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Milldale Primary School NoR - s92 Transport Response

Prepared for: Ministry of Education

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1. Background

Auckland Council has issued a request for further information (s92 request) dated 9 March 2020. This s92 request included queries related to the transport aspects of the proposal to designate a site for educational purposes within the Milldale development precinct. These queries are listed below in italics, along with our response below each query.

2. S92 queries and response

1) *The intersection of Argent Lane / Road 11 has been assessed using a network modelling package. Whilst this provides a high-level assessment of the operation of the intersection, network models are not typically appropriate for examining the operation of intersections in detail. To fully understand the operation of the intersection, an intersection modelling package, such as SIDRA, should be used and results provided together with detailed output such as degree of saturation, delays and queue lengths.*

We have assessed the Argent Lane / Road 11 intersection using SIDRA. It has been tested as a roundabout using the approximate dimensions shown in Fulton Hogan's layout plans. The SIDRA outputs are attached at the end of this technical note. The location of the intersection and the testing undertaken are indicated in **Figure 2.1**.

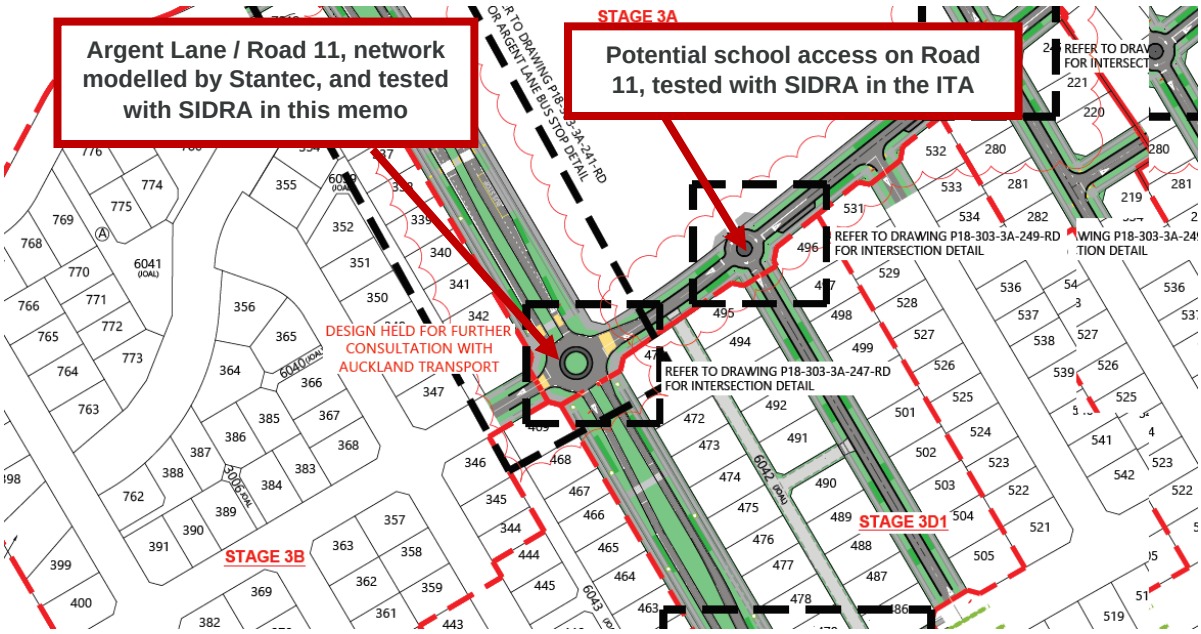

Figure 2.1 Intersections tested in this memo and in the ITA

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We tested the full buildout scenario as this is the most conservative – this scenario, as described in Stantec's Technical Note, accounts for a full housing population in Milldale as well as a full school roll at the proposed school location (ie. the overall heaviest traffic volumes anticipated in the precinct based on planned development). SIDRA testing shows that the roundabout is estimated to perform at overall LOS A, with some movements at LOS B. This is based upon the traffic volumes as used in Stantec's technical note.

As a further sensitivity test and to align with SIDRA modelling at the school entrance, we have considered that local effects of school traffic may be more concentrated on Road 11 than the volumes indicated in the network model. Therefore, we have also tested a set of traffic volumes scaled up on the Road 11 (eastern) approach to Argent Lane, such that they more closely match Abley's trip generation estimated in the ITA, which is more conservative than the network model. This results in an intersection LOS of B for the morning peak, and LOS C for the afternoon peak. The critical movements are in the afternoon peak on the southern approach to the intersection (Argent Lane), where the high volume of through movements results in queueing (LOS D). LOS D is a relatively normal situation for busy urban roads, such as Argent Lane is anticipated to be.

