ATTACHMENT 5

Transport Impact Assessment

October 2023

Draft

Kalgoorlie-Boulder Essential Workers Lifestyle Village

Prepared For:

M/Group

Transport Impact Assessment Report

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1 INTRODUCTION

1.1 BACKGROUND

This Transport Impact Assessment (TIA) has been prepared by Donald Veal Consultants on behalf of M/Group, regarding the proposed subdivision development which lies south of Gatacre Drive and east of Hart Kerspien Drive in the suburb of Broadwood in the City of Kalgoorlie-Boulder. The site is known as Harts Triangle and lies just to the north-west of the Kalgoorlie-Boulder Airport.

The proposed development contains some 397 dwellings of mixed 1-, 2- and 3-bedroom units. It is proposed as a gated community with a village green and communal facilities.

1.2 SCOPE OF ASSESSMENT

This TIA has been prepared largely in accordance with the Western Australian Planning Commission's (WAPC's) *Transport Assessment Guidelines for Developments Volume 3 Subdivision* (2016). Its intent is to provide the approving authority with sufficient traffic information to confirm that the proponent has adequately considered the traffic aspects of the development and that it would not have an adverse traffic impact on the surrounding area.

2 EXISTING SITE CONDITIONS

2.1 SITE LOCATION

The site lies within the City of Kalgoorlie-Boulder, just northwest of the Kalgoorlie-Boulder Airport. It is bounded by Gatacre Drive to the north, and Hart Kerspien Drive to the west. North of Gatacre Drive and west of Hart Kerspien Drive is more residential development.

Figure 2.1 shows an aerial view of the subject site and its location in a local context.

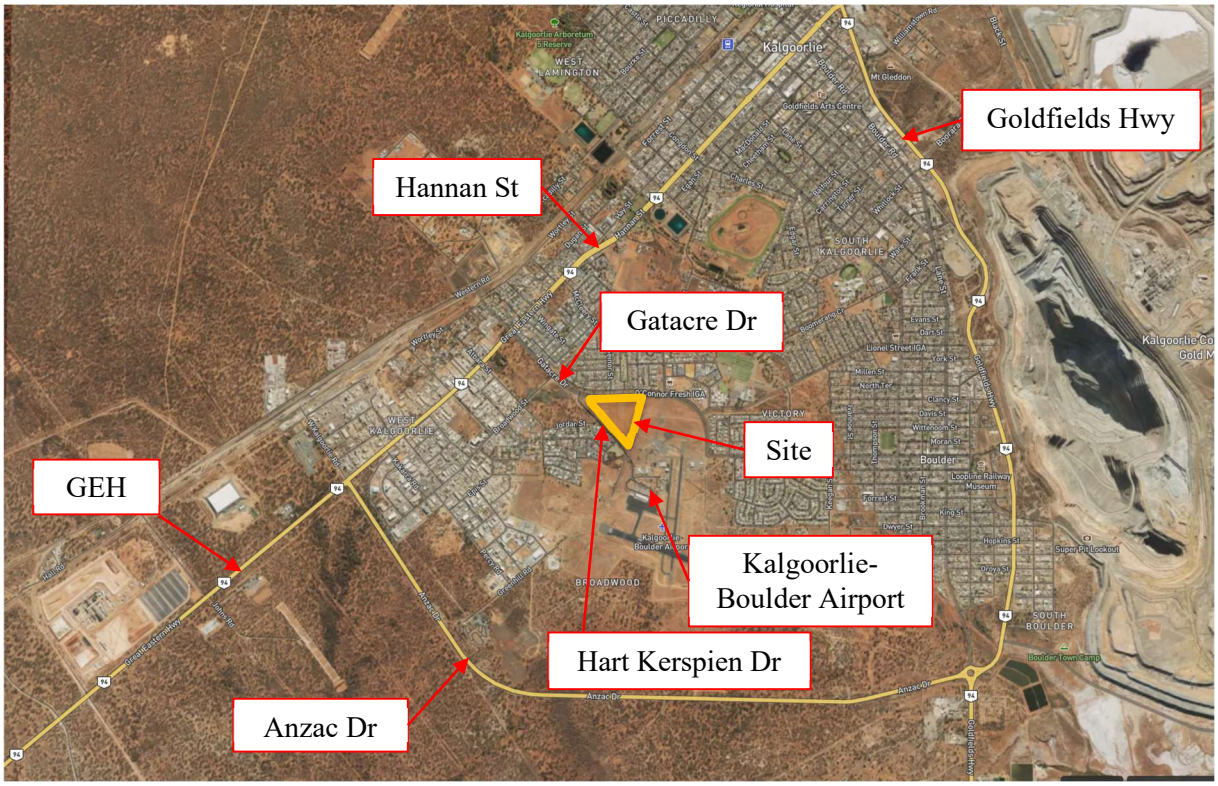

Figure 2.1: Site Location in a Local Context *Source: MetroMap*

2.2 CURRENT LAND USES

The site is currently vacant and undeveloped.

2.3 ROAD HIERARCHY CLASSIFICATION

Gatacre Drive is classified as a Local Distributor Road under Main Roads Western Australia's (MRWA's) Functional Road Hierarchy (see **Figure 2.2**.) Adjacent to the site it is a 4-lane divided carriageway road with two lanes in each direction and a 7.5m wide central median. The total road reserve width is 40m. Gatacre Drive provides a ring-road function around the south of the Kalgoorlie central business district. In the west it intersects with the Great Eastern Highway and it connects to Burt Street in central Boulder in the east. Gatacre Drive has a posted speed limit of 70km/h. See **Figure 2.3**.

Figure 2.2: Road Hierarchy of surrounding road network *Source: MRWA Crash Map*

Hart Kerspien Drive is classified as an Access Road with a single carriageway approximately 8m wide within a road reserve of 30m. It has a posted speed limit of 60 km/h for the section between Gatacre Drive and Moir Street, while the south section between Moir Street and the Kalgoorlie-Boulder Airport is 50km/h according to the MRWA Speed Limit Map. Five residential properties on the western side of the street have direct frontage access to it, with the others getting access from the side roads. Hart Kerspien Drive is currently the only public access road to the airport.

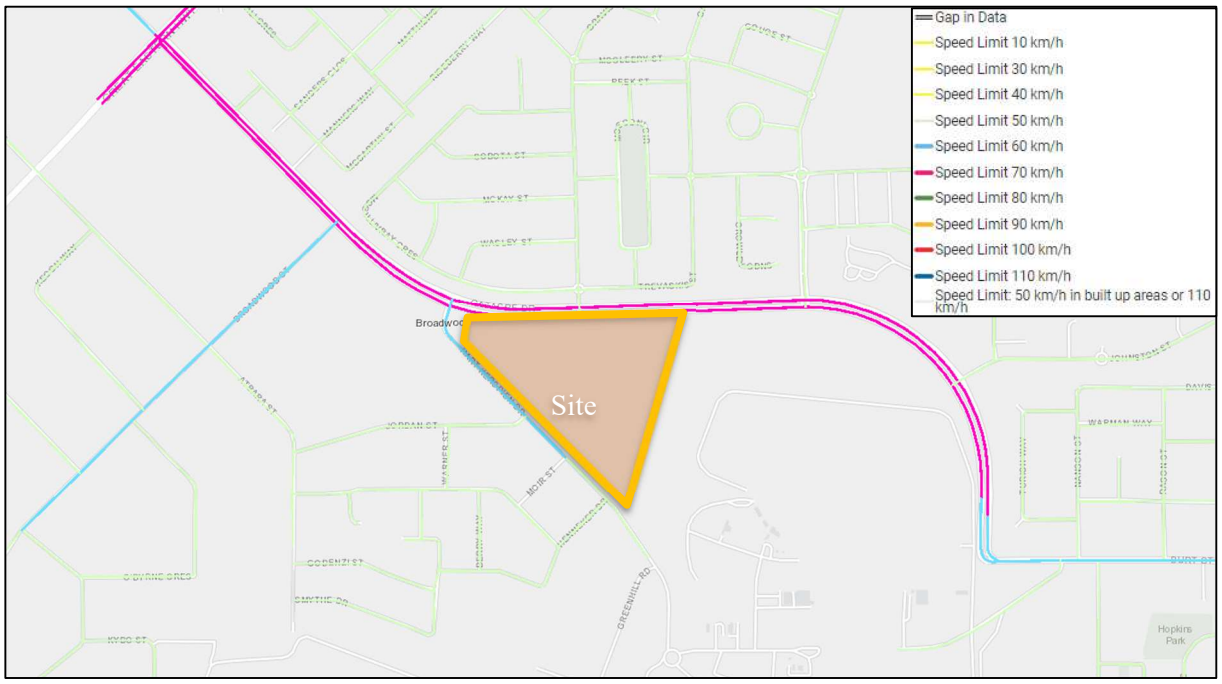

Figure 2.3: Speed Limit of surrounding road network *Source: MRWA Crash Map*

2.4 TRAFFIC VOLUMES

Recent traffic counts have been provided by the City. On Hart Kerspien Drive the weekday traffic was around 5,000 vehicles per day (vpd) in 2021.

On Gatacre Drive to the west of the Hart Kerspien Drive intersection westbound traffic totalled around 4,500vpd in 2023. It can reasonably be assumed that eastbound traffic here would be similar, giving a total volume of around 9,000vpd in both directions.

On Gatacre Drive to the east of Hart Kerspien Drive, total daily traffic in 2021 was about 9,200vpd i.e., about 4,600vpd in each direction.

2.5 PLANNED CHANGES TO THE ADJACENT ROAD NETWORK

DVC is aware that there are plans to add a northern access to the airport in addition to Hart Kerspien Drive. The new access road will align with O'Connor Street in the north and intersect with Gatacre Drive. It is not clear what the timing for construction is, but according to the Kalgoorlie-Boulder Airport Masterplan 2018-2034, this road is an 'enabler to land development to the General Aviation precinct in addition to providing a secondary route into the RPT terminal area.' DVC understands that it might be constructed within a 2-5 year horizon although this has not been confirmed.

Additional capacity expansion of Hart Kerspien Drive is not envisioned within the Airport Masterplan.

2.6 CRASH HISTORY

The MRWA CARS database was interrogated to identify the history of crashes occurring along Gatacre Drive and Hart Kerspien Drive in the latest 5-year reporting period, 2018 – 2022.

The database returned records of 10 crashes within this period as shown in **Figure 2.4**. Of these, seven involved right-angle, two rear-end and one a right turn-thru crash. Two of the crashes required a hospital visit, whilst 3 crashes resulted in property damage only. One crash resulted in medical severity at the intersection of Gatacre Drive and Hart Kerspien Drive. The others resulted in property damage only (eight major and one minor).

This crash history does not indicate any abnormal safety issues or patterns on the surrounding road network.

