



**DAYS ROAD & REGENCY ROAD,
CROYDON PARK
DEVELOPMENT PLAN AMENDMENT**

TRANSPORT INVESTIGATIONS



CIRQA™

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1. INTRODUCTION

CIRQA has been engaged to provide traffic impact investigations for the proposed Croydon Park Development Plan Amendment (DPA). Specifically, CIRQA's investigations relate to the proposed rezoning of land (from Light Industry to zoning that will support commercial/retail and residential uses) on the southern side of Regency Road (west of Days Road).

This report includes assessment of the potential traffic generation associated with the potential rezoning and redevelopment of the subject land, the associated impact on the adjacent existing road network, active and sustainable transport provisions and consideration of appropriate infrastructure upgrades/requirements.

The assessment also includes high-level consideration of potential cumulative impacts of redevelopment of the subject site, as well as other nearby separate DPA proposals.

2. BACKGROUND

2.1 STUDY AREA

The subject site is located approximately 5.3 km north-west of Adelaide's Central Business District (CBD) and comprises approximately 12.02 hectares. The site is bound by Regency Road to the north, Days Road to the east and residential dwellings to the south and west. Figure 1 illustrates the subject site and adjacent road network.



Figure 1 – Subject site and adjacent road network

The City of Port Adelaide Enfield's Development Plan (consolidated 6 February 2018) identifies that the site is currently located within a Light Industry Zone. The primary purpose of this zone is to provide land that accommodates a range of light industrial, storage and warehouse land uses.

The existing land uses are reflective of the current zoning with a mix of primarily industrial and commercial businesses. This includes a number of relatively large industrial businesses which generate regular heavy vehicle movements (including B-Doubles). The existing site is held under multiple ownerships and comprises a

number of separate properties. Specifically, Table 1 summarises the following existing uses located within the subject site.

Table 1 – Existing uses within the subject site

Property address	Use
Lot 102 at 121 Regency Road	Adelaide Integrated Precast
Lot 1 at 141 Regency Road	Bridgestone Tyre and Auto
Lot 9 at 92 Days Road	Office/workshop/warehouse
Lot 1 at 90 Days Road	B & P Mechanical Repairs
Lot 2 at 88 Days Road	Vacant/storage
Lot 3 at 86-88 Days Road	Vacant/storage
Lot 111 at 80-83 Days Road	Vacant/storage
Lot 114 at 76-78 Days Road	Vacant/storage
Lot 202 at 75A Days Road	Regency Building Supplies
Lot 200 at 74B Days Road	Vacant/storage
Lot 29 at 72 Days Road	SA Precast Pty Ltd
Lot 33 at 70 Days Road	Residential
Lot 32 at 68 Days Road	Residential

The overall site is serviced directly via both Days Road and Regency Road. A total of 13 crossovers are provided on Days Road. The majority of access points are two-way width with the exception of two single width residential crossovers and a third located to the south of the Days Road/Gray Street intersection. All turning movements are possible at the majority of the Days Road access points.

A total of five two-way width crossovers are provided on Regency Road. The three crossovers nearest the Regency Road/Days Road intersection are restricted to left-in/left-out due to a central raised median on Regency Road. The remaining two crossovers are unrestricted, with all movements permitted.

2.2 ADJACENT ROAD NETWORK

Regency Road is an arterial road under the care and control of the Department of Planning, Transport and Infrastructure (DPTI). Adjacent the site, Regency Road comprises two traffic lanes in each direction with a central median (painted and solid). Traffic data obtained from DPTI indicates that this section of Regency Road has an Annual Average Daily Traffic (AADT) volume in the order of 23,400 vehicles per day (vpd), of which approximately 5.6% are commercial vehicles. Adjacent the site, a 60 km/h speed limit applies on Regency Road. Regency Road is gazetted for B-Double use.

Days Road is a major collector road under the care and control of the City of Port Adelaide Enfield. Adjacent the site, Days Road is approximately 13.5 m wide and comprises a single carriageway in each direction. A 3 m wide (approximate)

painted median divides the opposing directions of traffic. At the intersection of Regency Road, Days Road splits into two approach lanes. A 50 km/h speed limit applies on Days Road. Days Road is gazetted for B-Double use north of Gray Street. DPTI data indicates a daily traffic volume of 9,000 vpd on Days Road adjacent the site.

