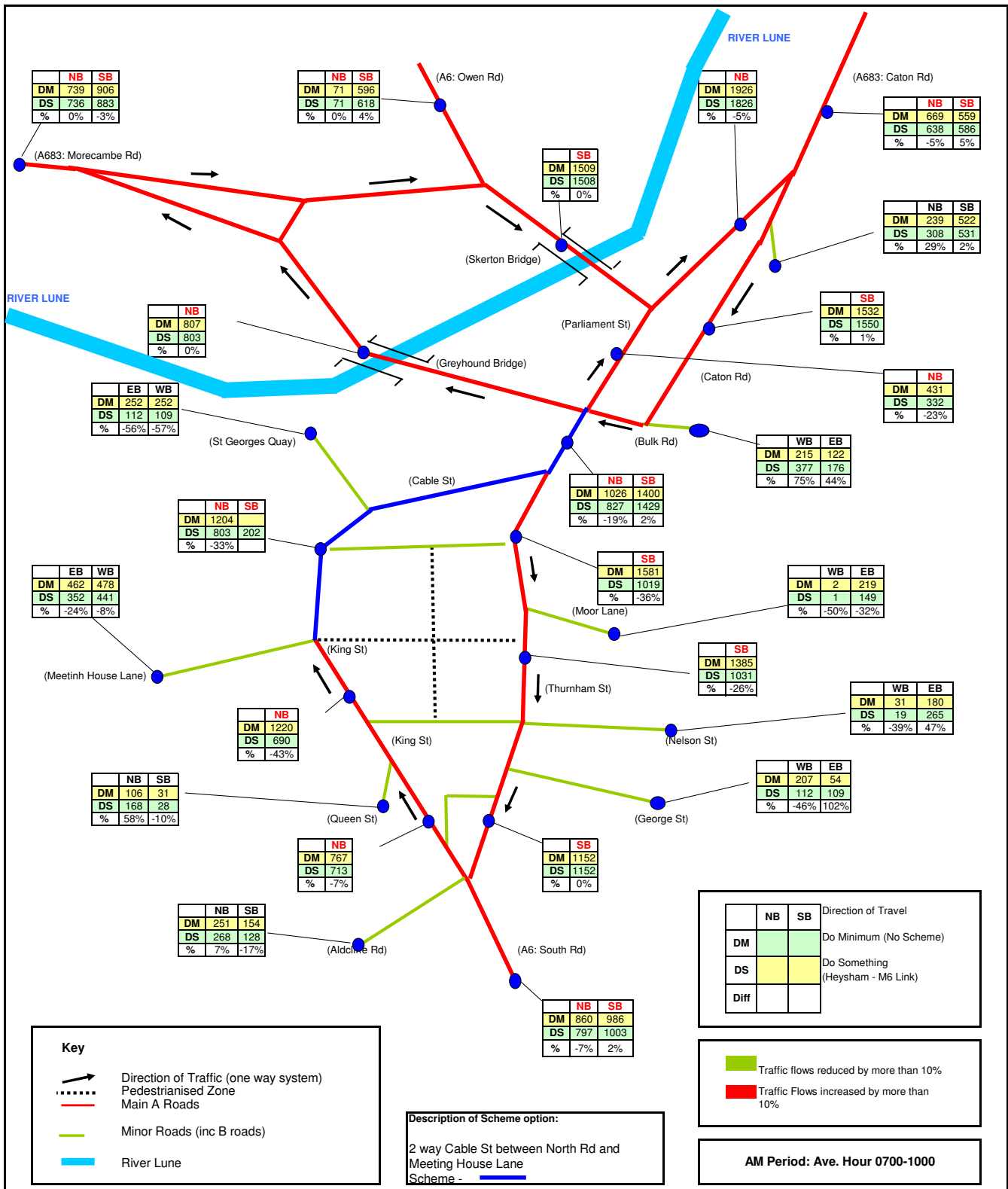
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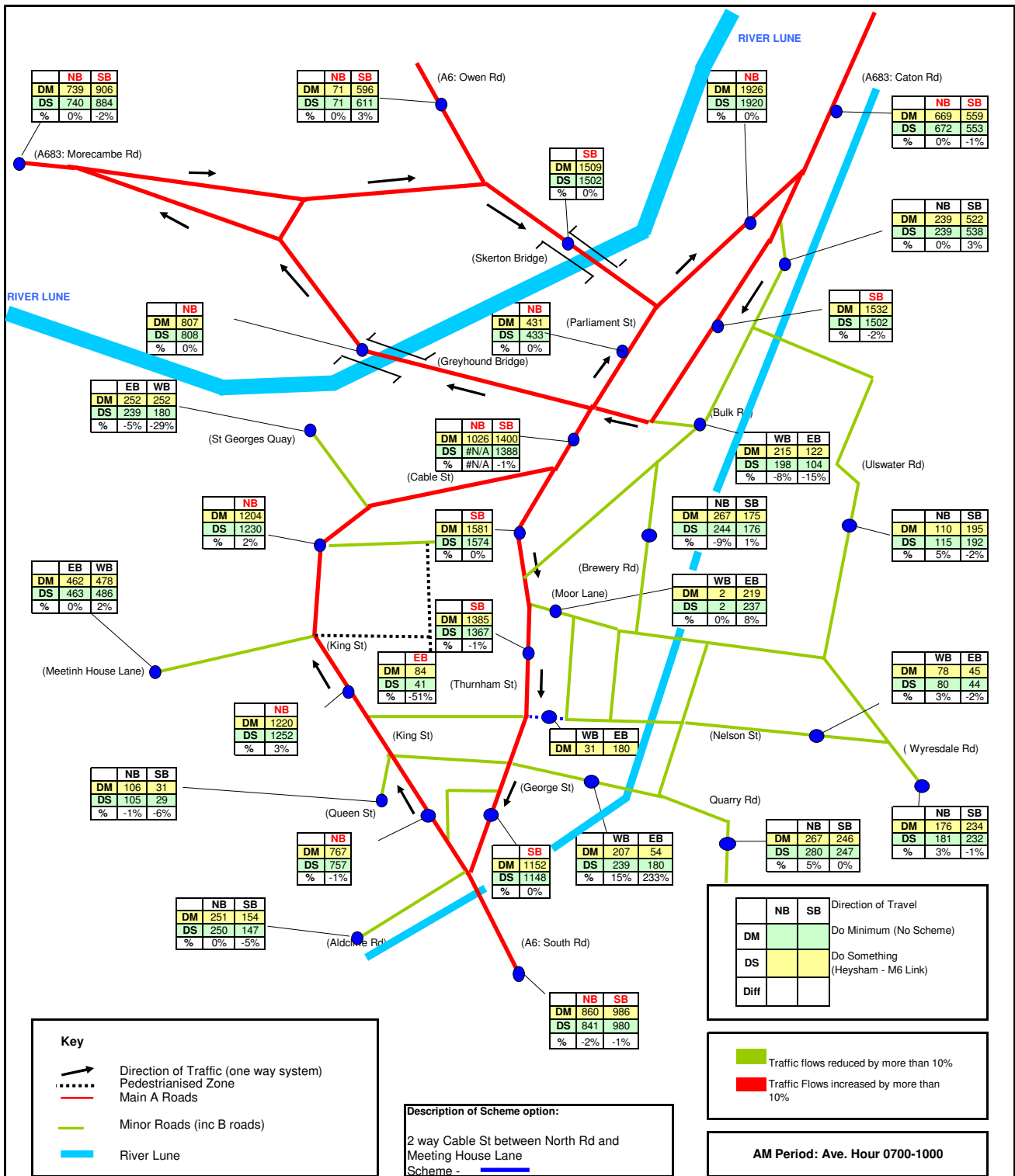


Client: Lancashire County Council
Project: Lancaster District Transport Vision & Strategy

Title: OPTION I

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Scale: N.T.S.
Date: 29/01/2008



Client: **Lancashire County Council**

Project: **Lancaster & Morecambe Vision Transport Strategy**

Title: **OPTION L - Nelson St**

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Date: **29/01/2008**