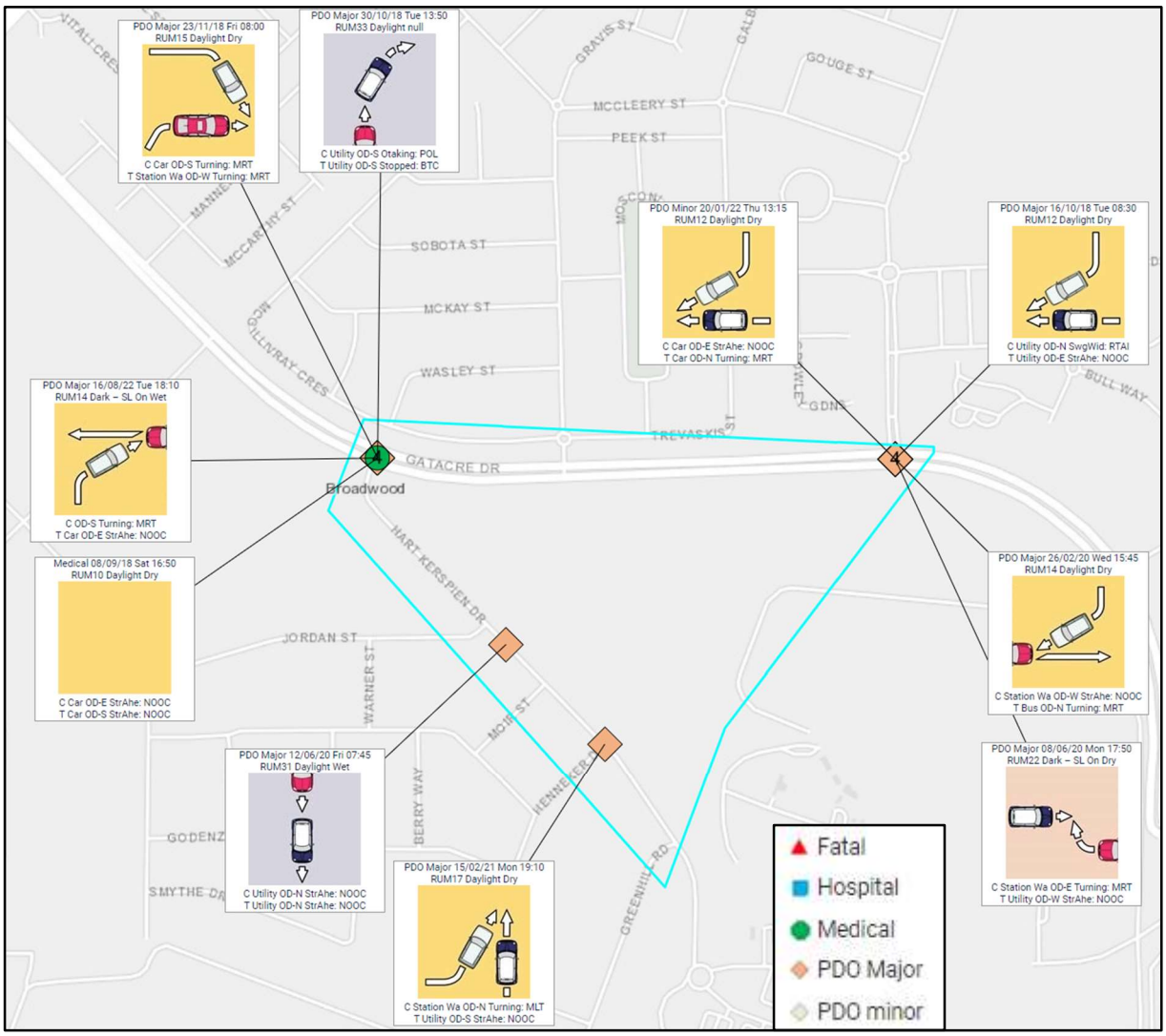

Figure 2.4: Crash Diagram *Source: MRWA Crash Map*

3 PROPOSED DEVELOPMENT

3.1 PROPOSED LAND USES

The subdivision plan proposes a mixture of 1-, 2- and 3-bedroomed units in a gated village with a central village green and communal facilities. DVC understands that this development aims to help meet the particular demands of the Kalgoorlie-Boulder housing market. Kalgoorlie-Boulder, as an established regional city in WA with a large mining industry and large state and local government services, has its own peculiar housing needs. Housing is required for some industries on a FIFO basis, while others require short-stay and medium stay accommodation. There is also a need for permanent long-term housing. We understand that the model for the village is to provide a mix of units which can potentially cater for all these differing types of demand. It is expected that most residents will have a car and to that end all 1-bedroom units will have a single carport, while each of the 2- and 3-bedroom units will have 2 carport spaces. All visitor parking will be met on-site.

From the above assessment, DVC understands that this village will display trip generation characteristics typical of a residential neighbourhood i.e., most people will drive to work and public transport usage is expected to be low. The current concept layout plan is shown as shown **Figure 3.1**.

3.2 CONSTRUCTION STAGING

DVC understands that the village housing units will be constructed from modular, prefabricated parts which will be delivered to site and assembled there. The supply of housing will therefore be progressive, rather than constructing many units simultaneously. Nonetheless, it is expected that the first 100 units would be completed by the end of 2025, with the remainder completed by the end of 2028. These are included in three traffic scenarios to demonstrate the traffic impacts as follows:

Scenario 1 – represents the construction of the first 100 units in the southernmost section of the village to be finished within 2 years (end of 2025).

Scenario 2 - represents the full village construction of approximately 400 units completed within 5 years (by the end of 2028). Scenarios 2a and 2b reflect access conditions with and without the proposed airport access road in 2028.

Scenario 3 - represents the horizon 10 years after 2028 which demonstrates the residual capacity in the road network. It assumes the Airport Northern Access Road has been constructed.

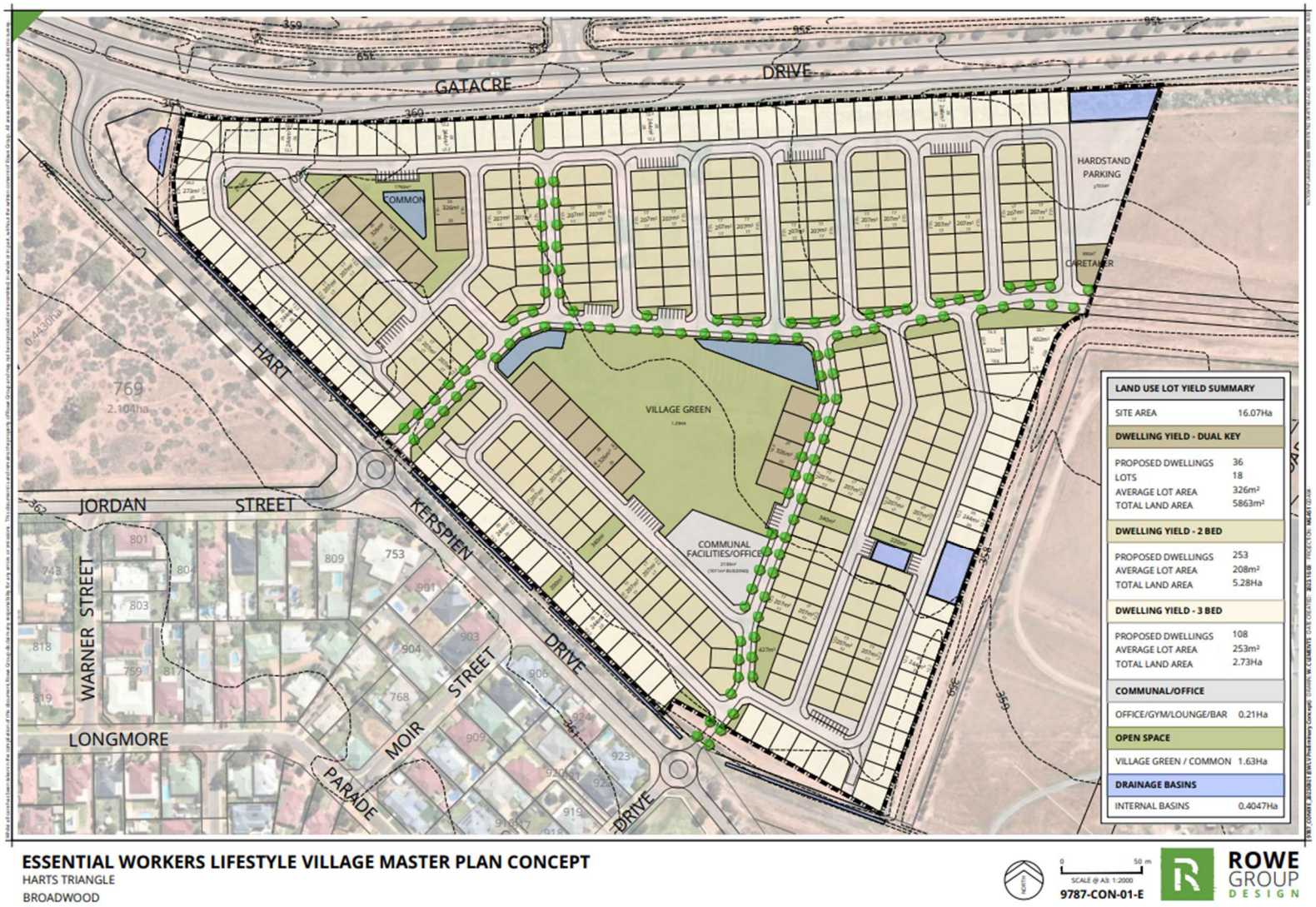

Figure 3.1: Site Concept Plan

3.3 INTERNAL ROAD NETWORK

The internal road layout shows the residential blocks positioned around the central, triangular Village Green and Communal Facilities. DVC understands that all internal road reserves will be 12m wide with a 6m road pavement on the entry roads and around the village green and a 5.5m road pavement elsewhere. A 6m road pavement will accommodate slightly busier traffic conditions on the entry roads and allow vehicles to pass a parked car (although we note that all residents will likely have on-site parking and visitor parking is provided in several locations throughout the village). A 5.5m pavement for all other streets is considered adequate to cater for local internal traffic.

The majority of internal roads will carry significantly less than 1,000 vpd although volumes may increase somewhat on roads at the entry points. This traffic will dissipate quickly through the surrounding road network. Under the WAPC Liveable Neighbourhoods guidelines this level of traffic is easily serviced by 5.5m and 6.0m carriageways.

The narrow roads will encourage a low-speed environment which together with the low volumes of traffic and only drivers familiar with the roads, is expected to deliver a safe driving environment. Based on these factors, DVC would not expect there to be any significant crash issues within the village road network.

3.4 ACCESS ARRANGEMENTS

The Master Plan Concept shows three access points, two off Hart Kerspien Drive and a third (future) off the new Airport access road to the east. DVC understands that each entrance will be access-controlled by means of a boom gate or similar. Residents will have a swipe card or similar, to gain access and egress. It is expected that the access control will have a high service rate.

The control points will be away from the surrounding roads i.e., set some distance from the edge of the road to allow for vehicle queueing at peak times. As shown, the control gate opposite Henneker Drive will be set back some 22m allowing for a queue of around 3 vehicles. This entrance and in future the Airport Northern Access Road entrance will be the access points for visitors who will have a lay-by area from which they will be able to call the resident and obtain a passcode or be automatically buzzed in from the house. Visitors finding themselves at the Jordan Street entrance will be directed by signs to the other entrances. The storage distance for the Jordan Street entrance is about 30m allowing for the storage of about 5 vehicles.

Details of the boom gates to be installed at the access points have not been made available at this stage but typically can service around 300 vehicles per hour per lane. With two access points initially available and another in the long term, there will be more than adequate capacity for residents and their visitors.

4 ANALYSIS OF TRANSPORT NETWORKS

4.1 TRIP GENERATION RATES

Peak hour trip generation for the proposed development has been based on the Residential Rates in Table 2 of Western Australia Planning Commission (WAPC) *Transport Assessment Guidelines for Developments (2016) Volume 3*. As noted in the Section 3.1, all units in the village will have on-site carports and it is expected that most residents will drive to and from work. Therefore, the usual residential trip generation rates have been used in this assessment.

The residential lots are estimated to generate about 318 trips during the peak hour as shown in **Table 4.1**.

Table 4.1: Trip Generation of Proposed Development

Source	Unit	AM Peak Hour trip rate			PM Peak Hour trip rate			Daily Trip Rate		
		In	Out	Total	In	Out	Total	In	Out	Total
WAPC/RTA	Dwellings	0.20	0.60	0.80	0.50	0.30	0.80	4.5	4.5	9

Quantity	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
397	79	238	318	199	119	318	1,787	1,787	3,573

The Roads and Traffic Authority's (RTA) Guide to Traffic Generating Developments suggests a daily trip rate of 9-10 trips per dwelling. This translates to about 3,600 to 4,000 trips per day to and from the site split 50/50 inbound and outbound trips.

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

Capital cities in general have well defined areas of residential development and employment areas. The Perth CBD for example is very well defined as a major attractor, as are the commercial and industrial precincts which are jotted around the metropolitan area. By comparison, Kalgoorlie-Boulder appears to have a more integrated employment pattern.