The intersection of Regency Road and Days Road is controlled by traffic signals with all relevant traffic movements permitted. B-Doubles are allowed to pass through the intersection of Regency Road and Days Road as both roads are gazetted for B-Double movements. However, the following restrictions apply for B-double movements at the intersection:

- no northbound left-turns from Days Road onto Regency Road; and
- no eastbound right-turns from Regency Road to Days Road.

2.3 WALKING AND CYCLING

Sealed footpaths are provided on both sides of Regency Road and Days Road. Cyclist facilities are provided on Regency Road at restricted times (7:00 am to 9:00 am and 4:00 pm to 6:00 pm Monday to Friday). No formal cycling facilities are provided on Days Road. As such, cyclists are required to use the traffic lanes (under a standard shared arrangement) or the adjacent footpath network. Both Days Road and Regency Road form part of the BikeDirect network.

Pedestrian crossing movements are facilitated at each arm of the signalised intersection of Regency Road and Days Road. Days Road contains no formal pedestrian crossing facilities adjacent the subject site.

2.4 PUBLIC TRANSPORT

Numerous public transport services operate within close vicinity to the subject site. Specifically, regular bus services operate along Regency Road and Days Road. Adjacent the subject site, bus stops (in both directions) are located in two locations along Days Road. Additional bus stops, in both directions, are located adjacent the subject site on Regency Road. These bus stops are serviced by the following bus routes:

- 230 – Port Adelaide Interchange to City;
- 232 – Port Adelaide Interchange to City;
- 232R – City to Rosewater;
- 300 – Suburban Connector;
- 300C – Suburban Connector;
- 300G – Suburban Connector;

- 300H – Suburban Connector;
- 949 – Elizabeth to Adelaide Secondary School of English (School); and
- A016 – Rosewater to Adelaide Oval.

The Islington Railway Station is located approximately 1 km to the east of the subject site. Train services frequently operate along the 'Gawler Central line' with the Islington Railway station classified as a 'high frequency station' by Adelaide Metro. This classification is given to stations that offer services approximately every 15 minutes, 7:30 am to 6:30 pm Monday to Friday.

3. PROPOSED REZONING

It is proposed to rezone the subject area to enable Mixed-Use development on the site. It is anticipated that the rezoning will allow primarily residential and commercial development, with residential development focused on the southern two-thirds of the subject site and commercial development fronting Regency Road. However, the DPA will also allow mixed-use development combining both types of uses within the site (mixed-use developments would be more likely to be established along the northern section of the site fronting Regency Road and Days Road).

3.1 ANTICIPATED DEVELOPMENT YIELDS

CIRQA has been advised that a range of potential development yields could be accommodated by the rezoning. The following anticipated development yields have been advised for each of the areas identified in Figure 2 (it should be noted that the yields include consideration of the requirement for land for an internal road network and other relevant considerations):

- up to 12,000 m² (approximate) of land is anticipated to be developed for commercial use. This would comprise 4,700 m² of food related floorspace (supermarket and ancillary food) and 800 m² of non-food related floorspace (petrol station, retail etc.). It is expected that these uses would primarily be developed in the northern third of the site; and
- the remainder of the site (10.82 hectares) is anticipated to be primarily residential development (generally located in the southern two-thirds of the site). It is expected that the site will yield between 45 to 70 residential dwellings per hectare.

3.2 ACCESS AND TRANSPORT INFRASTRUCTURE

Access provisions on Regency Road for future development within the site should be consolidated where possible (i.e. direct property access to Regency Road minimised where possible). Generally, it is considered that at least two to three primary intersections should be provided to service the majority of the overall site.

One of the primary intersections would be provided on Regency Road. A collector road into the subject site would form a priority-controlled T-intersection with Regency Road. The large extent of frontage on Days Road could accommodate two primary intersections (in addition to the aforementioned access on Regency Road) to service the subject site. Collector roads from the subject site would form priority controlled T-intersections with Days Road.