Therefore, the level of congestion likely to occur at full buildout of the precinct (and with a full school roll) does not necessitate the intersection being signalised.

Note that this is conservative as residents would naturally adjust their routing and timing of their trips, and as our estimates of vehicle trip numbers in the ITA were considered conservative – it is our belief that a greater proportion of pupils will walk or bike to school rather than being dropped off and picked up by car.

2) *The Stantec technical note in Appendix F of the ITA recommends that the Argent Lane / Road 11 intersection is signalised. It provides an assessment of the intersection as a signalised intersection for the initial school roll and the full school roll. There is, however, uncertainty as to when the intersection will be upgraded from a roundabout to a signalised intersection. To assess the effects of the school on the intersection with the initial roll and the full school roll, details of the operation of the intersection as a roundabout should be provided. This is to confirm that the intersection operates satisfactorily as a roundabout with the initial school roll and to demonstrate whether the intersection requires upgrading when the full school roll is implemented. The modelling should be performed in an appropriate intersection modelling package.*

The response to query (1) also covers this query. We conclude that the intersection operates satisfactorily with either the initial or full roll; however, as the overall population of Milldale increases and the school roll is filled, the overall traffic level will eventually be expected to be such that the intersection will perform more efficiently with signalisation. This is planned for as part of the Milldale precinct development as indicated by the future Argent Lane 4-lane plan.

3) *The ITA anticipates that there will be some over-spill parking from the school site on to the local road network. However, how much may over-spill is not identified nor how this would be managed. Given the local roads in the vicinity of the site will be narrow, will have vehicle crossings for properties, include pedestrian crossings, and likely have parking restriction due to their narrow nature, the ability for the roads surrounding the school to accommodate over-spill drop-off and pick-up parking may be limited, particularly in the afternoon peak. An assessment of the amount of over-spill parking onto the surrounding streets should be made together with details as to how this may be accommodated and managed to avoid adverse effects on the local network.*

The ITA does not anticipate over-spill parking as such– it is stated that the intention is to provide for pick-up and drop-off on site at a level that accommodates the practical requirements for the school. However, there is no method of controlling if occasionally someone may choose to utilise available on-street parking if it is there. We are comfortable that any parking restrictions (including the non-provision of on-street parking, should the road controlling authority elect to take this strategy) will not affect the ability of the school to provide for the necessary pick-up and drop-off activities, and staff parking is to be provided at the required rates. At the OPW stage, detail is expected to be provided on exact arrangements and numbers of pick-up and drop-off areas; additionally, a School Travel Plan is expected to be a requirement and will encourage the use of walking and cycling to get to school and will also educate parents on appropriate pick-up and drop-off protocol to avoid the need to park on street.

4) *It is unclear whether the ECE centre will have its own parking and entry/exit. Details of access and parking are requested to demonstrate that there are ways that the effects of the ECE can be managed.*

As stated in Section 5.4 (page 22) of the ITA, it is expected that the ECE will have a separate parking area away from the main school vehicle entrance. As the site is generously sized, there is ample opportunity to provide for on-site parking and a separate ECE access that will not affect the safe and efficient operation of the local road network. These elements will be designed at OPW stage.

5) *The ITA outlines a number of measures that are proposed around the school site to facilitate safe walking and cycling to school. These include the provision of wider (2.6m wide) footpaths and pedestrian crossings. Details of who would be responsible for providing such measures should be provided.*

As it happened for this NoR, the Milldale developer was simultaneously designing roading plans for Argent Lane and for intersections within Milldale. This resulted in an opportunity to collaborate and provide some indicative information on likely desire lines (for pedestrian crossing points) and the developer agreeing to design 2.6m footpaths; while normally an OPW consideration, these have already undergone road design detail and are being provided by the developer as part of the road designs to be constructed. The location of crossings will be further assessed as part of standard OPW procedure.

6) *Students to the primary school are not anticipated to travel by public transport to the school. However, from time to time, coaches may be required to attend the school to take pupils on school trips. Details of how coaches will be able to access the site and the local roads should be provided.*

While the actual design of a vehicle access will be undertaken in detail at the OPW stage, we have considered that on occasion vehicles larger than a car may need to access the site - **Figure 2.1** shows that a coach is able to access the site via a mountable mini roundabout as currently proposed at this intersection (School Access / Road 11 intersection); the vehicle tracking indicates that some design work will be necessary on the accessway at the OPW stage in order to accommodate the entry path; the actual design will depend upon other outcomes such as whether a two-way or one-way access at this point is proposed. Any proposed design will be subject to an assessment of practicality of entry and egress for a coach (ie. if a separate exit point is proposed, it will be designed to accommodate a coach exiting).