While Kalgoorlie-Boulder has some concentrated employment locations such as West Kalgoorlie Industrial Area, the KCGM superpit and the northern end of Hannan Street (the Top End), the City also offers smaller integrated employment, and shopping areas. It also offers several remote mine sites. This arrangement defies the usual approach of identifying major attractors and allocating a percentage of new trips distributed to each.

Discussions with the City have indicated that the distribution of trips to and from the airport relates to the main road network. In the vicinity of the proposed site, it is evident that about 60% of trips from the airport and the Broadwood residential suburb turn left (westbound) from Hart Kerspien Drive into Gatacre Drive with the remaining 40% turning eastwards at the intersection. It can reasonably be assumed that the reverse is also true for these traffic movements. The 60% westbound and 40% eastbound distribution has therefore been adopted for trips from the proposed development.

4.3 ROAD CAPACITIES

Gatacre Drive is a dual carriageway road with a wide median and two lanes of traffic in each direction. Despite its current classification as a Local Distributor, it currently only carries about 9,000vpd. While capacities of distributor roads will often depend on the number and type of control of intersections along the route, dual carriageway facilities without frontage access can readily carry in excess of 15,000vpd.

Hart Kerspien Drive carried up to 5,000vpd according to the 2021 counts provided by the City, albeit it is only classified as an Access Road. The form and function of this road (limited frontage access, a wide 8.5m carriageway and no on-street parking) indicates that it might better be classified as a Local Distributor with desirable volumes of the order of 6,000-7,000vpd.

4.4 INTERSECTION ANALYSIS

4.4.1 Growth Rates

To account for the growth in traffic on the surrounding roads and to the airport in future, a conservative (optimistic) traffic compound growth rate of 3.1% per annum has been adopted for traffic forecasts. This was the high growth estimate used in the Kalgoorlie-Boulder Airport Masterplan 2018-2034 as presented on the Airport website.

Turning movements for the three intersections were derived from upstream and downstream midblock traffic counts provided by the City, and the assumed distribution of traffic from the airport (and proposed development) at Gatacre Drive. Also, press reports indicated that passenger-traffic through Kalgoorlie-Boulder Airport had grown significantly due to a surge in FIFO workers at mining camps such as Evolution Mining's Mungari operation near Kalgoorlie. The 2021 traffic count on Hart Kerspien Drive has been factored by 10% to reflect an associated traffic growth between 2021 and 2023.

4.4.2 SIDRA Analysis

SIDRA is an intersection-modelling tool commonly used by traffic engineers for all types of intersection analysis. It has been used here to determine the existing and future operating characteristics of the intersections along Hart Kerspien Drive i.e., the two access roads opposite Jordan Street and Henneker Drive and their intersection with Gatacre Drive. The intersection of the proposed airport northern access road has not been analysed here as it has been assumed that as planning for this road gets underway it will be designed with sufficient capacity to handle future development at the airport and the small contribution from the proposed site.

SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

Degree of Saturation: is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.

Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).

Average Delay: is the average of all travel time delays for vehicles passing through the intersection.

95% Queue: is the queue length below which 95% of all observed queue lengths fall.

4.5 SIDRA ANALYSIS – OPENING YEAR & +10 YEARS

The new access intersections on Hart Kerspien Drive have been modelled as single lane roundabouts with a 10m inscribed diameter. While there are numerous four-leg give-way intersections in Kalgoorlie, it is considered that roundabouts should be introduced on Hart Kerspien Drive as it carries high traffic volumes, including many visiting drivers to and from the airport who are not necessarily local or familiar with the road network. Roundabouts provide a very well-defined priority at an intersection with a high level of safety. They also provide a traffic speed calming function on long straight sections of road such as this portion of Hart Kerspien Drive.

The SIDRA analysis demonstrates that no significant levels of congestion are forecast to occur at the intersections of Hart Kerspien Drive and either Jordan Street or Henneker Drive with the introduction of the proposed development.

However, some congestion and delays are expected at the intersection of Gatacre Drive and Hart Kerspien Drive in future ahead of the introduction of the Airport Northern Access Road. **Table 4.2** summarises the critical movements and Level of Service expected at the intersection in future scenarios. **Appendix A** contains key SIDRA results and input data for the Scenario 2a AM Peak Hour.

It is evident from the analysis that the right turn traffic from Hart Kerspien Drive will experience delays in future. The additional traffic from the proposed development will bring forward the date when this might occur, but even without this traffic, expected growth of traffic from the airport will result in some queueing and delays in the longer-term future, after 2028.

The introduction of the Airport Northern Access Road has the double impact of removing some of the airport traffic and development traffic from Hart Kerspien Drive to the extent that no significant queueing would be expected well past the 2038 horizon at the Hart Kerspien Drive intersection with Gatacre Drive.

Table 4.2: Performance of Gatacre Dr/Hart Kerspien Dr

Intersection of Gatacre Drive and Hart Kerspien Drive	
Scenario	**Level of Service**
Scenario1 – 2025 (100 units developed)	Right-turn from Hart Kerspien Dr - **LoS C**, No significant delays expected
Scenario 2a – 2028 Full Development, Airport Northern Access not constructed	Right-turn from Hart Kerspien Dr - **LoS F**,

	The right turn will experience delays and queues in the AM Peak Hour which will grow as traffic demand increases from the Airport.
Scenario 2b – 2028 Full Development, Airport Access Constructed	No significant delays expected.
Scenario 3 – 2038 Full Development, Airport Access Constructed	No significant delays expected.

4.6 DISCUSSION OF INTERSECTION PERFORMANCE

The traffic congestion predicted to occur once the site is fully developed and the airport continues growing, affects the right turn movement out of Hart Kerspien Drive. With the existing configuration of the intersection, this movement is required to give way to left-turn in and right-turn in from Gatacre Drive both of which experience reasonably high demand.

This problem could be addressed by introducing traffic signals or a roundabout at the intersection. However, these solutions would seem a poor investment if the Airport Northern Access Road is to be constructed anyway. DVC considers the northern access road to be a better alternative as it future-proofs development at the airport and surrounding areas.

The SIDRA analysis above suggests that the Northern Access Road should be constructed by 2028. However, it is based on several assumptions regarding traffic growth rates, trip generation and trip distribution. For example, traffic from the proposed development may not exhibit the same peak hour as traffic to and from the airport, in which case the traffic demand would be spread resulting in reduced queues and delays. Similarly, as the airport grows, flight arrivals and departures could potentially change resulting in different road traffic patterns. In other words, if one or more of these assumptions do not materialize, the existing intersection could perform adequately well beyond the 2028 date.

4.7 ROAD SAFETY

The crash record for the surrounding road network does not point to any particular road safety issues.

5 SUSTAINABLE TRANSPORT

5.1 BUS ROUTES

As indicated in **Figure 5.1**, there are TransGoldfields bus routes in the vicinity of the site along Gatacre Drive. Bus Route 863 does an anti-clockwise circular route within the southern half of the City of Kalgoorlie-Boulder. The bus operates an hourly service from 7:00 AM to 6:00 PM on weekdays and from 8:20 AM to 1:00 PM on Saturday. The closest bus stop is currently located on O'Connor Street after Maguire Street, approximately 250m from the northeast corner of the site. Presumably pedestrian access from the site to Gatacre Drive will be provided in the north-east corner to enable pedestrians to use both the bus service and the Super IGA nearby on O'Connor Street. It is not expected that there will be many public transport users from the site.

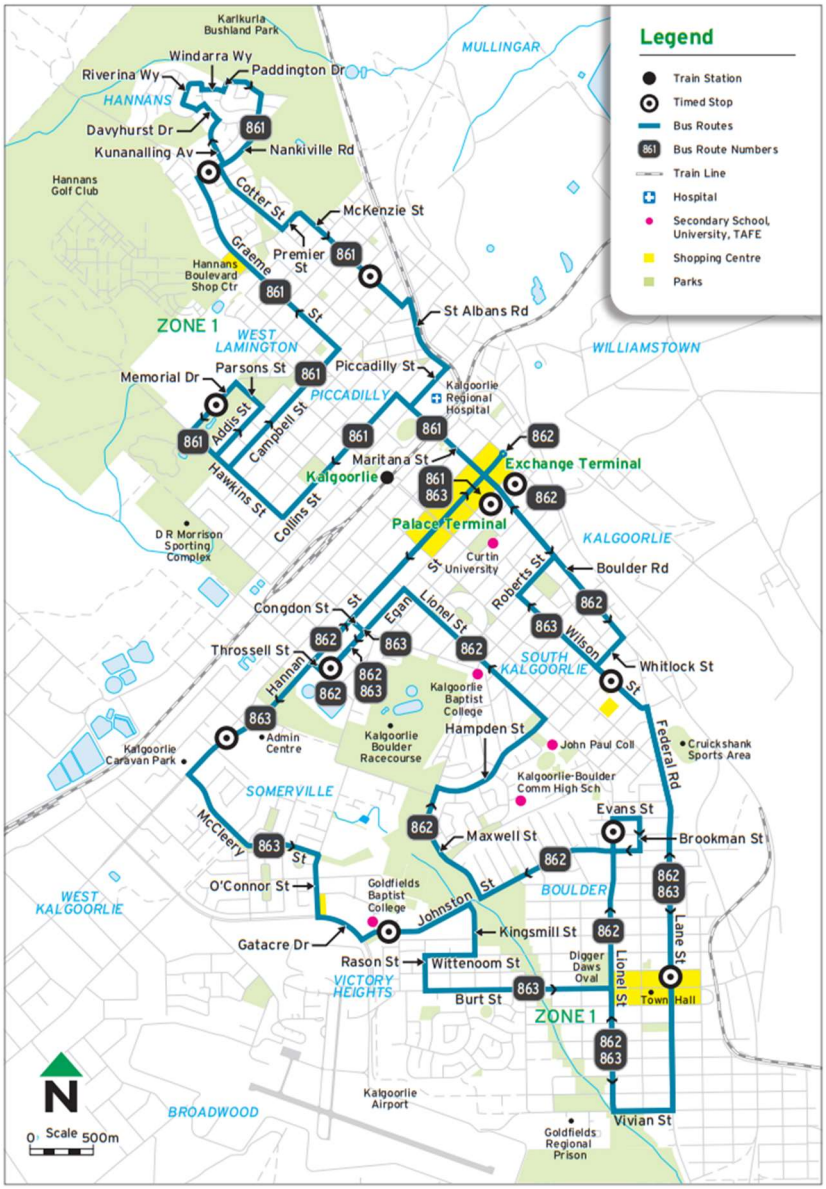

Figure 5.1: Kalgoorlie Bus Routes *Source: PTA*

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5.2 PEDESTRIAN AND CYCLE ACCESS FACILITIES

There is a 2.5m wide footpath between the airport terminal building to Jordan Street on the southern side of Hart Kerspien Drive. After crossing Hart Kerspien Drive at Jordan Street, the path continues on the northern side of Hart Kerspien Drive to join the southern side of Gatacre Drive. It then crosses Gatacre Drive at Seinor Street and continues east on the northern side to O'Connor Street and beyond.

It is not clear if there are plans to extend the path on the southern side of Gatacre Street to O'Connor Street which would further encourage walking and cycling from the site if access is provided.

Some residents from the proposed site may walk to or from the airport. It is approximately 625m from the airport to Henneker Drive (the proposed southern access road to the site) which would deter the average traveller with luggage. Some residents that may secure employment at the airport may walk or cycle to and from their work.

6 SUMMARY AND CONCLUSION

6.1 SUMMARY

This Transport Impact Assessment (TIA) has been prepared by Donald Veal Consultants on behalf of M/Group, regarding the proposed subdivision development which lies south of Gatacre Drive and east of Hart Kerspien Drive in the suburb of Broadwood in the City of Kalgoorlie-Boulder. The site is known as Harts Triangle and lies just to the north-west of the Kalgoorlie-Boulder Airport.