Given the extent of site frontage, additional minor intersections could potentially be provided to service the site. If proposed, additional intersections would need

to ensure adequate separation from other intersections including those associated with the site and those on the opposite side of Regency Road/Days Road. Consideration would also need to be given to provision of appropriate traffic control treatments, which may result in any additional intersections having turn restrictions (i.e. no right-turns). Nevertheless, this would be subject to further design input to confirm appropriate provisions and can be investigated further as the future site layout and internal road network is planned in more detail.

In order to service the future development of the subject site, an internal road network will also be required. The internal road network should provide connectivity between the primary intersections. Provision of rear access to allotments fronting Regency Road and Days Road would be desirable to minimise the requirement for direct access.

Additional minor direct access to Regency Road and Days Road should be minimised but could be considered where justified and designed appropriately.

The primary intersections should be treated with separate right-turn lanes on Regency Road and Days Road. Ideally, this would be undertaken in conjunction with implementation of DPTI's median treatment along these roads.

Additionally, treatment of Regency Road and Days Road should also seek to improve pedestrian safety and connectivity across both roads (i.e. pedestrian refuges could be provided or even Pedestrian Actuated Crossings if warranted).

Opportunities to improve provisions for cyclists on Days Road (such as on-road bicycle lanes) should also be considered (i.e. where intersection treatments and associated road widening are undertaken).

The internal road network should be designed in accordance with the City of Port Adelaide Enfield's engineering guidelines. In particular, the design of the road network should include consideration of on-street parking provisions, pedestrian and cyclist connectivity, waste collection provisions and appropriate traffic management treatments at all new intersections.

In addition to the above, consideration could be given to a possible future connection to the road network west of the subject site. Connection opportunities exist with Laurel Avenue and Ena Street terminating at the subject site's western boundary.

4. PARKING ASSESSMENT

The City of Port Adelaide Enfield's Development Plan identifies varying parking requirements for sites dependant on their proximity to public transport, active transport facilities and nearby services. It is noted that the site is located within close proximity to public transport (bus routes) operating along Regency Road and Days Road. The majority of the site is, within the 200 m distance from high frequency services noted in *"Table PAdE/5A – Off Street Vehicle Parking Requirements for Designated Areas"* for application of reduced rates.

On the basis of the above, the parking requirements identified in *"Table PAdE/5A – Off Street Vehicle Parking Requirements for Designated Areas"* could be considered applicable to the majority of the non-residential future development within the subject site. For developments within a designated area, the City of Port Adelaide Enfield's Development Plan identifies a rate of three (minimum) to six (maximum) spaces per 100 m² of gross leasable floor area for non-residential development excluding tourist accommodation.

These rates may be lower than currently associated with some land uses within the Council area. However, it is important to note that the rates are not solely provided to identify current parking demands but also address State Government and Council principles and strategies related to the encouragement of active and sustainable transport modes and a reduced focus on private motor vehicle use.

Where the Designated Area parking rate is not applicable, the parking requirements in *"Table PAdE/5 – Off Street Vehicle Parking Requirements"* are generally considered appropriate for application to future development within the subject site.

If parking requirements relevant to any proposed land uses are not defined in Council's Development Plan, advice should be sought from a suitably qualified Traffic Engineer.

5. TRAFFIC GENERATION AND DISTRIBUTION

In order to determine the impacts of the proposed rezoning on the adjacent road network, traffic volumes associated with the existing and potential future site (based upon the above yields) have been forecast.

Traffic volumes have generally been forecast using rates adopted from the NSW Roads and Maritime Services' *"Guide to Traffic Generating Developments"* (the RMS Guide) or other rates considered appropriate based on CIRQA's experience. The proportion of heavy vehicle movements assumed for each use has also been identified.

