

CHALLENGES WITH BICYCLE PLANNING IN SIDRA

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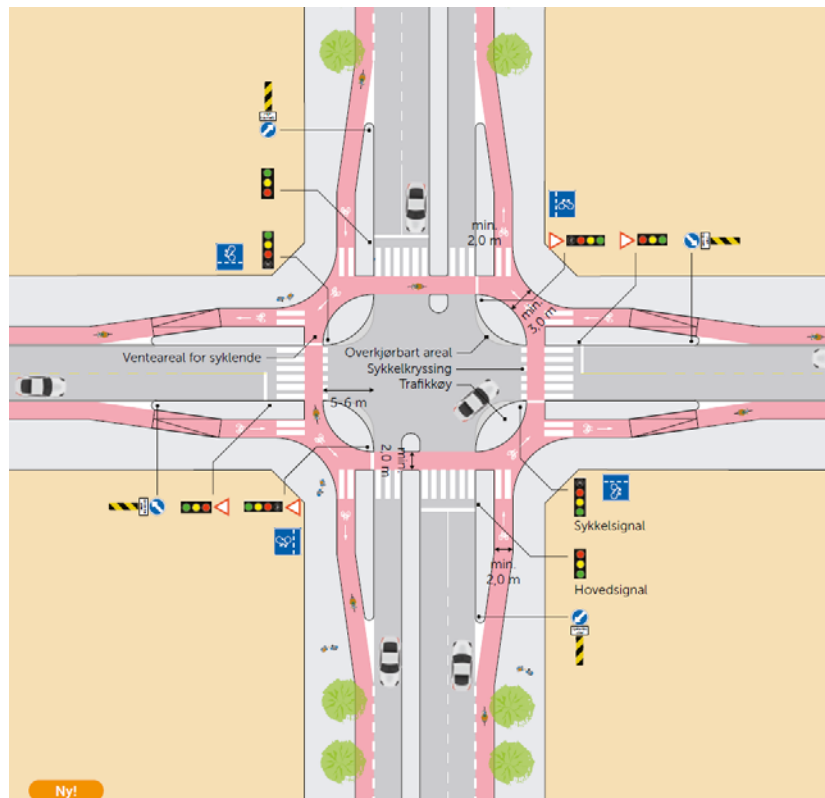
STRUCTURE OF THE PRESENTATION

Future intersection design
Introduction to the case area
Challenges
Structure of the case study
Results
Comparison
Discussion



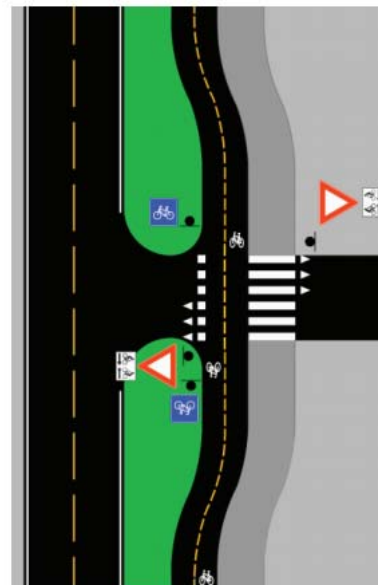
(Kilde: <https://vegnett.no/2018/05/derfor-er-vikepliktsreglene-for-syklist-gode-i-dag/>)

FUTURE INTERSECTION DESIGN

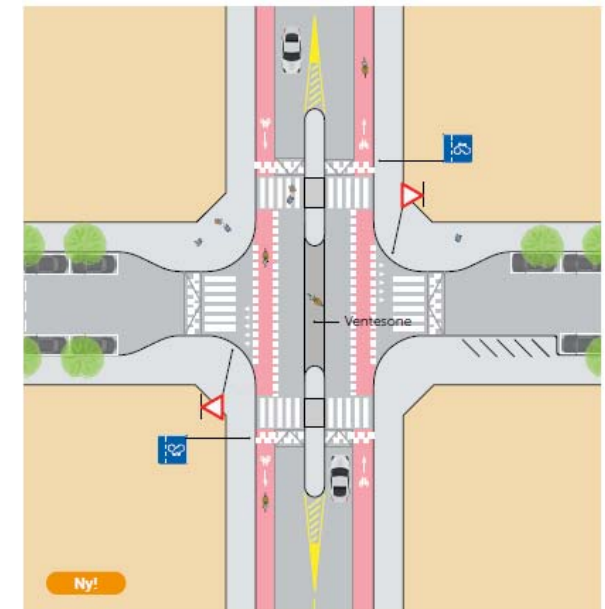


Figur 20: Signalregulert kryss med adskilt anlegg for syklende. (Kilde: Oslostandarden)

- *Nullvekstmålet* – zero vision
- Oslostandarden – new intersection design



Figur 4.16: Kryssing mellom veg og sykkelveg med fortau der kryssende trafikk på sekundærvegen skal vike for syklende (Kilde: Hb V122)



Figur 17: Forkjørregulert kryss med overkjørbar ventesone for venstresvingende syklister. (Kilde: Oslostandarden)

INTRODUCTION TO THE CASE AREA



Location:

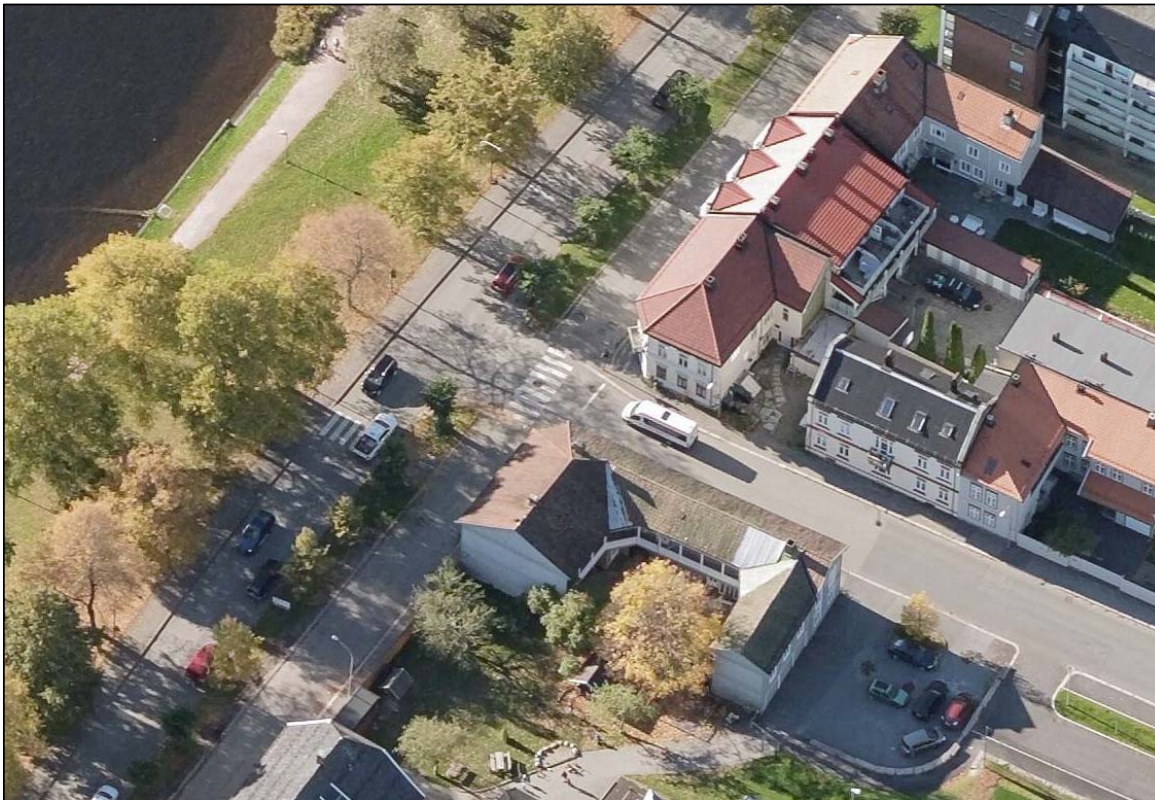
Øvre Slottsgate x Dronninggata
in Drammen