Gatacre Drive is a 4-lane, dual carriageway Local Distributor Road currently carrying about 9,000vpd. Hart Kerspien Drive is classified as an Access Road and provides the only public access to the Kalgoorlie-Boulder Airport. It carries about 5,000vpd and has limited frontage access from local houses on the street.

DVC is aware that there are plans to construct the Airport Northern Access Road in addition to Hart Kerspien Drive. The road will align with O'Connor Street in the north and intersect with Gatacre Drive. It is not clear what the timing for construction is.

The crash history on the road network surrounding the proposed site does not indicate any serious safety issues.

The proposed development will contain a mixture of 1-, 2- and 3-bedroomed units in a gated village with a central village green and communal facilities. It is expected that most residents will have a car and therefore all 1-bedroom units will have a single carport, while each of the 2- and 3-bedroom units will have 2 carport spaces. DVC understands that the first 100 units will be constructed by the end of 2025 with the remainder complete by 2028.

Access to the site is proposed via roundabout controlled intersections at Jordan Street and Henneker Drive onto Hart Kerspien Drive and via a new connection onto the proposed Airport Northern Access Road. It is understood that each access will have a boom-gate control with adequate storage to meet the queueing requirements of arriving traffic. Visitors will have a separate layby area in which they can wait while they arrange entry and without blocking the entrance for residents.

Based on WAPC guidelines, the proposed development will generate about 318 vehicle trips in the AM and PM peak hours and about 3,500 vehicle trips per day.

An analysis of the intersections on Hart Kerspien Drive has been undertaken for future scenarios at 2025, 2028 and 2038. These scenarios allow for a 3.1% traffic growth from the airport based on the Upside Growth Outlook in the Kalgoorlie-Boulder Airport Masterplan.

No traffic congestion issues are anticipated at the site access intersections with Jordan Street and Henneker Drive which are assumed to be roundabout controlled in future.

Queues and delays are expected to develop for the right turn movement from Hart Kerspien Drive onto Gatacre Drive by 2028 if the Airport Northern Access Road is not constructed by then. Once this road

is constructed queues and delays are not expected at the intersection even at the 2038 horizon and assumed background traffic growth rate.

The traffic analysis indicates the unacceptable levels of congestion may occur by 2028 based on several assumptions regarding traffic growth rates, trip generation and trip distribution. If any of these assumptions do not materialize, the capacity of the intersection may well be adequate beyond the 2028 horizon.

A roundabout or traffic signals could be introduced at the intersection of Gatacre Drive and Hart Kerspien Drive to reduce queues and delays for the right turn movement. However, these solutions would seem a poor investment if the Airport Northern Access Road is to be constructed anyway.

6.2 CONCLUSION

The proposed development will provide a valuable addition to the Kalgoorlie-Boulder housing supply. It is in a good location to take advantage of the Airport facilities and is close to many work opportunities in Kalgoorlie-Boulder.

This transport Impact Assessment concludes that traffic growth from the airport and from the full construction of the proposed development will introduce queues and delays at the intersection of Gatacre Drive and Hart Kerspien Drive. While interim solutions to this do exist, they would appear to be a poor investment if the Airport Northern Access Road is to be constructed anyway. The Northern Access Road will future-proof traffic demands in the airport vicinity and directly address congestion issues at the Gatacre Drive/Hart Kerspien Drive intersection.

From a traffic operational and road safety perspective, we support the proposed development and recommend its approval. We also recommend the need for Airport Northern Access Road is monitored and its construction realised in a timely manner.

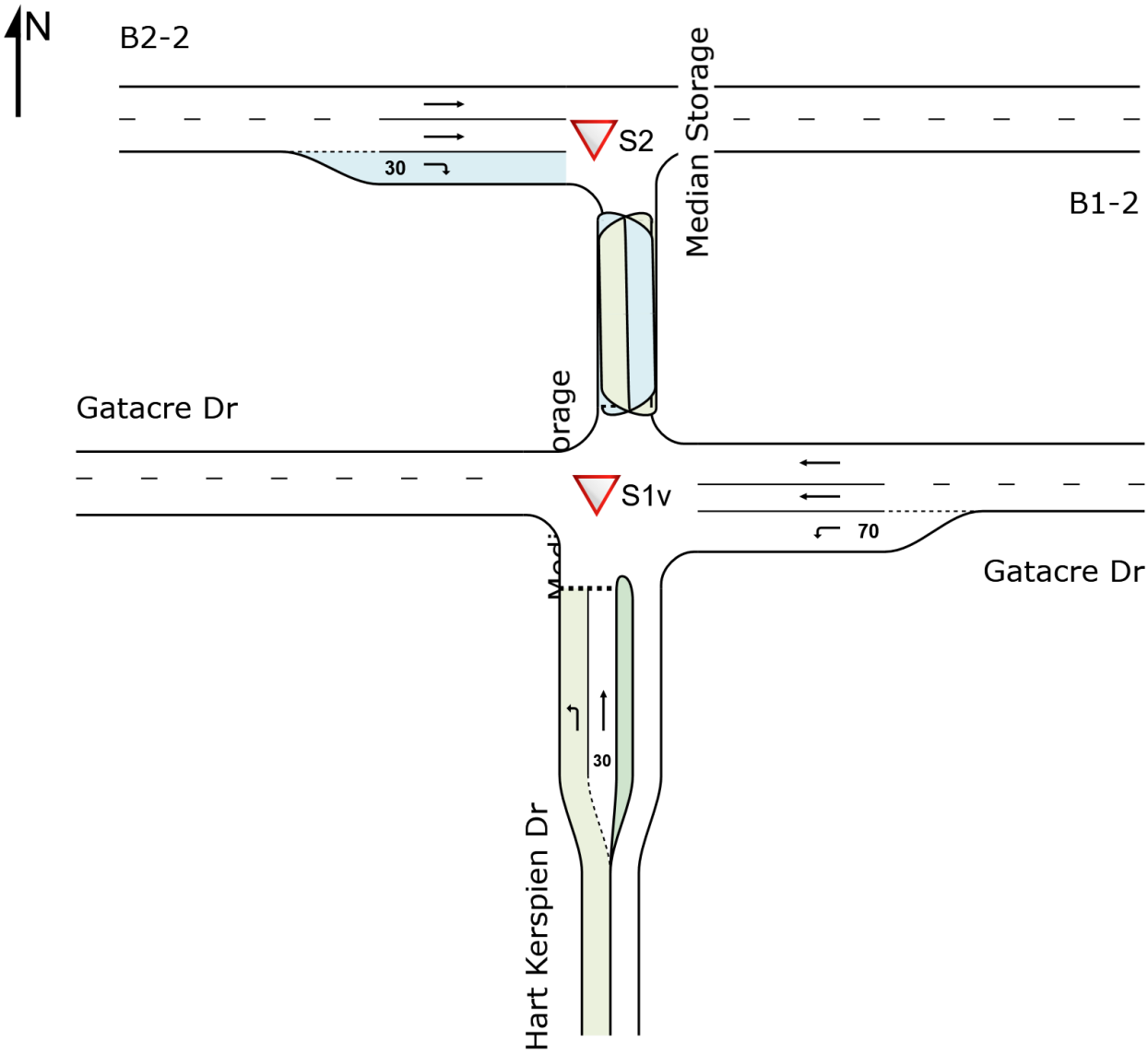
APPENDIX A: SIDRA ANALYSIS RESULTS

NETWORK LAYOUT

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽S2	NA	Gatacre & HK - EB
▽S1v	NA	Gatacre & HK - WB

MOVEMENT SUMMARY

Site: S2 [Gatacre & HK - EB (Site Folder: Existing AM)]

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Median Storage														
1	R2	137	10.0	137	10.0	0.124	1.6	LOS A	0.2	1.3	0.31	0.36	0.31	50.5
Approach		137	10.0	137	10.0	0.124	1.6	LOS A	0.2	1.3	0.31	0.36	0.31	50.5
West: B2-2														
2	T1	263	10.0	263	10.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
3	R2	211	10.0	211	10.0	0.153	6.5	LOS A	0.0	0.0	0.00	0.66	0.00	56.3
Approach		474	10.0	474	10.0	0.153	2.9	NA	0.0	0.0	0.00	0.29	0.00	65.4
All Vehicles		611	10.0	611	10.0	0.153	2.6	NA	0.2	1.3	0.07	0.31	0.07	62.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: S1v [Gatacre & HK - WB (Site Folder: Existing AM)]

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	211	10.0	211	10.0	0.161	6.4	LOS A	0.3	2.1	0.31	0.58	0.31	52.2
2	T1	137	10.0	137	10.0	0.336	16.4	LOS C	0.7	5.2	0.73	0.94	0.91	39.4
Approach		347	10.0	347	10.0	0.336	10.3	LOS B	0.7	5.2	0.48	0.72	0.55	48.3
East: Gatacre Dr														
3	L2	137	10.0	137	10.0	0.073	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	56.8
4	T1	379	10.0	379	10.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		516	10.0	516	10.0	0.099	1.7	NA	0.0	0.0	0.00	0.16	0.00	65.9
North: Median Storage														
5	T1	211	10.0	211	10.0	0.305	4.7	LOS A	0.6	4.7	0.62	0.68	0.70	45.8
Approach		211	10.0	211	10.0	0.305	4.7	LOS A	0.6	4.7	0.62	0.68	0.70	45.8
All Vehicles		1074	10.0	1074	10.0	0.336	5.1	NA	0.7	5.2	0.28	0.45	0.31	56.5

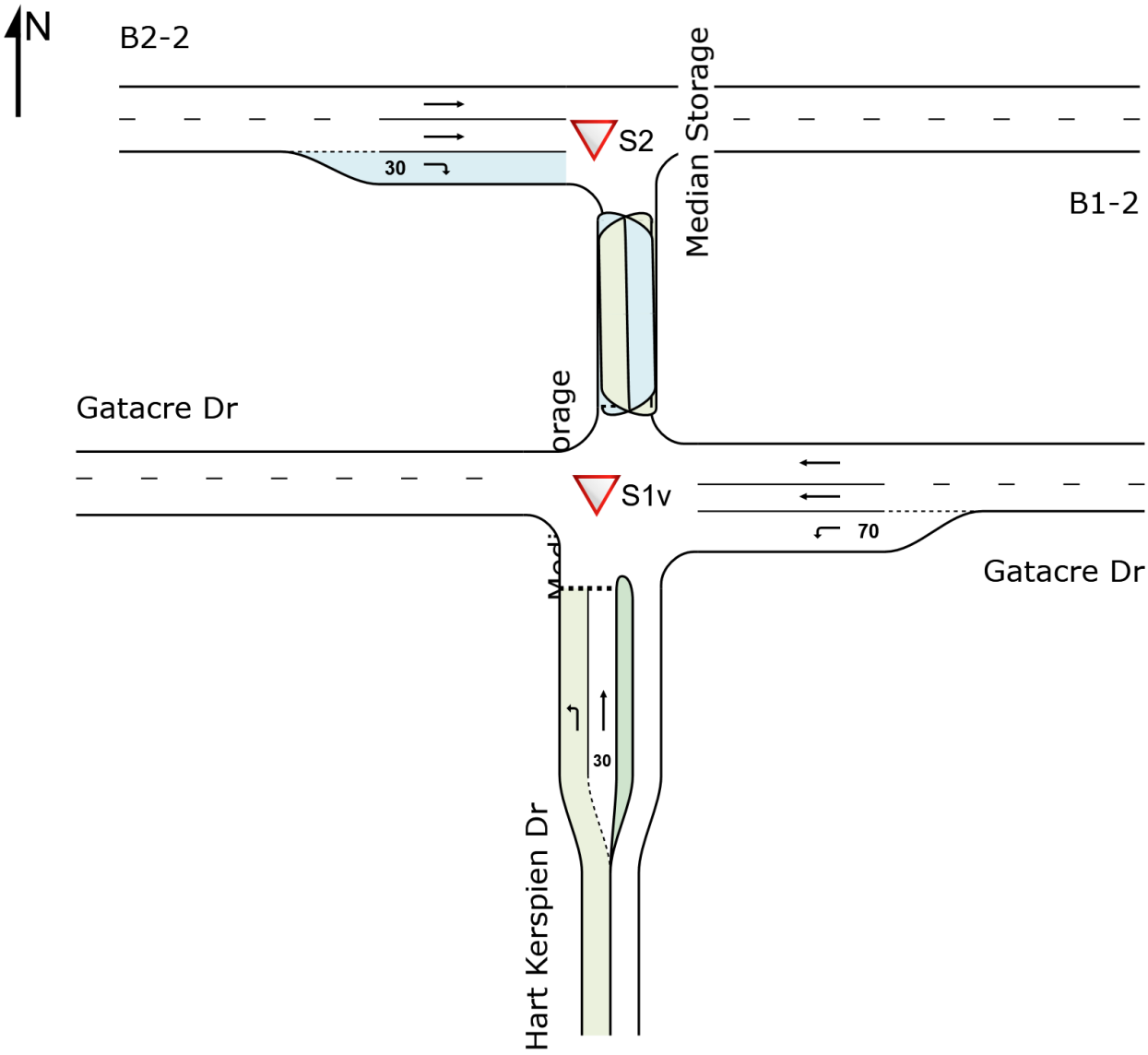
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