- **Industry (Factories)**
 - one am/pm peak hour trip per 100 m² of gross floor area;
 - 5% of peak hour trips assumed to be commercial vehicles;
- **Office**
 - 1.6 am and 1.2 pm peak hour trips per 100 m² of gross floor area;
 - 0% of peak hour trips assumed to be commercial vehicles;
- **Car Tyre Retail Outlet**
 - one am and one pm peak hour trip per 100 m² of gross floor area;
 - 0% of peak hour trips assumed to be commercial vehicles;
- **Low density residential**
 - 0.71 am and 0.78 pm peak hour trips per dwelling;
 - 2% of peak hour trips assumed to be commercial vehicles;
- **Commercial (food related)**
 - 6.25 am and 12.5 pm peak hour trips per 100 m² of gross floor area;
 - 2% of peak hour trips assumed to be commercial vehicles;
- **Commercial (non-food related)**
 - five am/pm peak hour trips per 100 m² gross leasable floor area;
 - 2% of trips assumed to be commercial vehicles.

Traffic volumes have been distributed to/from the subject site in order to determine the rezoning's potential impact. The signalised intersection of Regency Road and Days Road has been considered in this assessment as well as conditions at the potential primary access points.

5.1 EXISTING TRAFFIC

5.1.1 SUBJECT SITE

The above industry, office, car retail outlet and residential trip rates are applicable to the subject site. Based on these rates, it is estimated that the existing site uses generate in the order of 282 am and 268 pm peak hour trips (refer Appendix A). This includes an estimated 11 am and 11 pm commercial vehicle trips.

In addition, it has been estimated that 50% of movements will be into the site and 50% out for the am peak period and vice versa for the pm peak. The distribution of trips to/from the adjacent road network (via Regency Road/Days Road) is illustrated in Figure 2 below.