650 m west for the city center

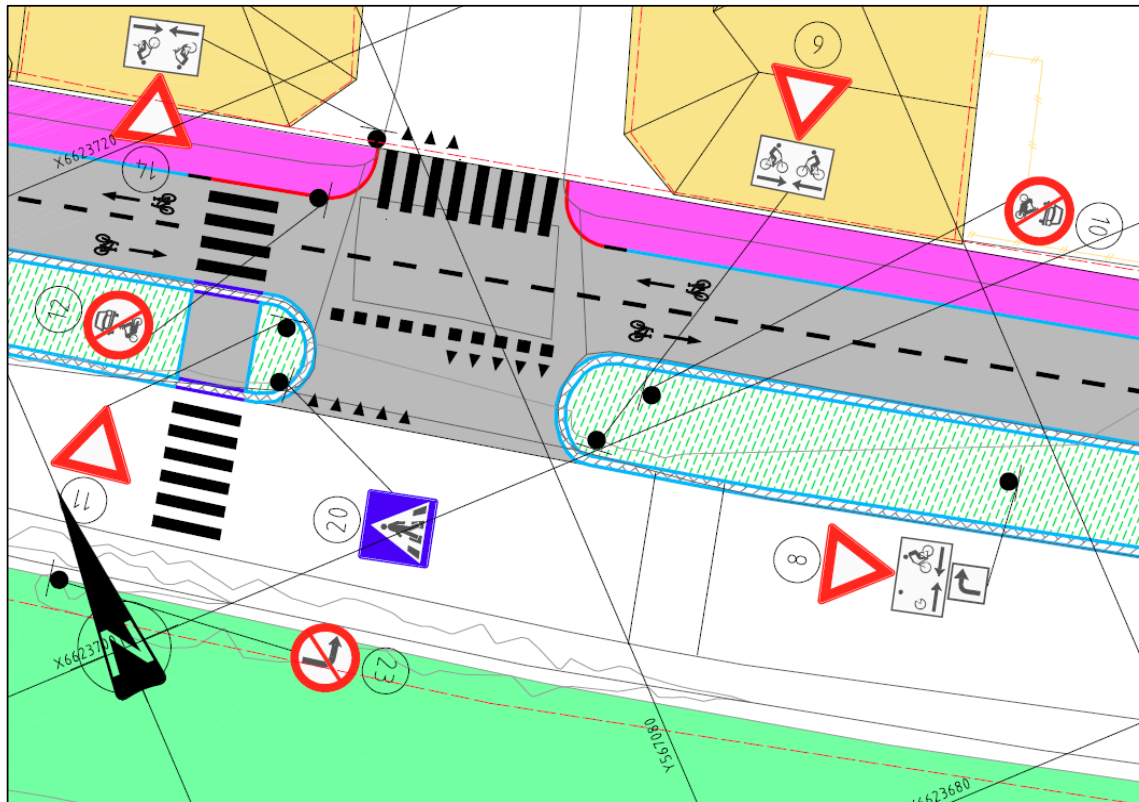
Plans:

New cycle path to the city
center from west

CURRENT SITUATION



PLANS



New cycle path to the city center from west.

Prioritizing of bicycles and pedestrians

Replace the traffic lights with sign control if possible.

CHALLENGES

How to properly simulate bicycle traffic in intersections?


How to set up Priority Rules and others parameters to reflect reality?


How does SIDRA take into account the intersection geometry?

- Turn radius
- Raised pedestrian crossings / intersection
- Positioning off stop line (*Tilbaketrukket stopplinje*)
- Advanced cycle box/head start box (*Sykkelboks*)
- ...

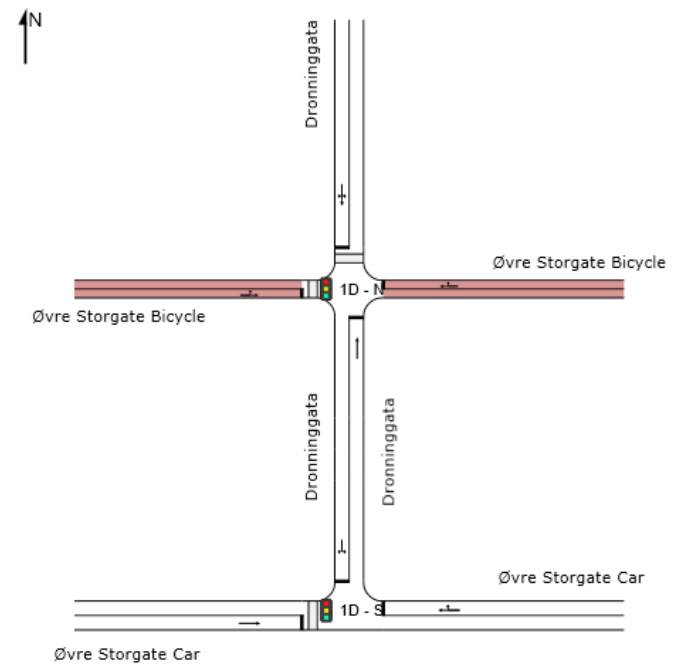
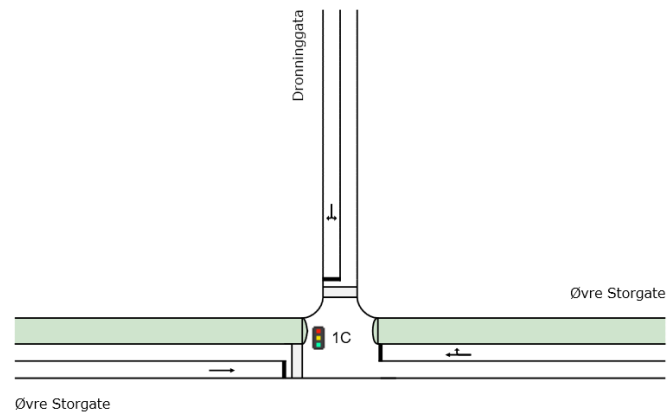
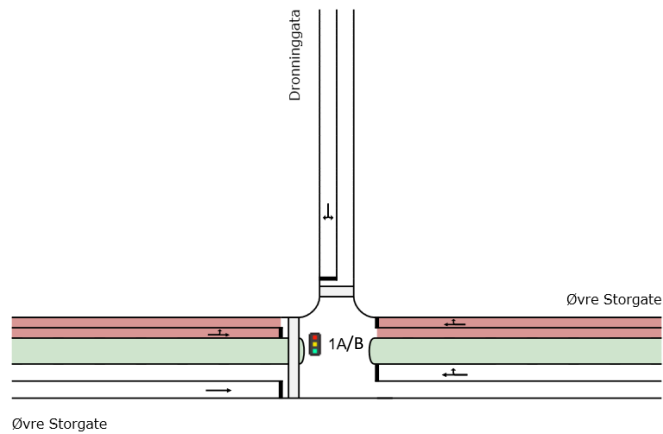
STRUCTURE OF THE CASE STUDY

To types of intersections: Signal Control and Sign Control.
Four scenarios (A, B, C and D) are tested.