NETWORK LAYOUT

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽S2	NA	Gatacre & HK - EB
▽S1v	NA	Gatacre & HK - WB

MOVEMENT SUMMARY

Site: S2 [Gatacre & HK - EB (Site Folder: Existing PM)]

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Median Storage														
1	R2	137	10.0	137	10.0	0.148	2.5	LOS A	0.2	1.5	0.42	0.48	0.42	49.4
Approach		137	10.0	137	10.0	0.148	2.5	LOS A	0.2	1.5	0.42	0.48	0.42	49.4
West: B2-2														
2	T1	442	10.0	442	10.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
3	R2	211	10.0	211	10.0	0.136	6.5	LOS A	0.0	0.0	0.00	0.66	0.00	56.4
Approach		653	10.0	653	10.0	0.136	2.1	NA	0.0	0.0	0.00	0.21	0.00	66.8
All Vehicles		789	10.0	789	10.0	0.148	2.2	NA	0.2	1.5	0.07	0.26	0.07	64.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: S1v [Gatacre & HK - WB (Site Folder: Existing PM)]

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	211	10.0	211	10.0	0.152	6.1	LOS A	0.3	2.0	0.25	0.56	0.25	52.4
2	T1	137	10.0	137	10.0	0.278	13.1	LOS B	0.5	4.1	0.67	0.89	0.75	42.3
Approach		347	10.0	347	10.0	0.278	8.9	LOS A	0.5	4.1	0.42	0.69	0.45	49.5
East: Gatacre Dr														
3	L2	137	10.0	137	10.0	0.073	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	56.8
4	T1	263	10.0	263	10.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
Approach		400	10.0	400	10.0	0.073	2.2	NA	0.0	0.0	0.00	0.21	0.00	64.8
North: Median Storage														
5	T1	211	10.0	211	10.0	0.260	3.0	LOS A	0.5	3.7	0.56	0.49	0.56	47.7
Approach		211	10.0	211	10.0	0.260	3.0	LOS A	0.5	3.7	0.56	0.49	0.56	47.7
All Vehicles		958	10.0	958	10.0	0.278	4.8	NA	0.5	4.1	0.27	0.44	0.28	55.9

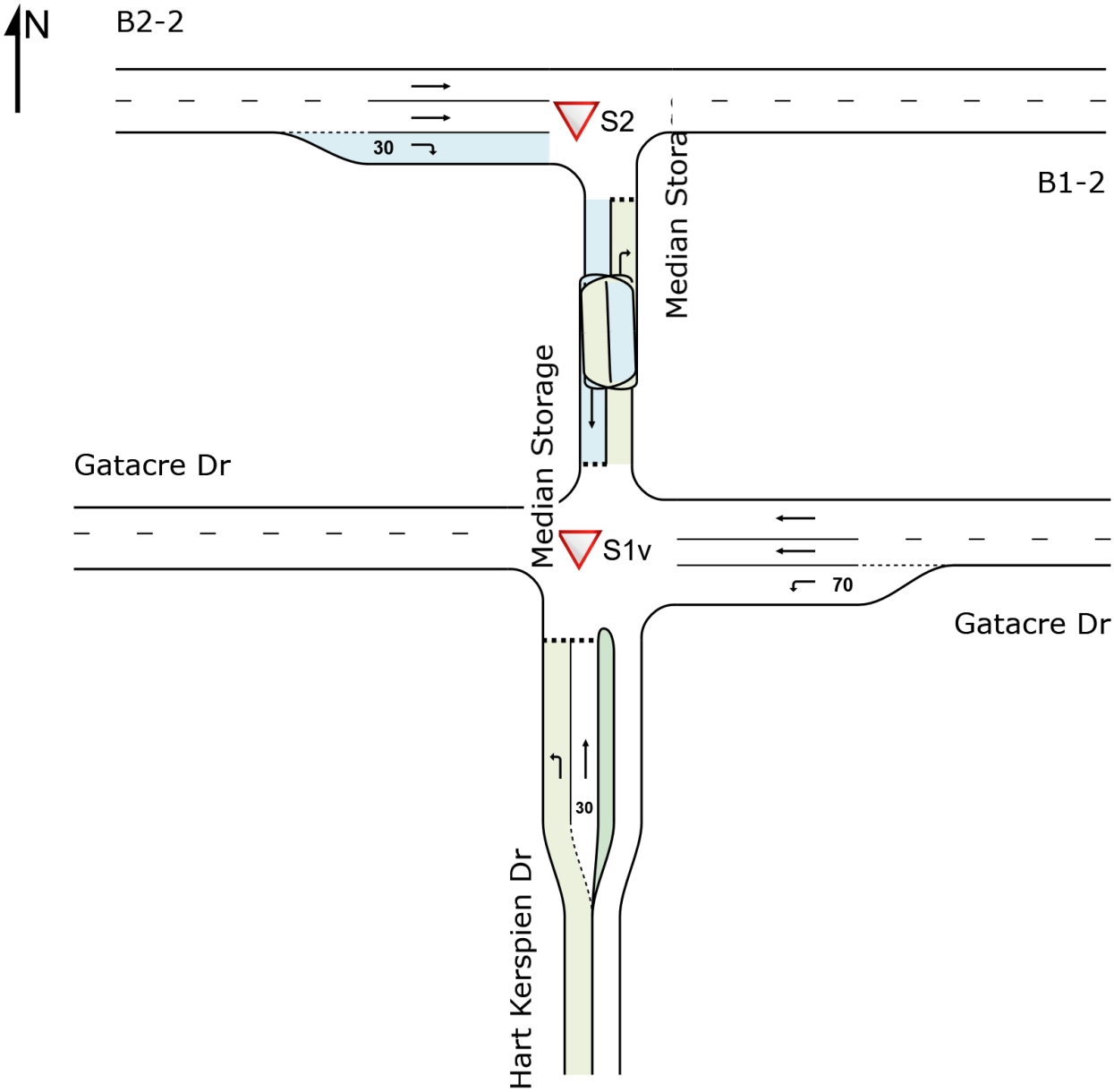
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

NETWORK LAYOUT

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing - Stage 1)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



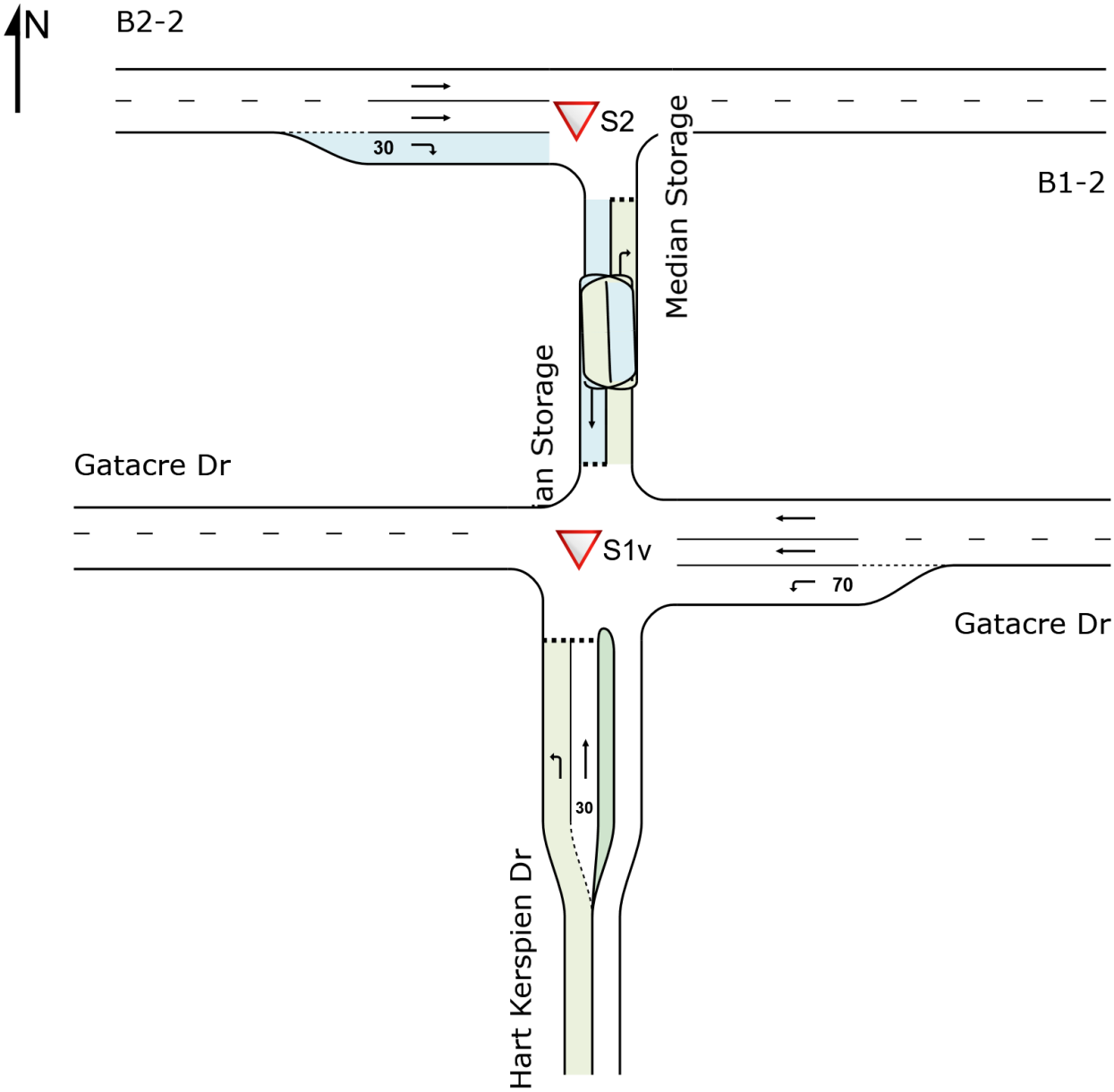
SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
S2	NA	Gatacre & HK - EB
S1v	NA	Gatacre & HK - WB

NETWORK LAYOUT

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing - Stage 1)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