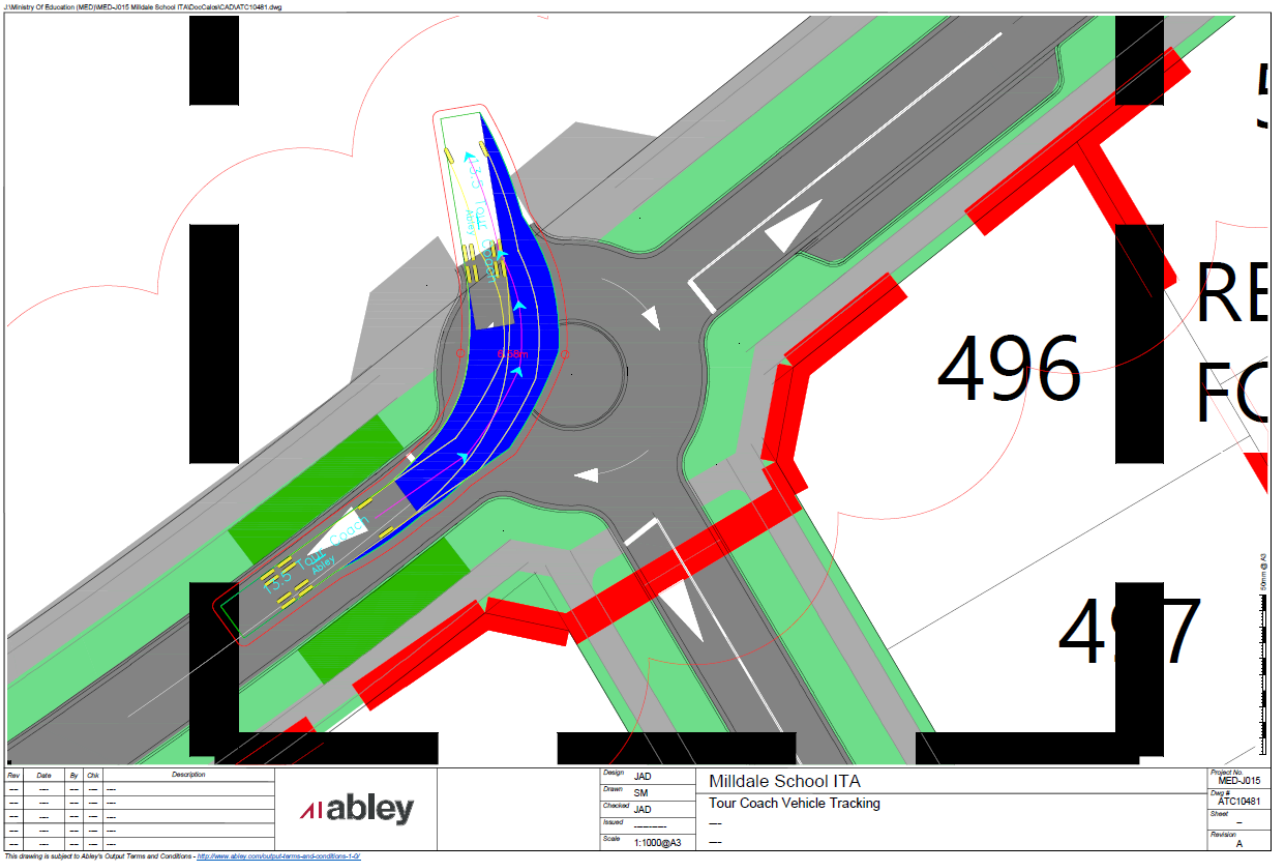

Figure 2.1 Tour coach vehicle tracking

2.1 SIDRA outputs

Road 11 / Argent Lane – AM Peak (Full buildout using network volumes)

MOVEMENT SUMMARY

Site: 101 [Milldale Road 11 / Argent Lane Rbout AM]