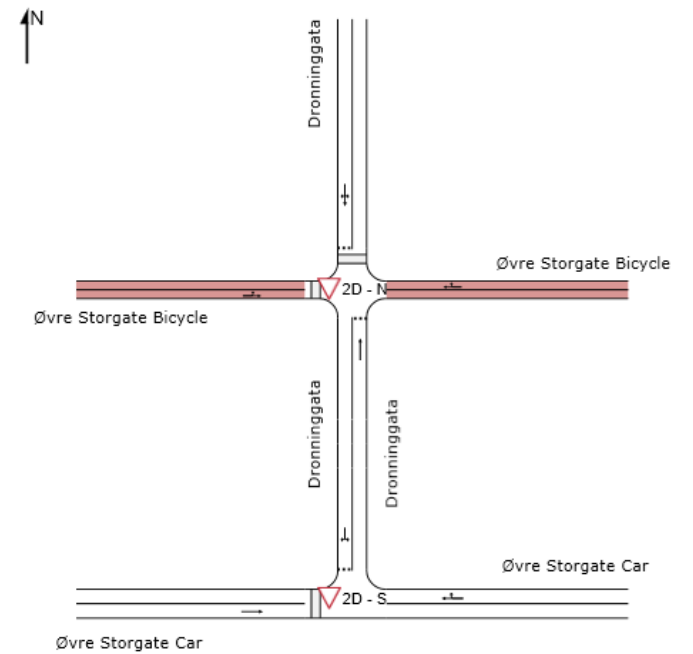
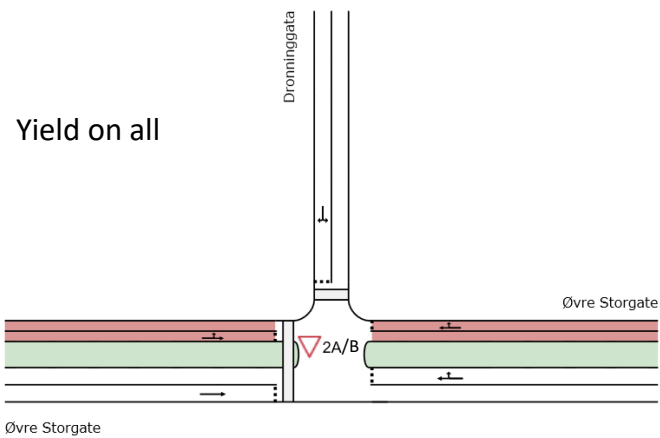
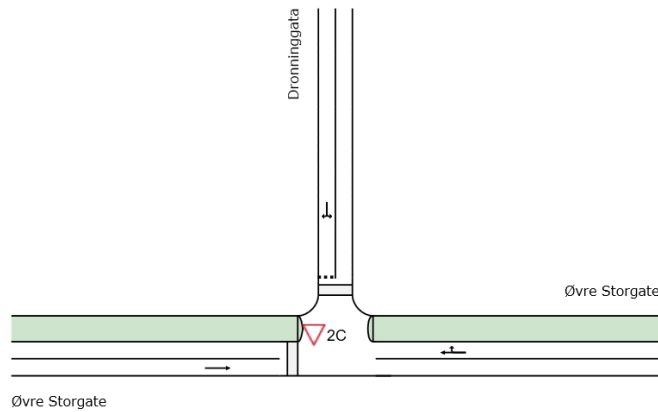
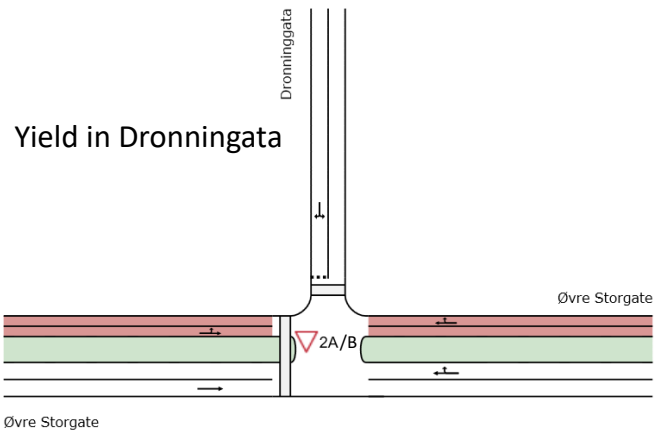
1. Signal Control 
 - A. Standard priority
 - B. Modified priority
 - C. Bicycles as pedestrians
 - D. Network

2. Sign Control 
 - A. Standard priority
 - Yield in Dronninggata (YD)
 - Yield on all (YA)
 - B. Modified priority
 - Yield in Dronninggata (YD)
 - Yield on all (YA)
 - C. Bicycles as pedestrians
 - D. Network

1 SIGNAL CONTROL

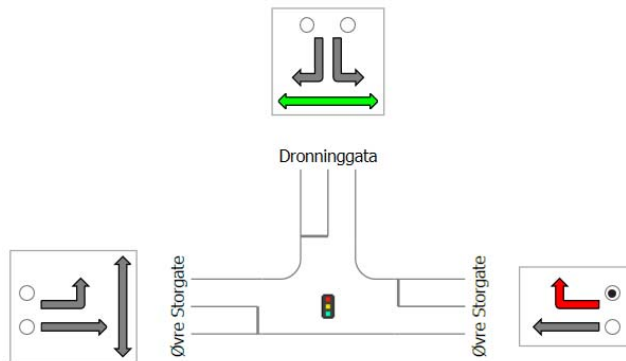


2. SIGN CONTROL

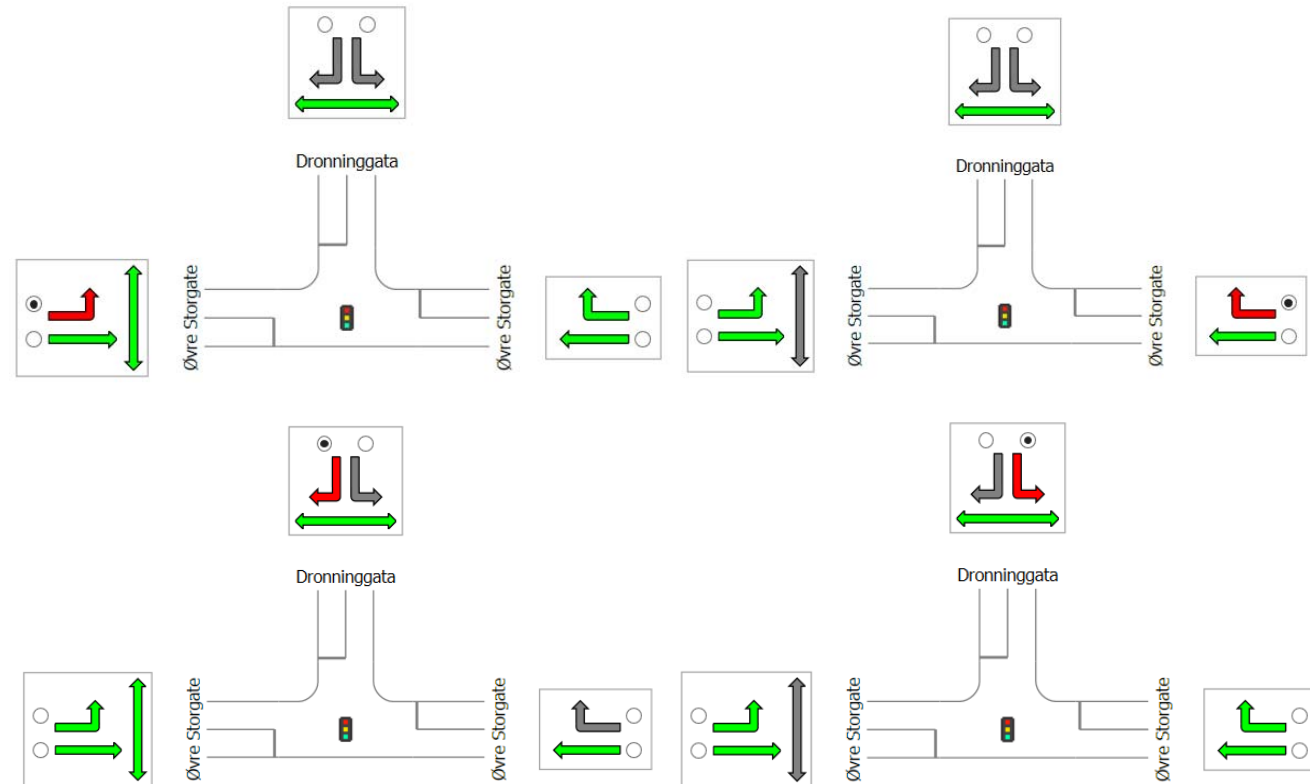


PRIORITY RULES ISSUE INN PARALLEL MOVEMENTS

A. Standard priority (with yield for pedestrians)



B. Modified priority



MOVEMENT SUMMARY

 Site: 1A [Alt 1A]