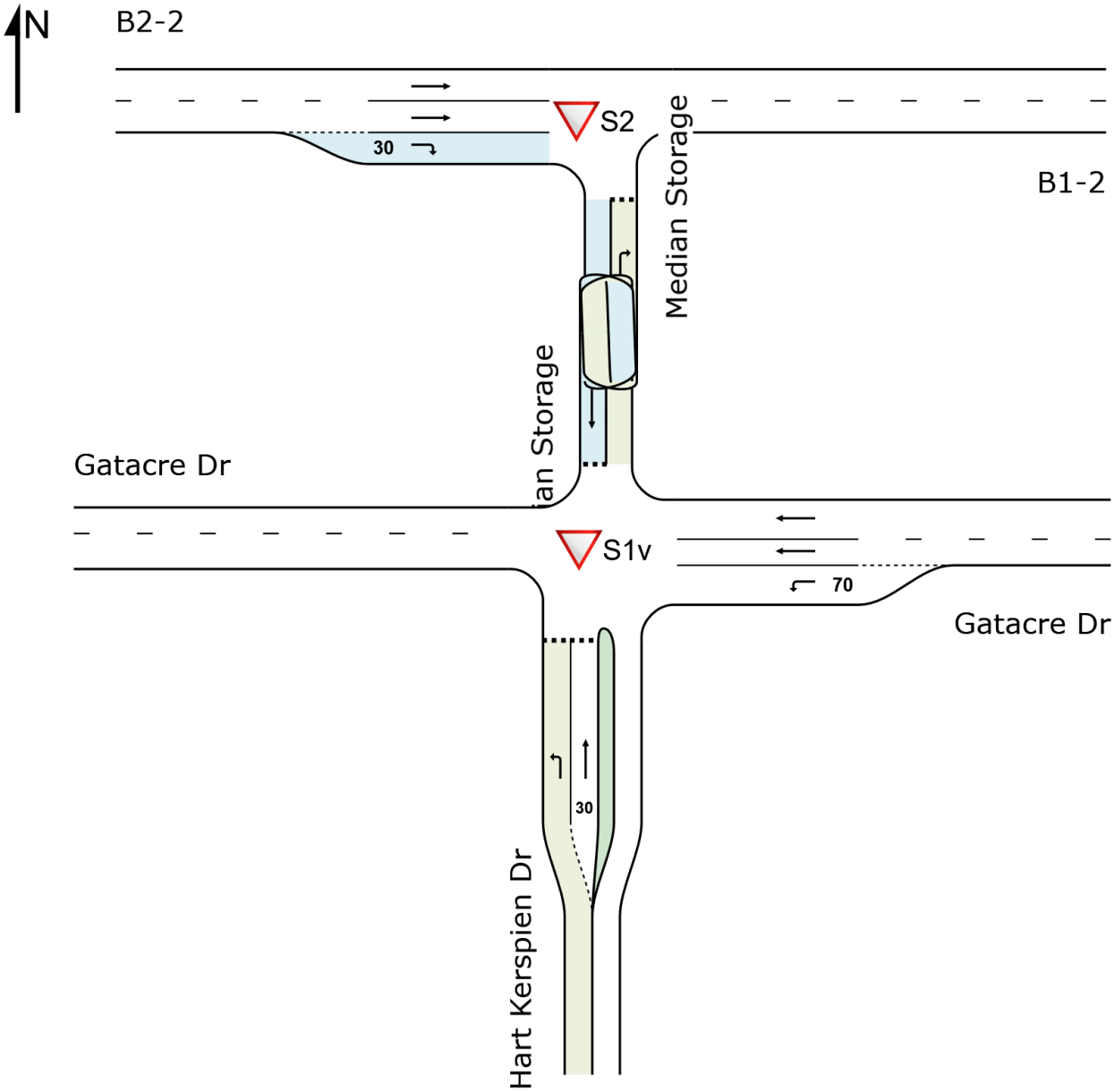
SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
S2	NA	Gatacre & HK - EB
S1v	NA	Gatacre & HK - WB

NETWORK LAYOUT

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
S2	NA	Gatacre & HK - EB
S1v	NA	Gatacre & HK - WB

MOVEMENT SUMMARY

Site: S2 [Gatacre & HK - EB (Site Folder: Stage 2a AM)]

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Median Storage														
1	R2	260	10.0	260	10.0	0.246	2.0	LOS A	0.4	2.8	0.38	0.42	0.38	50.1
Approach		260	10.0	260	10.0	0.246	2.0	LOS A	0.4	2.8	0.38	0.42	0.38	50.1
West: B2-2														
2	T1	306	10.0	306	10.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
3	R2	296	10.0	296	10.0	0.165	6.5	LOS A	0.4	3.3	0.00	0.66	0.00	56.4
Approach		602	10.0	602	10.0	0.165	3.2	NA	0.4	3.3	0.00	0.32	0.00	64.8
All Vehicles		862	10.0	862	10.0	0.246	2.8	NA	0.4	3.3	0.11	0.35	0.11	60.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: S1v [Gatacre & HK - WB (Site Folder: Stage 2a AM)]

Network: TSTIC [AM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	396	10.0	396	10.0	0.311	6.7	LOS A	0.6	4.7	0.38	0.61	0.38	50.4
2	T1	260	10.0	260	10.0	0.935	65.0	LOS F	4.8	36.6	0.96	1.84	3.86	13.6
Approach		656	10.0	656	10.0	0.935	29.8	LOS D	4.8	36.6	0.61	1.10	1.76	32.5
East: Gatacre Dr														
3	L2	193	10.0	193	10.0	0.102	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	55.5
4	T1	441	10.0	441	10.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		634	10.0	634	10.0	0.115	2.0	NA	0.0	0.0	0.00	0.18	0.00	65.5
North: Median Storage														
5	T1	296	10.0	296	10.0	0.505	8.6	LOS A	0.9	7.0	0.73	1.07	1.13	35.2
Approach		296	10.0	296	10.0	0.505	8.6	LOS A	0.9	7.0	0.73	1.07	1.13	35.2
All Vehicles		1585	10.0	1585	10.0	0.935	14.7	NA	4.8	36.6	0.39	0.73	0.94	45.3

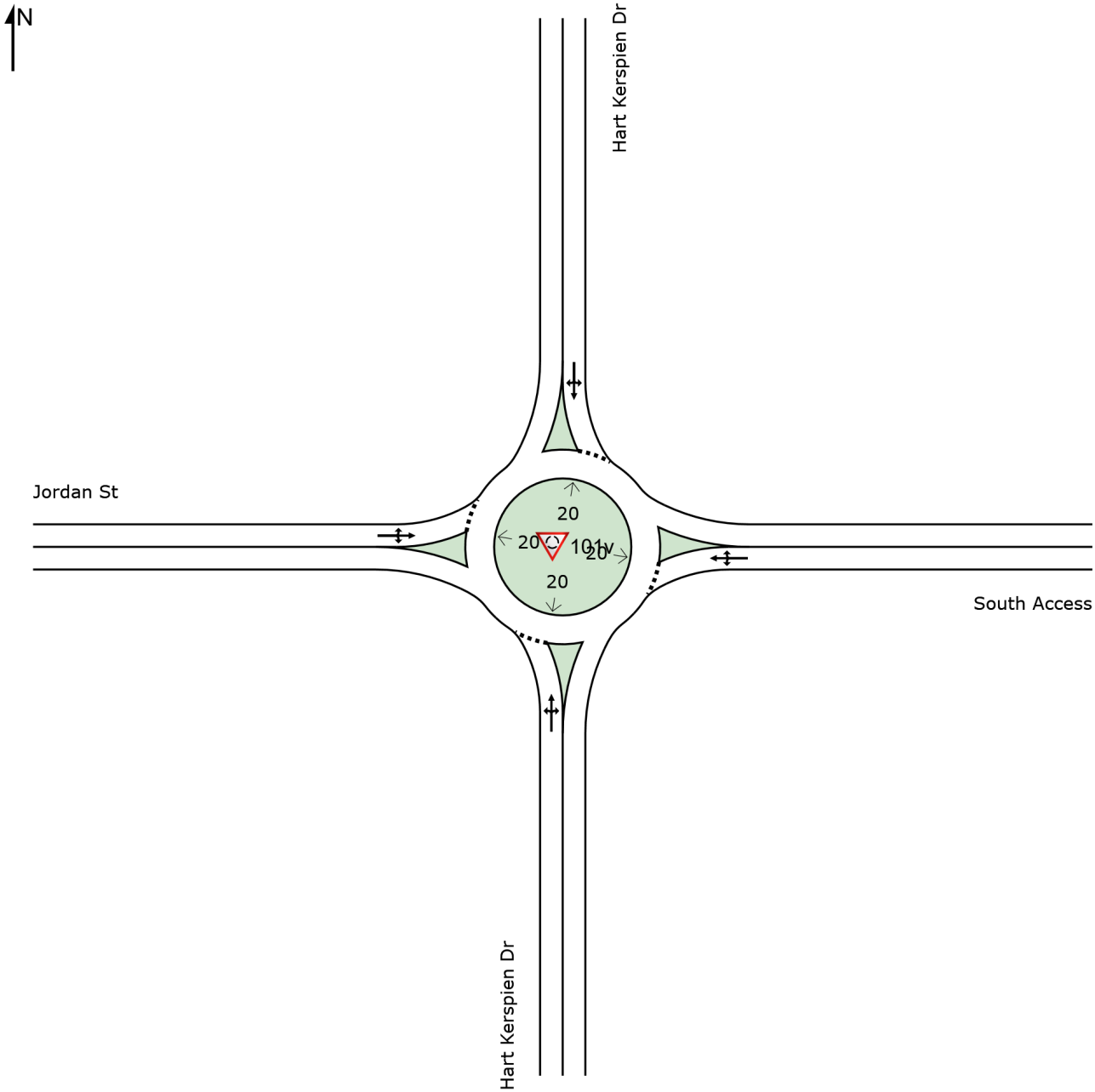
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101v [Jordan & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Jordan & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	1	5.0	1	5.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	41.5
2	T1	374	10.0	394	10.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	45.8
3	R2	1	5.0	1	5.0	0.345	8.6	LOS A	2.5	19.1	0.47	0.46	0.47	40.2
Approach		376	10.0	396	10.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	45.8
East: South Access														
4	L2	1	5.0	1	5.0	0.096	6.0	LOS A	0.5	3.9	0.60	0.70	0.60	37.0
5	T1	1	5.0	1	5.0	0.096	6.0	LOS A	0.5	3.9	0.60	0.70	0.60	33.4
6	R2	77	5.0	81	5.0	0.096	10.5	LOS B	0.5	3.9	0.60	0.70	0.60	39.6
Approach		79	5.0	83	5.0	0.096	10.4	LOS B	0.5	3.9	0.60	0.70	0.60	39.6
North: Hart Kerspien Dr														
7	L2	129	5.0	136	5.0	0.363	3.9	LOS A	3.1	23.4	0.05	0.45	0.05	48.1
8	T1	367	10.0	386	10.0	0.363	4.1	LOS A	3.1	23.4	0.05	0.45	0.05	50.8
9	R2	75	5.0	79	5.0	0.363	8.8	LOS A	3.1	23.4	0.05	0.45	0.05	43.1
Approach		571	8.2	601	8.2	0.363	4.7	LOS A	3.1	23.4	0.05	0.45	0.05	49.4
West: Jordan St														
10	L2	90	5.0	95	5.0	0.117	6.1	LOS A	0.7	5.2	0.65	0.64	0.65	41.3
11	T1	1	5.0	1	5.0	0.117	6.1	LOS A	0.7	5.2	0.65	0.64	0.65	38.3
12	R2	1	5.0	1	5.0	0.117	10.6	LOS B	0.7	5.2	0.65	0.64	0.65	43.2
Approach		92	5.0	97	5.0	0.117	6.2	LOS A	0.7	5.2	0.65	0.64	0.65	41.3
All Vehicles		1118	8.3	1177	8.3	0.363	5.0	LOS A	3.1	23.4	0.28	0.49	0.28	46.8