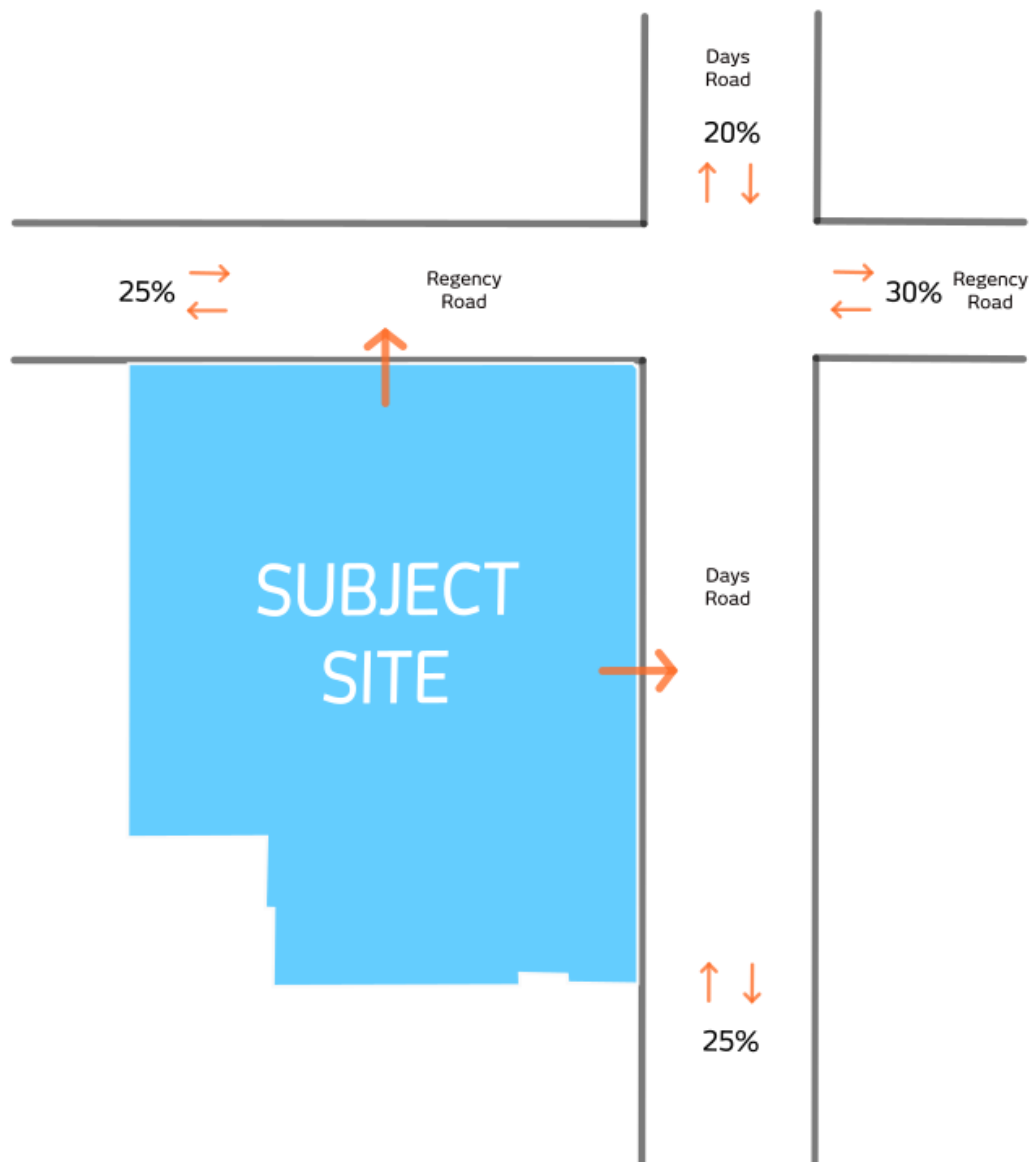


Figure 2 – Assumed distribution of current traffic from the subject site

5.2 FUTURE TRAFFIC GENERATION

5.2.1 SUBJECT SITE

For the purposes of the following assessment, the maximum anticipated development yields have been adopted. This includes 5,500 m² of commercial development and 758 residential dwellings. These yields are calculated by assuming the 5,500 m² of commercial development will require 1.2 hectares and the remaining 10.82 hectares will be developed with an average residential yield of 70 dwellings per hectare. Adopting the maximum yields provides a conservative assessment with regard to traffic impacts on the adjacent road network.

Based upon the traffic generation rates identified above, it is forecast that the proposed rezoning site could generate up to 806 movements during the am peak hour and 1,219 movements during the pm peak hours with 2% of peak hour movements assumed to be commercial vehicles (refer Appendix B). It is noted that the commercial movements have been discounted by 20% taking into account internal movements from within the subject site and passing trade.

The following in/out distributions have been adopted for the purposes of this assessment:

- **Residential** – 30% in and 70% out during the am peak hour (vice versa during the pm peak hour; and
- **Commercial** – 50% in and 50% out during both the am and pm peak hours.

Taking into consideration anticipated development yields, this equates to 36.6% of the total movements being inbound and 63.4% being outbound during the am peak hour and 60.8% inbound and 39.2% outbound during the pm peak hour. For the proposes of the future assessment, it has been assumed that commercial vehicles will comprise 2% of forecast vehicle movements (based upon the nature of the anticipated uses).

The distribution of future trips associated with the site has been estimated using demographic data from the 2016 ABS Census. This included demographic data from the City of Port Adelaide Enfield in relation to the location of residents' places of work and residential origins of workers within the vicinity of the subject site. The resulting traffic distribution and vehicle movements are illustrated in Figure 3 and Figure 4, respectively.