Dronninggata X Øvre Storgate in Drammen

Standard Priority Signal Control

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	812	0,6	0,611	9,1	LOS A	12,8	90,6	0,66	0,59	0,66	23,4
6	R2	98	1,3	0,611	12,7	LOS B	12,8	90,6	0,68	0,60	0,68	18,5
Approach		910	0,7	0,611	9,5	LOS A	12,8	90,6	0,67	0,59	0,67	20,7
North: Dronninggata												
7	L2	82	0,0	0,611	26,3	LOS C	8,0	51,1	0,95	0,82	0,95	28,3
9	R2	211	0,7	0,611	26,0	LOS C	8,0	51,1	0,95	0,82	0,95	26,0
Approach		293	0,5	0,611	26,1	LOS C	8,0	51,1	0,95	0,82	0,95	26,8
West: Øvre Storgate												
10	L2	11	0,0	0,090	8,8	LOS A	3,4	9,3	0,57	0,46	0,57	14,2
11	T1	535	2,8	0,300	7,9	LOS A	4,9	36,0	0,56	0,47	0,56	35,6
Approach		546	2,7	0,300	7,9	LOS A	4,9	36,0	0,56	0,47	0,56	33,0
All Vehicles		1749	1,3	0,611	11,8	LOS B	12,8	90,6	0,68	0,59	0,68	24,4

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P3	North Full Crossing	211	8,1	LOS A	0,2	0,2	0,52	0,52
P4	West Full Crossing	105	24,4	LOS C	0,2	0,2	0,90	0,90
All Pedestrians		316	13,5	LOS B			0,65	0,65

MOVEMENT SUMMARY

Site: 1B [Alt 1B]

Dronninggata X Øvre Storgate in Drammen

Modified Priority Signal Control

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	v/c	sec		veh	m				km/h
East: Øvre Storgate												
5	T1	812	0,6	1,237	106,1	LOS F	49,4	348,8	0,98	1,67	2,23	9,6
6	R2	98	1,3	1,237	115,5	LOS F	49,4	348,8	0,98	1,73	2,32	11,3
Approach		910	0,7	1,237	107,1	LOS F	49,4	348,8	0,98	1,67	2,24	9,6
North: Dronninggata												
7	L2	82	0,0	0,736	30,4	LOS C	8,8	56,8	0,99	0,91	1,13	27,2
9	R2	211	0,7	0,736	30,1	LOS C	8,8	56,8	0,99	0,91	1,13	24,8
Approach		293	0,5	0,736	30,2	LOS C	8,8	56,8	0,99	0,91	1,13	25,6
West: Øvre Storgate												
10	L2	11	0,0	0,162	19,4	LOS B	5,1	13,9	0,84	0,66	0,84	13,2
11	T1	535	2,8	0,300	12,1	LOS B	5,1	13,9	0,67	0,55	0,67	33,9
Approach		546	2,7	0,300	12,3	LOS B	5,1	36,0	0,67	0,55	0,67	30,4
All Vehicles		1749	1,3	1,237	64,6	LOS E	49,4	348,8	0,88	1,20	1,56	14,3

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Distance	Prop. Queued	Effective Stop Rate	
		ped/h	sec		ped	m			
P3	North Full Crossing	211	8,1	LOS A	0,2	0,2	0,52	0,52	
P4	West Full Crossing	105	24,4	LOS C	0,2	0,2	0,90	0,90	
All Pedestrians		316	13,5	LOS B			0,65	0,65	

MOVEMENT SUMMARY

 **Site: 1C [Alt 1C]**

Dronninggata X Øvre Storgate in Drammen

Bicycles as pedestrians Signal Control

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 60 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	568	0,9	0,679	12,4	LOS B	14,4	101,7	0,81	0,74	0,81	36,0
6	R2	73	1,7	0,679	17,0	LOS B	14,4	101,7	0,81	0,74	0,81	37,1
Approach		641	1,0	0,679	12,9	LOS B	14,4	101,7	0,81	0,74	0,81	36,2
North: Dronninggata												
7	L2	54	0,0	0,679	29,6	LOS C	7,4	51,8	0,98	0,87	1,07	30,4
9	R2	197	0,7	0,679	29,5	LOS C	7,4	51,8	0,98	0,87	1,07	26,4
Approach		251	0,6	0,679	29,5	LOS C	7,4	51,8	0,98	0,87	1,07	27,4
West: Øvre Storgate												
11	T1	322	4,6	0,284	6,2	LOS A	4,6	33,1	0,51	0,44	0,51	42,1
Approach		322	4,6	0,284	6,2	LOS A	4,6	33,1	0,51	0,44	0,51	42,1
All Vehicles		1215	1,8	0,679	14,6	LOS B	14,4	101,7	0,77	0,69	0,79	34,4

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	663	7,2	LOS A	0,6	0,6	0,50	0,50	
P4	West Full Crossing	105	24,4	LOS C	0,2	0,2	0,90	0,90	
All Pedestrians		768	9,6	LOS A			0,55	0,55	

MOVEMENT SUMMARY

 Site: 1D - N [Alt 1D - Dronninggata]

 Network: N101 [Alt 1D]

Dronninggata X Øvre Storgate in Drammen

Network Signal Control

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 60 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed			
		veh/h	%	veh/h	%	v/c	sec	veh	m		km/h			
South: Dronninggata														
2	T1	73	1,7	73	1,7	0,071	1,1	LOS A	0,2	1,1	0,19	0,15	0,19	39,1
Approach		73	1,7	73	1,7	0,071	1,1	LOS A	0,2	1,1	0,19	0,15	0,19	39,1
East: Øvre Storgate Bicycle														
5	T1	244	0,0	244	0,0	0,082	7,1	LOS A	2,3	6,1	0,52	0,42	0,52	14,1
6	R2	24	0,0	24	0,0	0,082	7,1	LOS A	2,3	6,1	0,52	0,42	0,52	14,5
Approach		268	0,0	268	0,0	0,082	7,1	LOS A	2,3	6,1	0,52	0,42	0,52	14,2
North: Dronninggata														
7	L2	28	0,0	28	0,0	0,869	37,7	LOS D	6,4	41,1	1,00	1,14	1,42	18,3
8	T1	251	0,6	251	0,6	0,869	34,0	LOS C	6,4	41,1	1,00	1,14	1,42	21,6
9	R2	14	0,0	14	0,0	0,869	38,5	LOS D	6,4	41,1	1,00	1,14	1,42	20,2
Approach		293	0,5	293	0,5	0,869	34,6	LOS C	6,4	41,1	1,00	1,14	1,42	21,0
West: Øvre Storgate Bicycle														
10	L2	11	0,0	11	0,0	0,075	6,6	LOS A	1,8	4,9	0,49	0,40	0,49	14,4
11	T1	213	0,0	213	0,0	0,075	6,6	LOS A	1,8	4,9	0,49	0,40	0,49	14,2
Approach		223	0,0	223	0,0	0,075	6,6	LOS A	1,8	4,9	0,49	0,40	0,49	14,2
All Vehicles		858	0,3	858	0,3	0,869	15,9	LOS B	6,4	41,1	0,65	0,64	0,79	17,2

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	211	8,1	LOS A	0,2	0,2	0,52	0,52
P4	West Full Crossing	105	19,3	LOS B	0,1	0,1	0,80	0,80
All Pedestrians		316	11,8	LOS B			0,62	0,62

 Site: 1D - S [Alt 1D - Øvre Storgate]

 Network: N101 [Alt 1D]