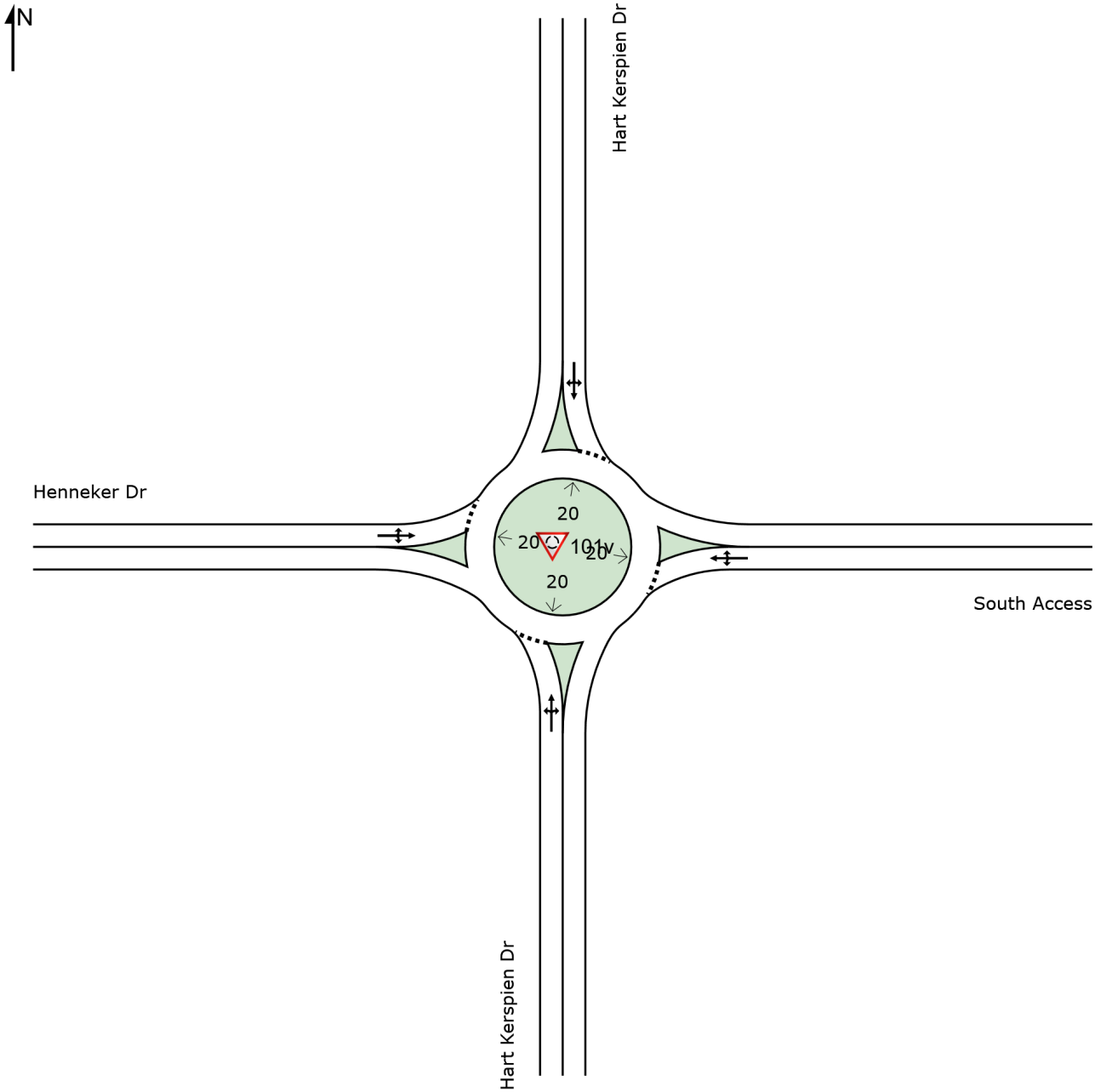
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay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

SITE LAYOUT

Site: 101v [Henneker & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Henneker & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	1	5.0	1	5.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	44.1
2	T1	309	10.0	325	10.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	47.1
3	R2	1	5.0	1	5.0	0.255	7.9	LOS A	1.7	13.2	0.31	0.37	0.31	42.9
Approach		311	10.0	327	10.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	47.1
East: South Access														
4	L2	1	5.0	1	5.0	0.046	4.7	LOS A	0.2	1.8	0.48	0.62	0.48	40.1
5	T1	1	5.0	1	5.0	0.046	4.7	LOS A	0.2	1.8	0.48	0.62	0.48	35.0
6	R2	42	5.0	44	5.0	0.046	9.2	LOS A	0.2	1.8	0.48	0.62	0.48	40.2
Approach		44	5.0	46	5.0	0.046	9.0	LOS A	0.2	1.8	0.48	0.62	0.48	40.1
North: Hart Kerspien Dr														
7	L2	69	5.0	73	5.0	0.231	2.8	LOS A	1.7	12.4	0.04	0.36	0.04	44.2
8	T1	256	10.0	269	10.0	0.231	2.8	LOS A	1.7	12.4	0.04	0.36	0.04	48.1
9	R2	35	5.0	37	5.0	0.231	7.3	LOS A	1.7	12.4	0.04	0.36	0.04	39.6
Approach		360	8.6	379	8.6	0.231	3.3	LOS A	1.7	12.4	0.04	0.36	0.04	46.9
West: Henneker Dr														
10	L2	20	5.0	21	5.0	0.025	5.1	LOS A	0.1	1.0	0.54	0.53	0.54	41.8
11	T1	1	5.0	1	5.0	0.025	5.0	LOS A	0.1	1.0	0.54	0.53	0.54	40.1
12	R2	1	5.0	1	5.0	0.025	9.6	LOS A	0.1	1.0	0.54	0.53	0.54	45.6
Approach		22	5.0	23	5.0	0.025	5.3	LOS A	0.1	1.0	0.54	0.53	0.54	41.9
All Vehicles		737	8.8	776	8.8	0.255	3.7	LOS A	1.7	13.2	0.20	0.38	0.20	46.6

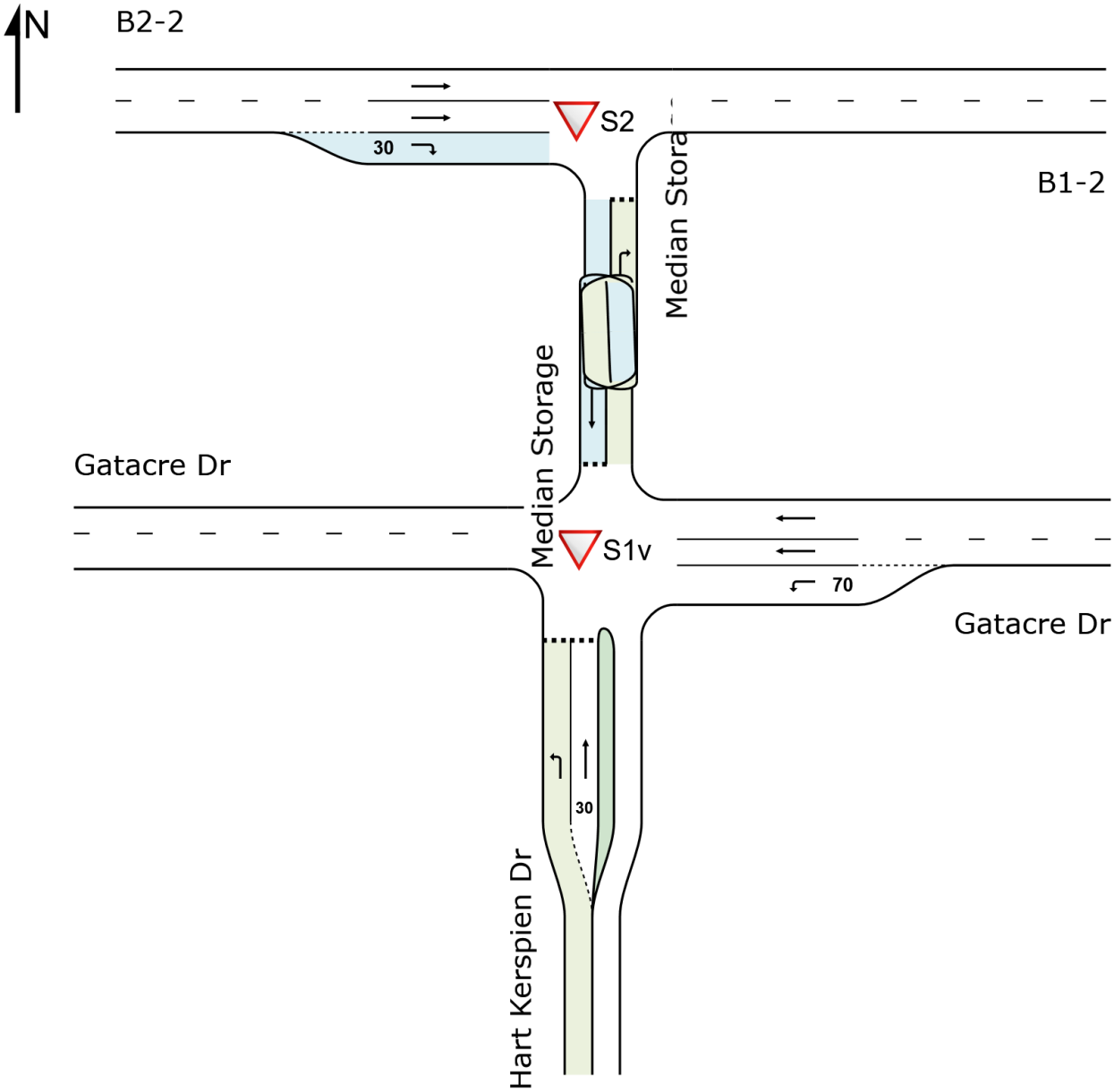
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay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

NETWORK LAYOUT

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Sign controlled T-intersection with Median Storage for two-staged turn movements
Major Road Turn opposes Stage 1 of the Minor Road turn movement (Type B)
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
S2	NA	Gatacre & HK - EB
S1v	NA	Gatacre & HK - WB

MOVEMENT SUMMARY

Site: S2 [Gatacre & HK - EB (Site Folder: Stage 2a PM)]

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Median Storage														
1	R2	209	10.0	209	10.0	0.243	3.1	LOS A	0.3	2.6	0.48	0.57	0.48	48.6
Approach		209	10.0	209	10.0	0.243	3.1	LOS A	0.3	2.6	0.48	0.57	0.48	48.6
West: B2-2														
2	T1	515	10.0	515	10.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
3	R2	371	10.0	371	10.0	0.206	6.5	LOS A	0.9	6.6	0.00	0.66	0.00	56.3
Approach		885	10.0	885	10.0	0.206	2.7	NA	0.9	6.6	0.00	0.27	0.00	65.7
All Vehicles		1095	10.0	1095	10.0	0.243	2.8	NA	0.9	6.6	0.09	0.33	0.09	62.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: S1v [Gatacre & HK - WB (Site Folder: Stage 2a PM)]

Network: TSTIC [PM (Network Folder: Gatacre & HK Existing - Stage 2a)]

Type B Two-Stage T-Intersection Crossing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	320	10.0	320	10.0	0.236	6.3	LOS A	0.4	3.4	0.29	0.57	0.29	50.7
2	T1	209	10.0	209	10.0	0.725	33.8	LOS D	2.1	15.8	0.90	1.27	1.95	21.6
Approach		529	10.0	529	10.0	0.725	17.2	LOS C	2.1	15.8	0.54	0.85	0.95	39.9
East: Gatacre Dr														
3	L2	243	10.0	243	10.0	0.129	6.5	LOS A	0.0	0.0	0.00	0.61	0.00	55.5
4	T1	306	10.0	306	10.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
Approach		549	10.0	549	10.0	0.129	2.9	NA	0.0	0.0	0.00	0.27	0.00	63.5
North: Median Storage														
5	T1	371	10.0	371	10.0	0.566	8.3	LOS A	0.9	7.0	0.74	1.17	1.23	35.6
Approach		371	10.0	371	10.0	0.566	8.3	LOS A	0.9	7.0	0.74	1.17	1.23	35.6
All Vehicles		1449	10.0	1449	10.0	0.725	9.5	NA	2.1	15.8	0.38	0.71	0.66	48.8

