LGWM GOLDEN MILE MCA WORKSHOP – CYCLING LEVEL OF SERVICE

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Methodology

Trafitec Danish Roadway Segment Cycling LOS 2007 (a.k.a. **the Danish method**)

- **Consistent with the wider LGWM programme (e.g. City Streets)**
- **Most important:**
  - **Width - space available for cycling**
  - **Degree of separation from motor traffic and pedestrians**
- **Important:**
  - **Traffic volume, speed, parking and bus stops all decrease ratings.**
- **Based on their relative improvement or deterioration in LOS compared to the base model, the three options are scored on a seven-point scale of -3 to 3**

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The Danish Method

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	ROADWAY SEGMENT													
				FROM					TO					ROADLENGTH
	NO.	NAME OF ROAD	Road-ID	Km	Meter	Houseno.	Name of road	Road-ID	Km	Meter	Houseno.	Name of road	Road-ID	In kilometers
	1	Lambton Quay - Base Model					Whitmore St					Grey St		0.610
	2	Willis Street - Base Model					Willeston St					Manners St		0.320
	3	Manners Street - Base Model					Willis St					Taranaki St		0.515
	4	Courtenay Place - Base Model					Taranaki St					Cambridge Tce		0.430
	5	Lambton Quay - Option 1					Whitmore St					Grey St		0.610
	6	Willis Street - Option 1					Willeston St					Manners St		0.320
	7	Manners Street - Option 1					Willis St					Taranaki St		0.515
	8	Courtenay Place - Option 1					Taranaki St					Cambridge Tce		0.430
	9	Lambton Quay - Option 2					Whitmore St					Grey St		0.610
	10	Willis Street - Option 2					Willeston St					Manners St		0.320
	11	Manners Street - Option 2					Willis St					Taranaki St		0.515
	12	Courtenay Place - Option 2					Taranaki St					Cambridge Tce		0.430
	13	Lambton Quay - Option 3					Whitmore St					Grey St		0.610
	14	Willis Street - Option 3					Willeston St					Manners St		0.320
	15	Manners Street - Option 3					Willis St					Taranaki St		0.515
	16	Courtenay Place - Option 3					Taranaki St					Cambridge Tce		0.430

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The Danish Method – Continued

Inputs:

IMPORTANT DATA		
MOTORISED VEHICLES IN BOTH DIRECTIONS Only one number in one of the three columns AADT Weekday 6-18 o'clock Weekday peakhour	AVERAGE SPEED Of motor vehicles In km/h	LAND USE ON BOTH ROADSIDES 1=Residential, > 50% residence in ground floor 2=Shopping, > 30% shops in ground floor 3=Mixed, other roads in urban area 4=Rural fields, mostly surrounding fields 5=Rural forrest, mostly surrounding forrest

AVERAGE CROSS SECTION - IN METERS - ONE NUMBER IN EVERY COLUMN

Sidewalk	Buffer area between sidewalk and bicycle facility E.g. dividing verge, parking, bus stop, etc. 3 or more parked cars per 100 meter of roadside is to be entered as a 2 meter wide buffer area	Bicycle track Both one- and two-way traffic	Bicycle lane / paved shoulder Including white dividing line Minimum 0.9 meters wide	Buffer area between bicycle facility and drive lane E.g. dividing verge, parking, bus stop, etc. 3 or more parked cars per 100 meter of roadside is to be entered as a 2 meter wide buffer area

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The Danish Method – Continued

Inputs:

	LESS IMPORTANT DATA (AUTOMATICALLY CALCULATED IF NOT ENTERED)				
SIDEWALK PAVEMENT	CROSS SECTION IN METERS	DUMMIES - IF IT EXISTS THEN 1, OTHERWISE 0			
	Nearest drive lane	**Median**	**Drive lanes**	**Bus stop**	**Trees and bigger plantings**
0 = No sidewalk	Including bicycle lane / paved	0 = no median	0 = 1-3 drive lanes	0 = no bus stop	0 = no or few plantings
1 = Sidewalk of concrete flags	shoulder of less than 0.9 meters	1 = median exist	1 = 4 or more drive lanes	1 = bus stop exist	1 = one or more trees / bigger
2 = Sidewalk of asphalt	and edge lines				plantings per 50 meters of road