Dronninggata X Øvre Storgate in Drammen

Network Signal Control

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 60 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed			
		veh/h	%	veh/h	%	v/c	sec	veh	m		km/h			
East: Øvre Storgate Car														
5	T1	568	0,9	568	0,9	0,588	9,2	LOS A	7,5	53,1	0,70	0,64	0,70	38,7
6	R2	73	1,7	73	1,7	0,588	13,7	LOS B	7,5	53,1	0,70	0,64	0,70	36,4
Approach		641	1,0	641	1,0	0,588	9,7	LOS A	7,5	53,1	0,70	0,64	0,70	38,5
North: Dronninggata														
7	L2	54	0,0	54	0,0	0,710	2,9	LOS A	0,6	3,9	0,11	0,48	0,15	42,4
9	R2	197	0,7	197	0,7	0,710	3,0	LOS A	0,6	3,9	0,11	0,48	0,15	33,8
Approach		251	0,6	251	0,6	0,710	3,0	LOS A	0,6	3,9	0,11	0,48	0,15	37,3
West: Øvre Storgate Car														
11	T1	322	4,6	322	4,6	0,300	7,3	LOS A	3,0	22,0	0,56	0,48	0,56	40,9
Approach		322	4,6	322	4,6	0,300	7,3	LOS A	3,0	22,0	0,56	0,48	0,56	40,9
All Vehicles		1215	1,8	1215	1,8	0,710	7,7	LOS A	7,5	53,1	0,54	0,56	0,55	39,1

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Prop. Queued	Effective Stop Rate	
P4	West Full Crossing	105	21,8	LOS C	0,2	0,2	0,85	0,85
All Pedestrians		105	21,8	LOS C			0,85	0,85

MOVEMENT SUMMARY

▽ Site: 2A [Alt 2A - Yield in Dronninggata]

Dronninggata X Øvre Storgate in Drammen
Standard Priority Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	812	0,6	0,606	1,8	LOS A	6,8	47,8	0,43	0,30	0,47	26,5
6	R2	98	1,3	0,606	5,5	LOS A	6,8	47,8	0,44	0,31	0,48	19,4
Approach		910	0,7	0,606	2,2	NA	6,8	47,8	0,43	0,30	0,47	22,6
North: Dronninggata												
7	L2	82	0,0	1,037	119,6	LOS F	17,0	109,0	1,00	2,67	4,49	18,6
9	R2	211	0,7	1,037	68,4	LOS F	17,0	109,0	1,00	2,67	4,49	15,5
Approach		293	0,5	1,037	82,7	LOS F	17,0	109,0	1,00	2,67	4,49	16,5
West: Øvre Storgate												
10	L2	11	0,0	0,235	13,3	LOS B	1,2	3,2	0,29	0,16	0,29	14,9
11	T1	535	2,8	0,315	0,9	LOS A	1,9	13,5	0,32	0,18	0,32	41,3
Approach		546	2,7	0,315	1,2	NA	1,9	13,5	0,32	0,18	0,32	37,9
All Vehicles		1749	1,3	1,037	15,4	NA	17,0	109,0	0,49	0,66	1,10	23,3

MOVEMENT SUMMARY

▽ Site: 2A [Alt 2A - Yield on all]

Dronninggata X Øvre Storgate in Drammen
Standard Priority Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	812	0,6	0,637	5,6	LOS A	6,5	45,7	0,55	0,70	0,78	24,6
6	R2	98	1,3	0,637	6,9	LOS A	6,5	45,7	0,56	0,73	0,80	18,9
Approach		910	0,7	0,637	5,7	LOS A	6,5	45,7	0,55	0,71	0,78	21,6
North: Dronninggata												
7	L2	82	0,0	0,702	39,0	LOS E	5,0	31,9	0,71	1,29	1,65	29,7
9	R2	211	0,7	0,702	13,7	LOS B	5,0	31,9	0,71	1,29	1,65	27,8
Approach		293	0,5	0,702	20,8	LOS C	5,0	31,9	0,71	1,29	1,65	28,4
West: Øvre Storgate												
10	L2	11	0,0	0,242	19,2	LOS C	1,0	2,6	0,35	0,23	0,35	14,8
11	T1	535	2,8	0,299	3,0	LOS A	1,3	9,8	0,35	0,42	0,35	38,2
Approach		546	2,7	0,299	3,3	LOS A	1,3	9,8	0,35	0,41	0,35	35,8
All Vehicles		1749	1,3	0,702	7,5	NA	6,5	45,7	0,52	0,71	0,79	25,8

MOVEMENT SUMMARY

▽ Site: 2B [Alt 2B - Yield in Dronninggata]

Dronninggata X Øvre Storgate in Drammen
Modified Priority Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	812	0,6	0,954	22,0	LOS C	32,3	228,1	0,46	0,95	1,36	17,8
6	R2	98	1,3	0,954	66,0	LOS F	32,3	228,1	0,47	1,00	1,43	16,4
Approach		910	0,7	0,954	26,7	NA	32,3	228,1	0,46	0,95	1,37	17,3
North: Dronninggata												
7	L2	82	0,0	1,037	119,6	LOS F	17,0	109,0	1,00	2,67	4,49	18,6
9	R2	211	0,7	1,037	68,4	LOS F	17,0	109,0	1,00	2,67	4,49	15,5
Approach		293	0,5	1,037	82,7	LOS F	17,0	109,0	1,00	2,67	4,49	16,5
West: Øvre Storgate												
10	L2	11	0,0	0,260	25,3	LOS D	1,3	3,5	0,30	0,17	0,30	14,8
11	T1	535	2,8	0,315	0,9	LOS A	1,9	13,5	0,32	0,18	0,32	41,2
Approach		546	2,7	0,315	1,4	NA	1,9	13,5	0,32	0,18	0,32	37,7
All Vehicles		1749	1,3	1,037	28,2	NA	32,3	228,1	0,51	1,00	1,56	20,1

MOVEMENT SUMMARY

▽ Site: 2B [Alt 2B - Yield on all]

Dronninggata X Øvre Storgate in Drammen
Modified Priority Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	812	0,6	0,727	6,8	LOS A	8,8	62,0	0,58	0,82	1,01	23,6
6	R2	98	1,3	0,727	16,7	LOS C	8,8	62,0	0,59	0,86	1,05	18,6
Approach		910	0,7	0,727	7,9	LOS A	8,8	62,0	0,58	0,83	1,01	21,1
North: Dronninggata												
7	L2	82	0,0	0,681	38,7	LOS E	5,0	31,9	0,65	1,16	1,48	29,9
9	R2	211	0,7	0,681	12,8	LOS B	5,0	31,9	0,65	1,16	1,48	28,0
Approach		293	0,5	0,681	20,1	LOS C	5,0	31,9	0,65	1,16	1,48	28,6
West: Øvre Storgate												
10	L2	11	0,0	0,280	35,3	LOS E	1,1	2,9	0,37	0,26	0,37	14,7
11	T1	535	2,8	0,299	3,0	LOS A	1,3	9,8	0,36	0,43	0,36	38,0
Approach		546	2,7	0,299	3,6	LOS A	1,3	9,8	0,36	0,42	0,36	35,5
All Vehicles		1749	1,3	0,727	8,6	NA	8,8	62,0	0,52	0,76	0,89	25,4

MOVEMENT SUMMARY

▽ Site: 2C [Alt 2C]