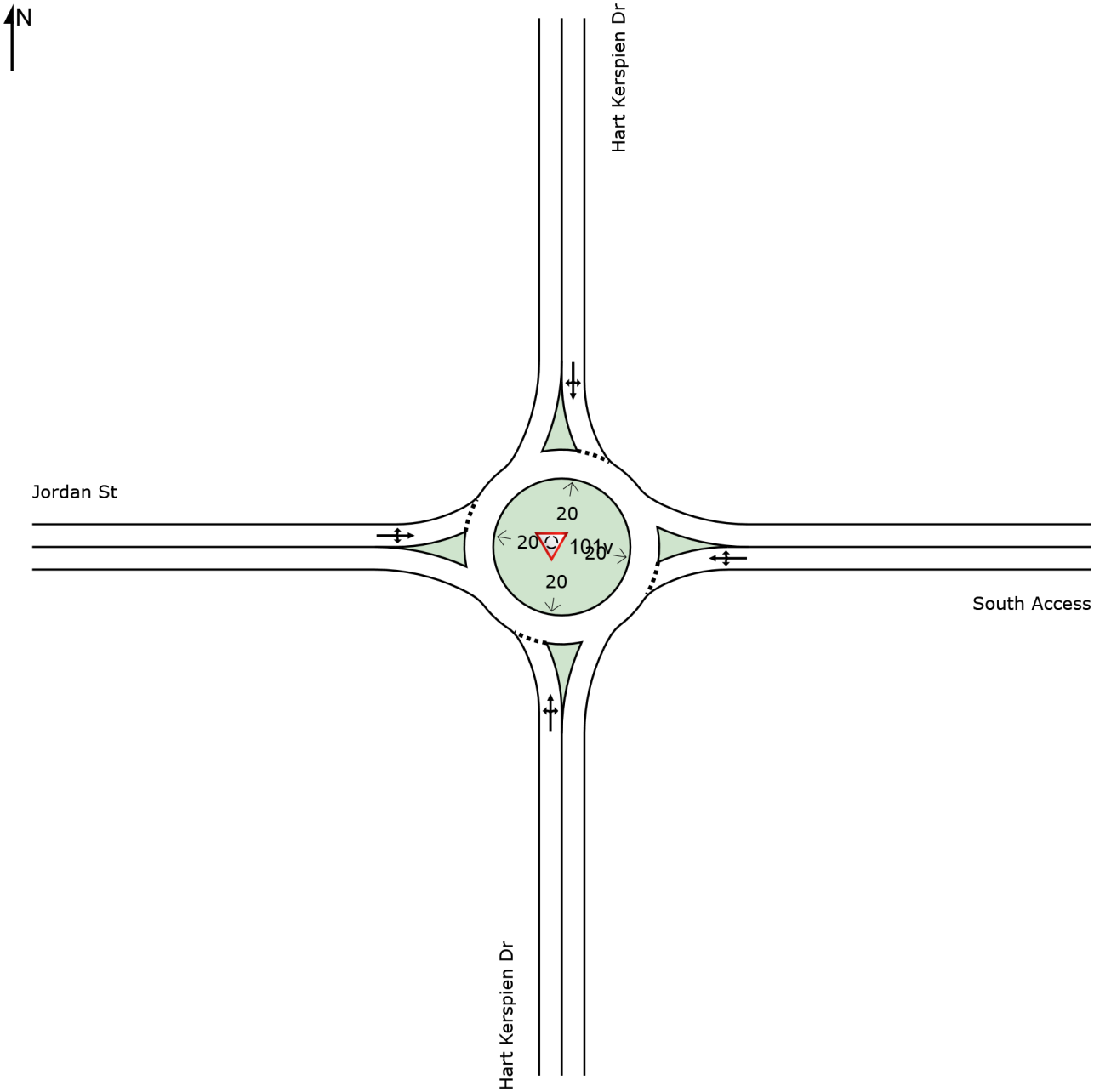
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101v [Jordan & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Jordan & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	1	5.0	1	5.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	41.5
2	T1	374	10.0	394	10.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	45.8
3	R2	1	5.0	1	5.0	0.345	8.6	LOS A	2.5	19.1	0.47	0.46	0.47	40.2
Approach		376	10.0	396	10.0	0.345	4.1	LOS A	2.5	19.1	0.47	0.46	0.47	45.8
East: South Access														
4	L2	1	5.0	1	5.0	0.096	6.0	LOS A	0.5	3.9	0.60	0.70	0.60	37.0
5	T1	1	5.0	1	5.0	0.096	6.0	LOS A	0.5	3.9	0.60	0.70	0.60	33.4
6	R2	77	5.0	81	5.0	0.096	10.5	LOS B	0.5	3.9	0.60	0.70	0.60	39.6
Approach		79	5.0	83	5.0	0.096	10.4	LOS B	0.5	3.9	0.60	0.70	0.60	39.6
North: Hart Kerspien Dr														
7	L2	129	5.0	136	5.0	0.363	3.9	LOS A	3.1	23.4	0.05	0.45	0.05	48.1
8	T1	367	10.0	386	10.0	0.363	4.1	LOS A	3.1	23.4	0.05	0.45	0.05	50.8
9	R2	75	5.0	79	5.0	0.363	8.8	LOS A	3.1	23.4	0.05	0.45	0.05	43.1
Approach		571	8.2	601	8.2	0.363	4.7	LOS A	3.1	23.4	0.05	0.45	0.05	49.4
West: Jordan St														
10	L2	90	5.0	95	5.0	0.117	6.1	LOS A	0.7	5.2	0.65	0.64	0.65	41.3
11	T1	1	5.0	1	5.0	0.117	6.1	LOS A	0.7	5.2	0.65	0.64	0.65	38.3
12	R2	1	5.0	1	5.0	0.117	10.6	LOS B	0.7	5.2	0.65	0.64	0.65	43.2
Approach		92	5.0	97	5.0	0.117	6.2	LOS A	0.7	5.2	0.65	0.64	0.65	41.3
All Vehicles		1118	8.3	1177	8.3	0.363	5.0	LOS A	3.1	23.4	0.28	0.49	0.28	46.8

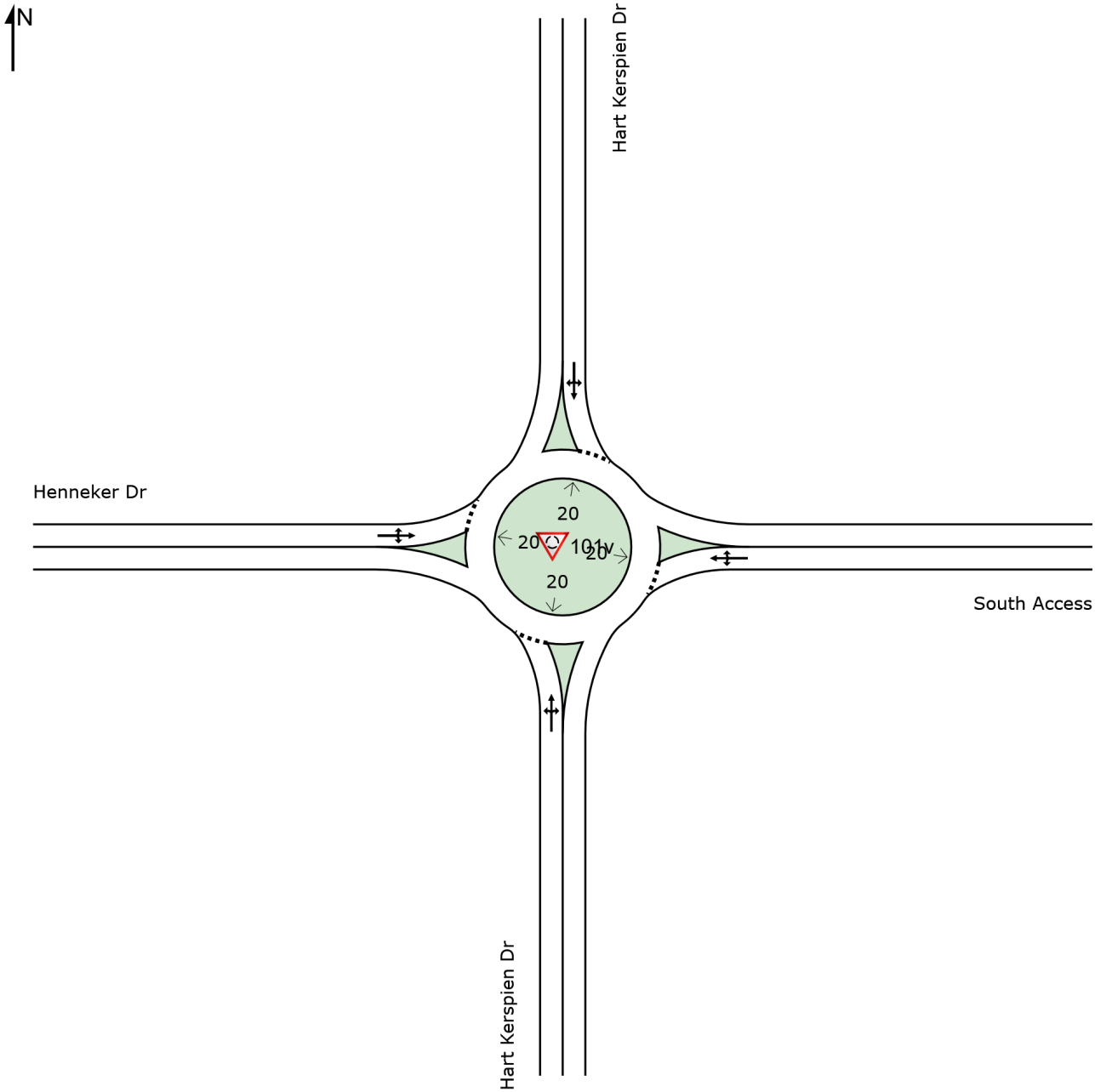
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay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

SITE LAYOUT

Site: 101v [Henneker & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101v [Henneker & HK (Site Folder: Stage 2a PM)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hart Kerspien Dr														
1	L2	1	5.0	1	5.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	44.1
2	T1	309	10.0	325	10.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	47.1
3	R2	1	5.0	1	5.0	0.255	7.9	LOS A	1.7	13.2	0.31	0.37	0.31	42.9
Approach		311	10.0	327	10.0	0.255	3.4	LOS A	1.7	13.2	0.31	0.37	0.31	47.1
East: South Access														
4	L2	1	5.0	1	5.0	0.046	4.7	LOS A	0.2	1.8	0.48	0.62	0.48	40.1
5	T1	1	5.0	1	5.0	0.046	4.7	LOS A	0.2	1.8	0.48	0.62	0.48	35.0
6	R2	42	5.0	44	5.0	0.046	9.2	LOS A	0.2	1.8	0.48	0.62	0.48	40.2
Approach		44	5.0	46	5.0	0.046	9.0	LOS A	0.2	1.8	0.48	0.62	0.48	40.1
North: Hart Kerspien Dr														
7	L2	69	5.0	73	5.0	0.231	2.8	LOS A	1.7	12.4	0.04	0.36	0.04	44.2
8	T1	256	10.0	269	10.0	0.231	2.8	LOS A	1.7	12.4	0.04	0.36	0.04	48.1
9	R2	35	5.0	37	5.0	0.231	7.3	LOS A	1.7	12.4	0.04	0.36	0.04	39.6
Approach		360	8.6	379	8.6	0.231	3.3	LOS A	1.7	12.4	0.04	0.36	0.04	46.9
West: Henneker Dr														
10	L2	20	5.0	21	5.0	0.025	5.1	LOS A	0.1	1.0	0.54	0.53	0.54	41.8
11	T1	1	5.0	1	5.0	0.025	5.0	LOS A	0.1	1.0	0.54	0.53	0.54	40.1
12	R2	1	5.0	1	5.0	0.025	9.6	LOS A	0.1	1.0	0.54	0.53	0.54	45.6
Approach		22	5.0	23	5.0	0.025	5.3	LOS A	0.1	1.0	0.54	0.53	0.54	41.9
All Vehicles		737	8.8	776	8.8	0.255	3.7	LOS A	1.7	13.2	0.20	0.38	0.20	46.6

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