PEDESTRIAN TRAFFIC ON NEAREST ROADSIDE			BICYCLE & MOPED TRAFFIC IN BOTH DIRECTIONS			PARKED CARS PER 100 METER	
Only one number in one of the three columns See technical report for specifications.			Only one number in one of the three columns			Only on-street parking	
PEDpedestrian model	PEDbicycle model	Weekday peakhour (traditional traffic count)	AADT	Weekday 6-18 o'clock	Weekday peakhour	TOTAL	Only nearest roadside

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Key assumptions

- Option 1
- Closes some side streets (Reduced general traffic, ability for cycle to filter through)
- Largely the same as Base Model

- Option 2
- People on bikes continue to be able to ride on parts of Lambton Quay and Courtenay Place
- Closes some side streets, ability for bikes to filter through
- Less traffic due to removal of general traffic

- Option 3
- Opportunity to provide a protected cycle facility (e.g. a two-way cycleway)
- Closes some side streets, ability for bikes to filter through
- Less traffic due to removal of general traffic

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Evaluation outcomes

Key assumption: 30km/h for all sections

	A	B	CJ	CN	CO	CP	CQ	CR	CS	CT	CU	CV
1	ROADWAY SEGMENT		BICYCLE LEVEL OF SERVICE									
2												
3			LEVEL OF SERVICE		SATISFACTION: LEVEL AND SPLIT ON RATING CATEGORIES							SERVICE SUM
4						Very	Moderately	A little	A little	Moderately	Very	
5	NO.	NAME OF ROAD	A-F	User	Level	satisfied	satisfied	satisfied	dissatisfied	dissatisfied	dissatisfied	Number
Base Model	6	1	Lambton Quay - Ba	E	Poor	4.7	1%	5%	11%	17%	33%	32%	-71
	7	2	Willis Street - Base	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-36
	8	3	Manners Street - B	E	Poor	4.6	1%	6%	12%	18%	33%	30%	-56
	9	4	Courtenay Place -	B	Good	1.8	48%	36%	10%	3%	2%	1%	71
Option 1	10	5	Lambton Quay - O	B	Good	2.0	35%	40%	16%	5%	3%	1%	85
	11	6	Willis Street - Opti	B	Good	2.0	38%	40%	14%	5%	2%	1%	47
	12	7	Manners Street - O	B	Good	1.9	41%	39%	13%	4%	2%	1%	78
	13	8	Courtenay Place -	B	Good	2.1	34%	41%	16%	5%	3%	1%	60
Option 2	14	9	Lambton Quay - O	A	Good	1.6	57%	31%	8%	2%	1%	0%	108
	15	10	Willis Street - Opti	B	Good	1.9	41%	39%	13%	4%	2%	1%	48
	16	11	Manners Street - O	B	Good	1.9	41%	39%	13%	4%	2%	1%	78
	17	12	Courtenay Place -	B	Good	1.9	40%	39%	13%	4%	2%	1%	64
Option 3	18	13	Lambton Quay - O	A	Good	1.0	100%	0%	0%	0%	0%	0%	366
	19	14	Willis Street - Opti	B	Good	1.9	41%	39%	13%	4%	2%	1%	48
	20	15	Manners Street - O	B	Good	1.9	41%	39%	13%	4%	2%	1%	78
	21	16	Courtenay Place -	A	Good	1.0	100%	0%	0%	0%	0%	0%	258