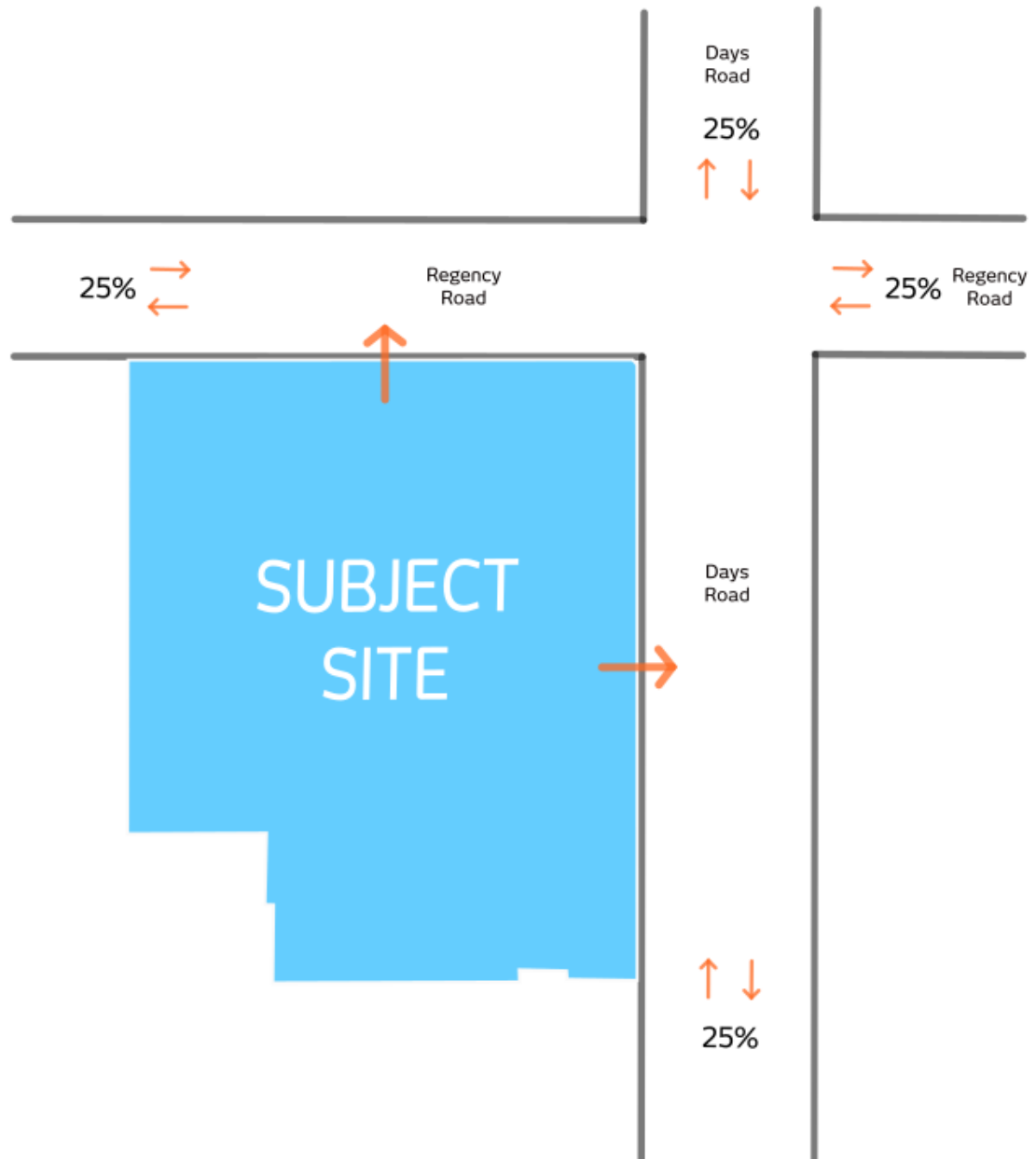


Figure 3 – Forecast future distribution of trips from the proposed rezoning on the adjacent road network