Dronninggata X Øvre Storgate in Drammen

Bicycles as pedestrians Sign Control

Site Category: (None)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate												
5	T1	568	0,9	0,639	3,1	LOS A	8,7	61,4	0,47	0,42	0,60	44,3
6	R2	73	1,7	0,639	13,0	LOS B	8,7	61,4	0,47	0,42	0,60	41,4
Approach		641	1,0	0,639	4,2	NA	8,7	61,4	0,47	0,42	0,60	43,7
North: Dronninggata												
7	L2	54	0,0	1,564	292,1	LOS F	34,1	239,9	1,00	3,40	8,47	8,4
9	R2	197	0,7	1,564	288,0	LOS F	34,1	239,9	1,00	3,40	8,47	6,3
Approach		251	0,6	1,564	288,9	LOS F	34,1	239,9	1,00	3,40	8,47	6,8
West: Øvre Storgate												
11	T1	322	4,6	0,315	1,0	LOS A	1,9	13,5	0,34	0,19	0,34	47,9
Approach		322	4,6	0,315	1,0	NA	1,9	13,5	0,34	0,19	0,34	47,9
All Vehicles		1215	1,8	1,564	62,3	NA	34,1	239,9	0,54	0,98	2,16	18,1

MOVEMENT SUMMARY

Site: 2D - N [Alt 2D - Dronninggata]

Network: 2D [Alt 2D]

Dronninggata X Øvre Storgate in Drammen
Network Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Dronninggata														
2	T1	73	1,7	73	1,7	0,088	2,9	LOS A	0,1	0,9	0,46	0,54	0,46	37,8
Approach		73	1,7	73	1,7	0,088	2,9	LOS A	0,1	0,9	0,46	0,54	0,46	37,8
East: Øvre Storgate Bicycle														
5	T1	244	0,0	244	0,0	0,253	0,9	LOS A	0,6	1,5	0,31	0,17	0,31	14,9
6	R2	24	0,0	24	0,0	0,253	1,0	LOS A	0,6	1,5	0,31	0,17	0,31	14,9
Approach		268	0,0	268	0,0	0,253	0,9	NA	0,6	1,5	0,31	0,17	0,31	14,9
North: Dronninggata														
7	L2	28	0,0	28	0,0	0,620	10,2	LOS B	1,0	6,2	0,54	0,88	0,89	21,9
8	T1	251	0,6	251	0,6	0,620	6,8	LOS A	1,0	6,2	0,54	0,88	0,89	31,9
9	R2	14	0,0	14	0,0	0,620	9,0	LOS A	1,0	6,2	0,54	0,88	0,89	26,9
Approach		293	0,5	293	0,5	0,620	7,2	LOS A	1,0	6,2	0,54	0,88	0,89	29,6
West: Øvre Storgate Bicycle														
10	L2	11	0,0	11	0,0	0,210	0,9	LOS A	0,4	1,2	0,30	0,16	0,30	14,9
11	T1	213	0,0	213	0,0	0,210	0,8	LOS A	0,4	1,2	0,30	0,16	0,30	14,9
Approach		223	0,0	223	0,0	0,210	0,8	NA	0,4	1,2	0,30	0,16	0,30	14,9
All Vehicles		858	0,3	858	0,3	0,620	3,2	NA	1,0	6,2	0,40	0,44	0,52	19,4

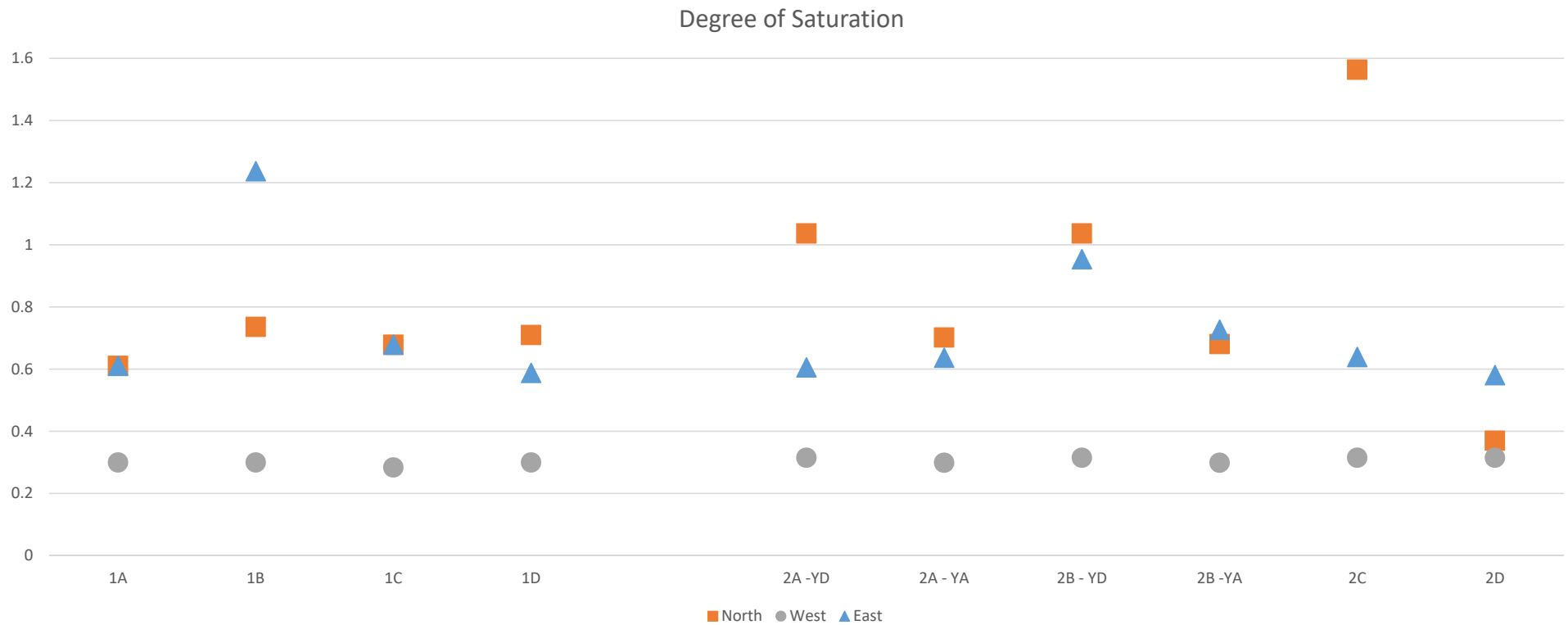
Site: 2D - S [Alt 2D - Øvre Storgate]

Network: 2D [Alt 2D]