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Evaluation outcomes

Key assumption: when set "Average speed" at 37km/h

	A	B	CJ	CN	CO	CP	CQ	CR	CS	CT	CU	CV
1	ROADWAY SEGMENT		BICYCLE LEVEL OF SERVICE									
2												
3			LEVEL OF SERVICE		SATISFACTION: LEVEL AND SPLIT ON RATING CATEGORIES							SERVICE
4						Very	Moderately	A little	A little	Moderately	Very	SUM
5	NO.	NAME OF ROAD	A-F	User	Level	satisfied	satisfied	satisfied	dissatisfied	dissatisfied	dissatisfied	Number
Base Model	6	1	Lambton Quay - Ba	E	Poor	4.7	1%	5%	11%	17%	33%	32%	-71
	7	2	Willis Street - Base	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-36
	8	3	Manners Street - B	E	Poor	4.6	1%	6%	12%	18%	33%	30%	-56
	9	4	Courtenay Place -	B	Good	1.8	48%	36%	10%	3%	2%	1%	71
Option 1	10	5	Lambton Quay - O	E	Poor	4.7	1%	5%	11%	17%	33%	33%	-72
	11	6	Willis Street - Optic	E	Poor	4.6	1%	6%	13%	19%	33%	29%	-35
	12	7	Manners Street - C	E	Average	4.6	1%	6%	14%	19%	32%	27%	-52
	13	8	Courtenay Place -	E	Poor	4.8	1%	5%	11%	17%	33%	33%	-51
Option 2	14	9	Lambton Quay - O	D	Average	4.1	3%	11%	21%	23%	27%	16%	-33
	15	10	Willis Street - Optic	E	Average	4.6	1%	6%	13%	19%	32%	27%	-33
	16	11	Manners Street - C	E	Average	4.6	1%	6%	14%	19%	32%	27%	-52
	17	12	Courtenay Place -	E	Average	4.6	1%	6%	13%	19%	32%	28%	-45
Option 3	18	13	Lambton Quay - O	A	Good	1.0	100%	0%	0%	0%	0%	0%	366
	19	14	Willis Street - Optic	E	Average	4.6	1%	6%	13%	19%	32%	27%	-33
	20	15	Manners Street - C	E	Average	4.6	1%	6%	14%	19%	32%	27%	-52
	21	16	Courtenay Place -	A	Good	1.0	100%	0%	0%	0%	0%	0%	258

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Evaluation outcomes

Key assumption: when set "Average speed" at 40km/h

	A	B	CJ	CN	CO	CP	CQ	CR	CS	CT	CU	CV
1	ROADWAY SEGMENT		BICYCLE LEVEL OF SERVICE									
2												
3			LEVEL OF SERVICE		SATISFACTION: LEVEL AND SPLIT ON RATING CATEGORIES							SERVICE SUM
4						Very	Moderately	A little	A little	Moderately	Very	
5	NO.	NAME OF ROAD	A-F	User	Level	satisfied	satisfied	satisfied	dissatisfied	dissatisfied	dissatisfied	Number
Base Model	6	1	Lambton Quay - Ba	E	Poor	4.7	1%	5%	11%	17%	33%	32%	-71
	7	2	Willis Street - Base	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-36
	8	3	Manners Street - B	E	Poor	4.6	1%	6%	12%	18%	33%	30%	-56
	9	4	Courtenay Place -	B	Good	1.8	48%	36%	10%	3%	2%	1%	71
Option 1	10	5	Lambton Quay - O	E	Poor	4.9	1%	4%	10%	16%	33%	37%	-79
	11	6	Willis Street - Optic	E	Poor	4.8	1%	5%	11%	17%	33%	34%	-38
	12	7	Manners Street - C	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-58
	13	8	Courtenay Place -	E	Poor	4.9	1%	4%	9%	15%	33%	38%	-56
Option 2	14	9	Lambton Quay - O	D	Average	4.2	2%	10%	19%	22%	29%	19%	-42
	15	10	Willis Street - Optic	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-36
	16	11	Manners Street - C	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-58
	17	12	Courtenay Place -	E	Poor	4.7	1%	5%	11%	17%	33%	32%	-50
Option 3	18	13	Lambton Quay - O	A	Good	1.0	100%	0%	0%	0%	0%	0%	366
	19	14	Willis Street - Optic	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-36
	20	15	Manners Street - C	E	Poor	4.7	1%	5%	12%	18%	33%	31%	-58
	21	16	Courtenay Place -	A	Good	1.0	100%	0%	0%	0%	0%	0%	258

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Evaluation outcomes

Other Factors that Influenced the Scores

- Position of Bus Stops (in-lane or indented bus bays)
- Cycle Access (i.e. If cycle access is not allowed on Manners Street between Taranaki St and Lower Cuba St, negative impact)
- Loading Bays and Taxi Stands
- Intersection Treatments (Including closing side streets)

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Evaluation outcomes – Cycling Level of Service

Lambton Quay Do Minimum	Lambton Quay Option 1	Lambton Quay Option 2	Lambton Quay Option 3
0	1	1	3

Willis Street Do Minimum	Willis Street Option 1	Willis Street Option 2	Willis Street Option 3
0	0	0	-1

Manners Steet Do Minimum	Manners Street All Options
0	-1

Courtenay Place Do Minimum	Courtenay Place Option 1	Courtenay Place Option 2	Courtenay Place Option 3
0	1	1	3

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Comments

- Loading bays retention
- Loading bays & taxi bay retention
- Tory Street through movement by general traffic

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WAKA KOTAHI
NZ TRANSPORT AGENCY

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

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