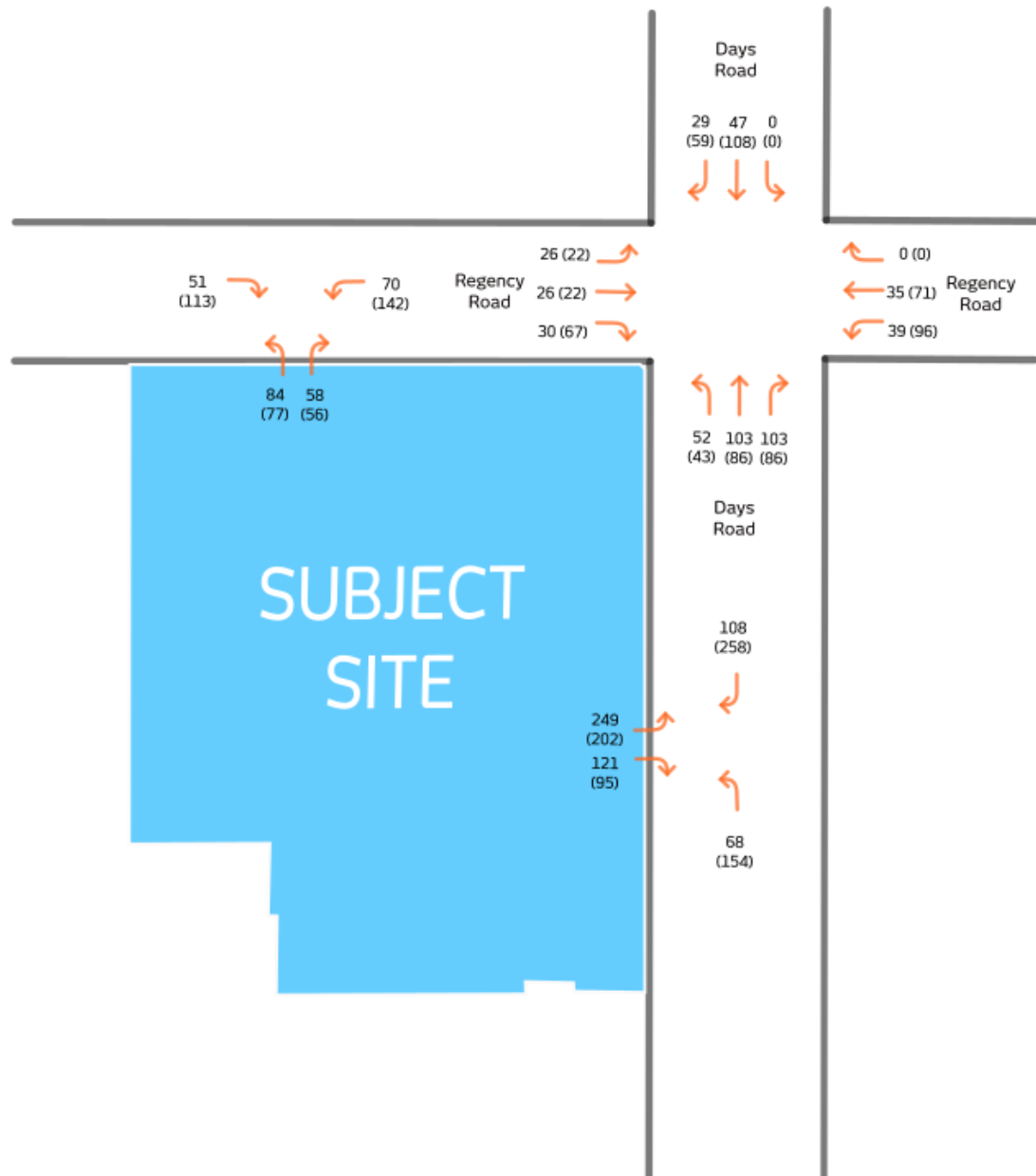


Figure 4 – Forecast traffic generated on the adjacent road network by the proposed rezoning during the am (pm) peak hours

6. TRAFFIC IMPACT

SIDRA Intersection modelling software has been used to assess the impacts of the proposed rezoning and anticipated development on the adjacent road network.

It should be noted that the SIDRA Intersection modelling has included consideration of DPTI's SIDRA Modelling Guidelines. Of particular note, all intersections have been assessed as 'standalone sites' (given that DPTI does not generally support SIDRA 'Network' models). In addition, default values have been adopted for commercial vehicle parameters. In reality, there are a number of B-Double movements associated with the subject site which would reduce following redevelopment of the site and the actual results likely to be better for the proposal than assessed (i.e. the assessment has not been reduced or discounted to account for this likelihood and is therefore conservative).

As per discussions with DPTI, the SIDRA analysis has been undertaken at the signalised intersection of Regency Road and Days Road as well as the future primary access points

To assess the impact of potential nearby developments, a number of scenarios were modelled. These scenarios include:

- **Base case** – to establish the baseline performance of the intersection; and
- **Scenario 1** – Existing (base case) volumes with the assumed existing volumes of the subject site subtracted, and future volumes associated with the future rezoning of the subject site added. This allows identification of the difference in traffic impacts between the current site uses and the assumed future uses of site.

Detailed SIDRA output is included in Appendices C to D with key results and outcomes identified below.