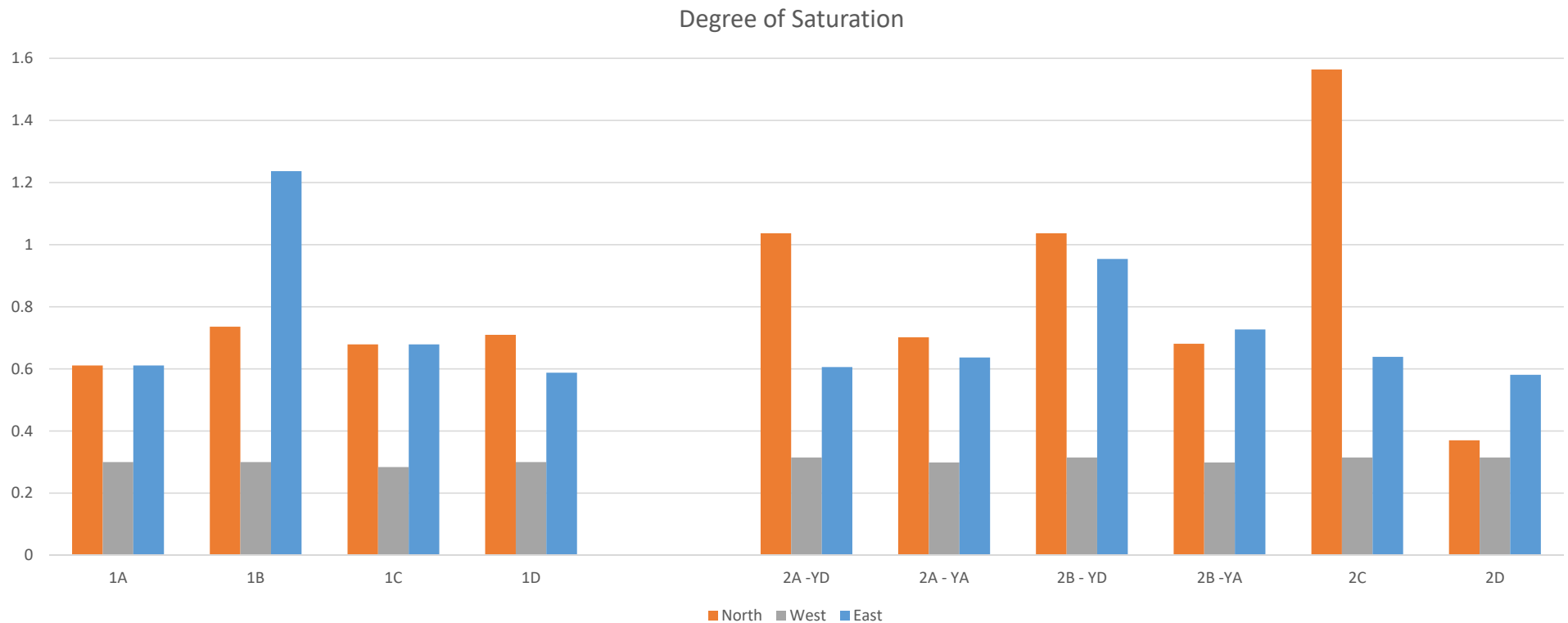
Dronninggata X Øvre Storgate in Drammen
Network Sign Control
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Øvre Storgate Car														
5	T1	568	0,9	568	0,9	0,581	1,8	LOS A	2,4	16,8	0,47	0,29	0,49	46,5
6	R2	73	1,7	73	1,7	0,581	6,3	LOS A	2,4	16,8	0,47	0,29	0,49	45,6
Approach		641	1,0	641	1,0	0,581	2,3	NA	2,4	16,8	0,47	0,29	0,49	46,4
North: Dronninggata														
7	L2	54	0,0	54	0,0	0,370	9,6	LOS A	0,7	4,9	0,66	0,88	0,85	37,6
9	R2	197	0,7	197	0,7	0,370	6,2	LOS A	0,7	4,9	0,66	0,88	0,85	25,9
Approach		251	0,6	251	0,6	0,370	6,9	LOS A	0,7	4,9	0,66	0,88	0,85	30,2
West: Øvre Storgate Car														
11	T1	322	4,6	322	4,6	0,315	1,0	LOS A	0,7	5,4	0,34	0,19	0,34	47,9
Approach		322	4,6	322	4,6	0,315	1,0	NA	0,7	5,4	0,34	0,19	0,34	47,9
All Vehicles		1215	1,8	1215	1,8	0,581	2,9	NA	2,4	16,8	0,47	0,39	0,53	44,7