New Site
Site Category: (None)
Roundabout

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
South: Argent Lane S												
1	L2	12	1.0	0.242	3.3	LOS A	1.7	11.8	0.46	0.44	0.46	38.3
2	T1	232	1.0	0.242	3.0	LOS A	1.7	11.8	0.46	0.44	0.46	38.9
3	R2	23	1.0	0.242	6.7	LOS A	1.7	11.8	0.46	0.44	0.46	39.0
Approach		266	1.0	0.242	3.3	LOS A	1.7	11.8	0.46	0.44	0.46	38.9
East: Road 11 E												
4	L2	28	1.0	0.276	7.9	LOS A	1.8	12.9	0.81	0.84	0.81	36.1
5	T1	23	1.0	0.276	7.6	LOS A	1.8	12.9	0.81	0.84	0.81	36.7
6	R2	128	1.0	0.276	11.3	LOS B	1.8	12.9	0.81	0.84	0.81	36.8
Approach		180	1.0	0.276	10.3	LOS B	1.8	12.9	0.81	0.84	0.81	36.7
North: Argent Lane N												
7	L2	168	1.0	0.611	2.8	LOS A	6.8	48.1	0.42	0.36	0.42	38.4
8	T1	679	1.0	0.611	2.5	LOS A	6.8	48.1	0.42	0.36	0.42	39.1
9	R2	16	1.0	0.611	6.2	LOS A	6.8	48.1	0.42	0.36	0.42	39.2
Approach		863	1.0	0.611	2.7	LOS A	6.8	48.1	0.42	0.36	0.42	39.0
West: Road 11 W												
10	L2	6	1.0	0.056	4.4	LOS A	0.3	2.2	0.54	0.55	0.54	37.8
11	T1	28	1.0	0.056	4.1	LOS A	0.3	2.2	0.54	0.55	0.54	38.4
12	R2	16	1.0	0.056	7.8	LOS A	0.3	2.2	0.54	0.55	0.54	38.6
Approach		51	1.0	0.056	5.3	LOS A	0.3	2.2	0.54	0.55	0.54	38.4
All Vehicles		1360	1.0	0.611	3.9	LOS A	6.8	48.1	0.48	0.44	0.48	38.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Road 11 / Argent Lane – PM Peak (Full buildout using network volumes)

MOVEMENT SUMMARY

Site: 101 [Milldale Road 11 / Argent Lane Rbout PM]

New Site
Site Category: (None)
Roundabout

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
South: Argent Lane S												
1	L2	32	1.0	0.626	3.8	LOS A	6.5	46.0	0.64	0.51	0.64	37.9
2	T1	674	1.0	0.626	3.5	LOS A	6.5	46.0	0.64	0.51	0.64	38.6
3	R2	49	1.0	0.626	7.2	LOS A	6.5	46.0	0.64	0.51	0.64	38.7
Approach		755	1.0	0.626	3.8	LOS A	6.5	46.0	0.64	0.51	0.64	38.5
East: Road 11 E												
4	L2	2	1.0	0.148	4.4	LOS A	0.9	6.1	0.56	0.65	0.56	37.2
5	T1	21	1.0	0.148	4.2	LOS A	0.9	6.1	0.56	0.65	0.56	37.8
6	R2	113	1.0	0.148	7.8	LOS A	0.9	6.1	0.56	0.65	0.56	37.9
Approach		136	1.0	0.148	7.2	LOS A	0.9	6.1	0.56	0.65	0.56	37.9
North: Argent Lane N												
7	L2	124	1.0	0.357	2.8	LOS A	2.7	19.1	0.35	0.37	0.35	38.5
8	T1	316	1.0	0.357	2.5	LOS A	2.7	19.1	0.35	0.37	0.35	39.2
9	R2	23	1.0	0.357	6.2	LOS A	2.7	19.1	0.35	0.37	0.35	39.3
Approach		463	1.0	0.357	2.8	LOS A	2.7	19.1	0.35	0.37	0.35	39.0
West: Road 11 W												
10	L2	8	1.0	0.094	8.7	LOS A	0.6	4.3	0.83	0.77	0.83	36.2
11	T1	23	1.0	0.094	8.4	LOS A	0.6	4.3	0.83	0.77	0.83	36.8
12	R2	19	1.0	0.094	12.1	LOS B	0.6	4.3	0.83	0.77	0.83	36.9
Approach		51	1.0	0.094	9.8	LOS A	0.6	4.3	0.83	0.77	0.83	36.8
All Vehicles		1404	1.0	0.626	4.0	LOS A	6.5	46.0	0.55	0.49	0.55	38.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Road 11 / Argent Lane – AM Peak (Full buildout using upscaled volumes for localised school traffic effects)

MOVEMENT SUMMARY

Site: 101 [Milldale Road 11 / Argent Lane Rbout AM ADJUSTED]

New Site
Site Category: (None)
Roundabout

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
South: Argent Lane S												
1	L2	12	1.0	0.353	5.9	LOS A	2.6	18.5	0.79	0.74	0.79	37.5
2	T1	232	1.0	0.353	5.6	LOS A	2.6	18.5	0.79	0.74	0.79	38.2
3	R2	23	1.0	0.353	9.3	LOS A	2.6	18.5	0.79	0.74	0.79	38.3
Approach		266	1.0	0.353	6.0	LOS A	2.6	18.5	0.79	0.74	0.79	38.1
East: Road 11 E												
4	L2	87	1.0	0.856	27.9	LOS C	15.8	111.3	1.00	1.62	2.14	30.2
5	T1	72	1.0	0.856	27.6	LOS C	15.8	111.3	1.00	1.62	2.14	30.6
6	R2	397	1.0	0.856	31.3	LOS C	15.8	111.3	1.00	1.62	2.14	30.7
Approach		556	1.0	0.856	30.3	LOS C	15.8	111.3	1.00	1.62	2.14	30.6
North: Argent Lane N												
7	L2	168	1.0	0.613	2.8	LOS A	7.1	49.9	0.43	0.36	0.43	38.4
8	T1	679	1.0	0.613	2.5	LOS A	7.1	49.9	0.43	0.36	0.43	39.1
9	R2	16	1.0	0.613	6.2	LOS A	7.1	49.9	0.43	0.36	0.43	39.2
Approach		863	1.0	0.613	2.7	LOS A	7.1	49.9	0.43	0.36	0.43	38.9
West: Road 11 W												
10	L2	6	1.0	0.076	6.6	LOS A	0.5	3.4	0.74	0.69	0.74	37.1
11	T1	28	1.0	0.076	6.3	LOS A	0.5	3.4	0.74	0.69	0.74	37.7
12	R2	16	1.0	0.076	10.0	LOS A	0.5	3.4	0.74	0.69	0.74	37.8
Approach		51	1.0	0.076	7.5	LOS A	0.5	3.4	0.74	0.69	0.74	37.7
All Vehicles		1736	1.0	0.856	12.1	LOS B	15.8	111.3	0.68	0.83	1.04	35.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Road 11 / Argent Lane – PM Peak (Full buildout using upscaled volumes for localised school traffic effects)

MOVEMENT SUMMARY

Site: 101 [Milldale Road 11 / Argent Lane Rbout PM ADJUSTED]

New Site
Site Category: (None)
Roundabout

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
South: Argent Lane S												
1	L2	32	1.0	0.963	38.7	LOS D	31.0	218.9	1.00	2.02	2.79	28.2
2	T1	674	1.0	0.963	38.4	LOS D	31.0	218.9	1.00	2.02	2.79	28.6
3	R2	49	1.0	0.963	42.1	LOS D	31.0	218.9	1.00	2.02	2.79	28.7
Approach		755	1.0	0.963	38.7	LOS D	31.0	218.9	1.00	2.02	2.79	28.6
East: Road 11 E												
4	L2	7	1.0	0.516	5.7	LOS A	4.1	29.3	0.73	0.76	0.76	36.8
5	T1	74	1.0	0.516	5.4	LOS A	4.1	29.3	0.73	0.76	0.76	37.3
6	R2	396	1.0	0.516	9.1	LOS A	4.1	29.3	0.73	0.76	0.76	37.5
Approach		477	1.0	0.516	8.4	LOS A	4.1	29.3	0.73	0.76	0.76	37.4
North: Argent Lane N												
7	L2	124	1.0	0.359	2.8	LOS A	2.8	19.9	0.37	0.38	0.37	38.5
8	T1	316	1.0	0.359	2.5	LOS A	2.8	19.9	0.37	0.38	0.37	39.2
9	R2	23	1.0	0.359	6.2	LOS A	2.8	19.9	0.37	0.38	0.37	39.3
Approach		463	1.0	0.359	2.8	LOS A	2.8	19.9	0.37	0.38	0.37	39.0
West: Road 11 W												
10	L2	8	1.0	0.147	14.3	LOS B	1.0	7.3	0.96	0.91	0.96	34.4
11	T1	23	1.0	0.147	14.0	LOS B	1.0	7.3	0.96	0.91	0.96	34.9
12	R2	19	1.0	0.147	17.7	LOS B	1.0	7.3	0.96	0.91	0.96	35.0
Approach		51	1.0	0.147	15.4	LOS B	1.0	7.3	0.96	0.91	0.96	34.8
All Vehicles		1745	1.0	0.963	20.2	LOS C	31.0	218.9	0.76	1.21	1.54	33.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.