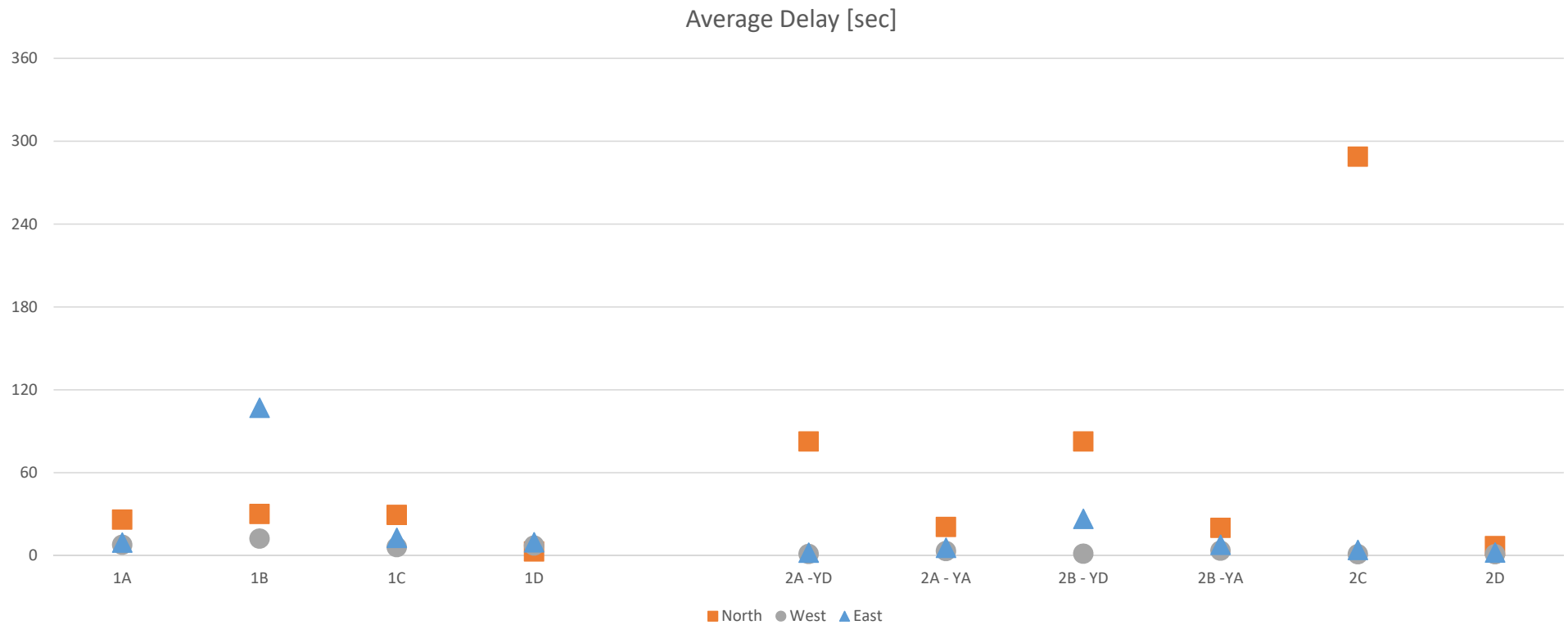
COMPARISON – DEGREE OF SATURATION



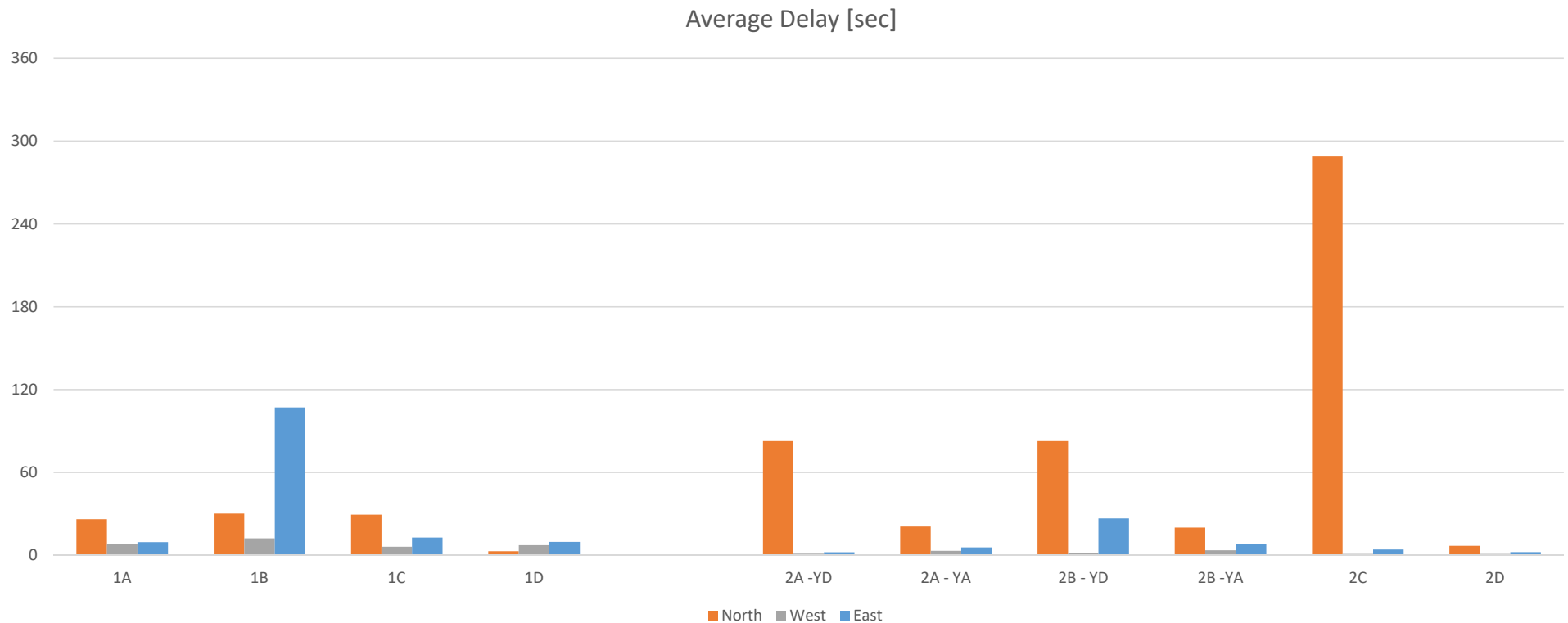
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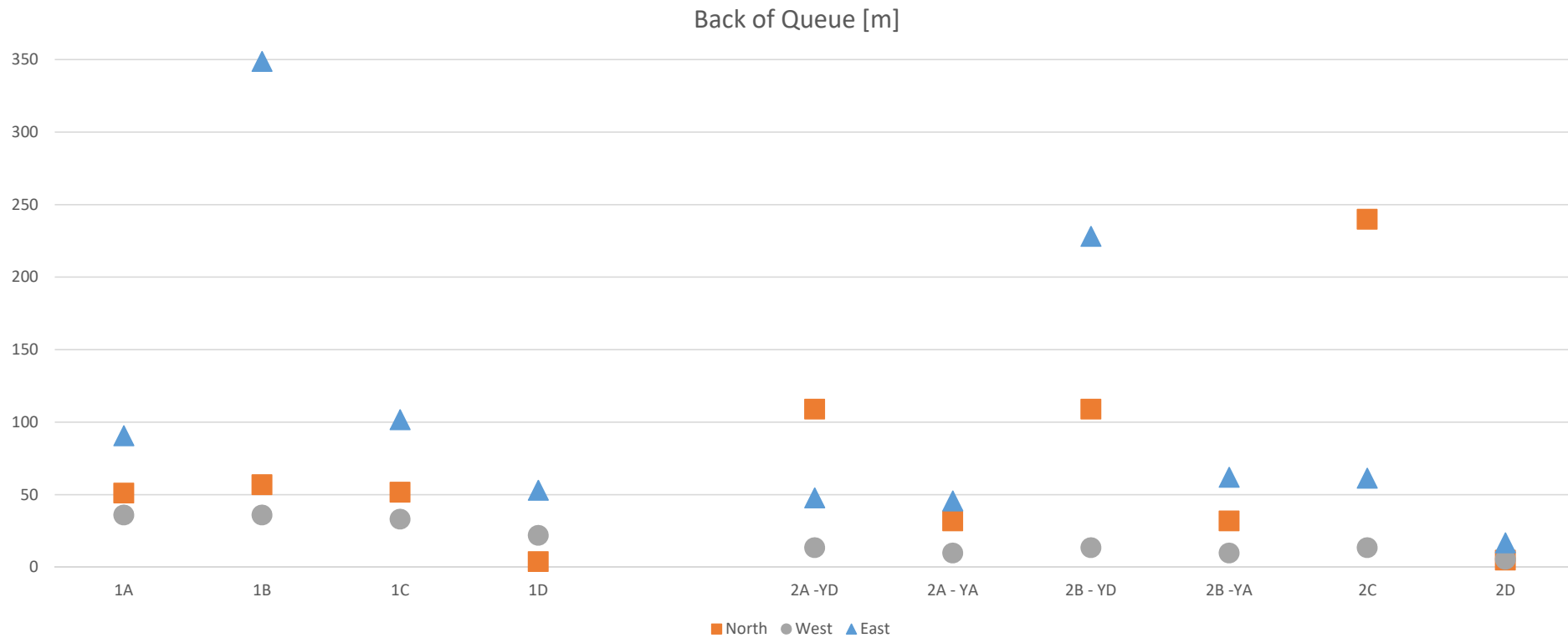
COMPARISON – AVERAGE DELAY



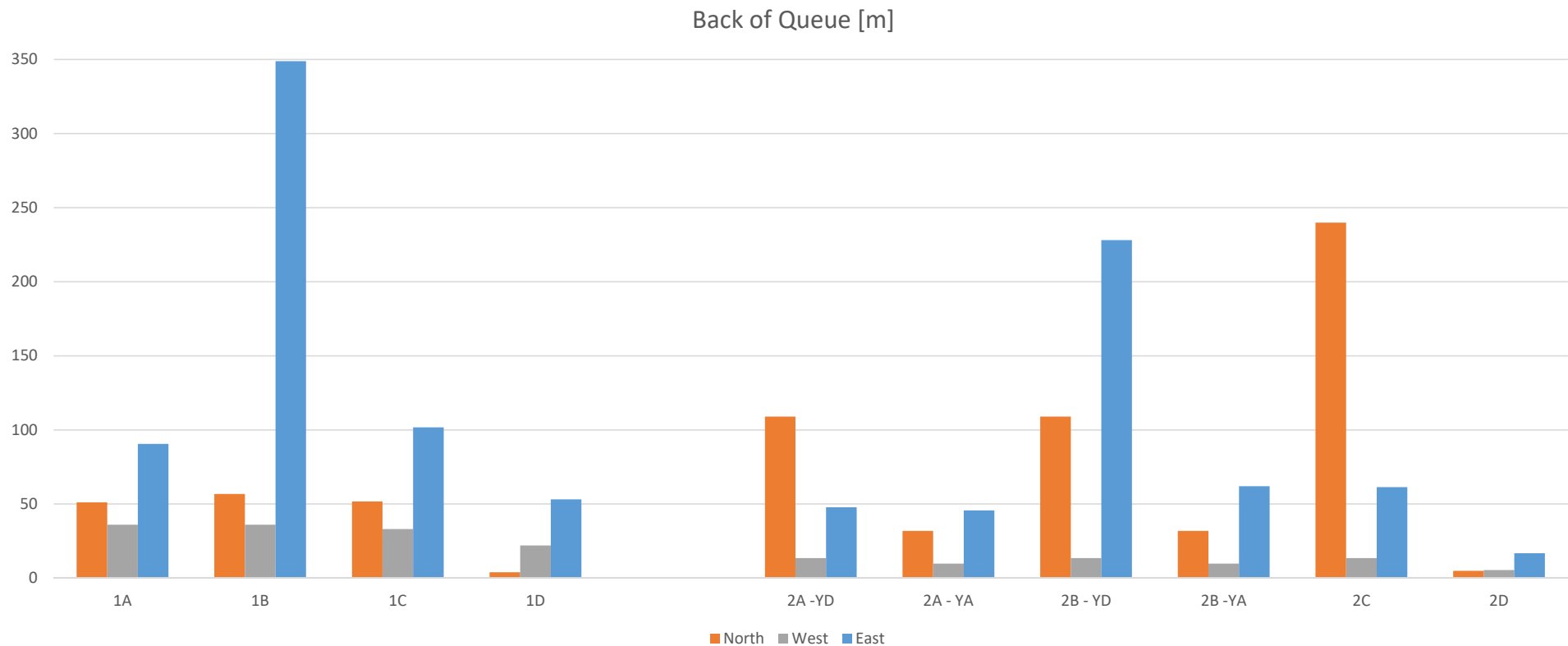
COMPARISON – AVERAGE DELAY



COMPARISON – BACK OF QUEUE



COMPARISON – BACK OF QUEUE



DISCUSSION

Which settings is correct to use?

Recommendations?