6.1 BASE CASE MODELLING

SCATS data and DPTI turn count surveys (both 2018) for the Regency Road/Days Road intersection (TS 023) were assessed and compared. The SCATS data and turn count data were relatively similar with only minor differences in volumes. Given the DPTI turn count survey data provides more accurate identification of traffic movements, particularly for shared lanes (i.e. through and left or right-turn lanes), the turn count survey data has been utilised for the assessment. In any event, the turn count data is slightly higher than the SCATS data and provides a more conservative assessment. The adopted 'base case' (existing) volumes are illustrated in Figure 5 below.

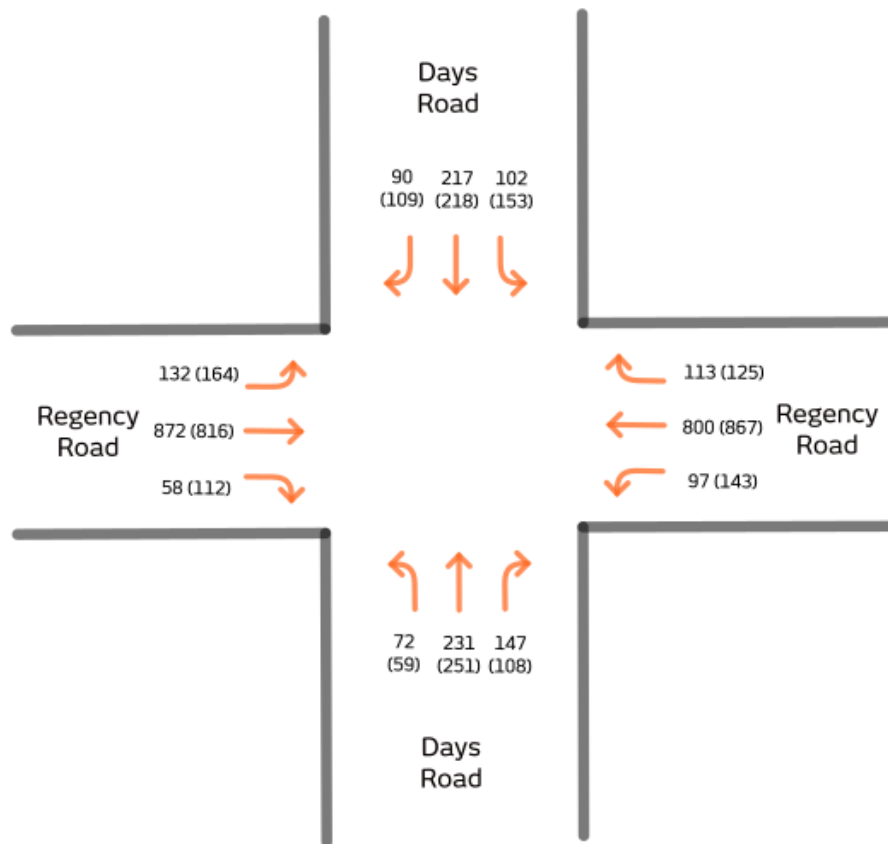


Figure 5 – Base case (existing) am and (pm) peak hour volumes

6.1.1 REGENCY ROAD/DAYS ROAD

The key SIDRA results for the base case for Regency Road/Days Road are identified in Table 2 and Table 3.

Table 2 – Key am peak hour base case results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.691	41.6	244.7	D
	T	0.691	34.5	244.7	C
	R	0.254	31.0	18.7	C
Days Road (North)	L	1.002	79.0	172.3	E
	T	1.002	74.4	172.3	E
	R	0.318	65.6	46.1	E
Regency Road (East)	L	0.090	8.4	11.1	A
	T	0.686	32.0	183.1	C
	R	0.539	35.6	29.4	D
Days Road (South)	L	0.475	65.3	81.3	E
	T	1.138	145.7	288.5	F
	R	1.138	201.4	288.5	F

Table 3 – Key pm peak hour base case results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.580	30.3	204.5	C
	T	0.580	23.3	204.5	C
	R	0.395	24.1	27.4	C
Days Road (North)	L	1.482	482.8	540.6	F
	T	1.482	478.2	540.6	F
	R	0.474	72.8	55.8	E
Regency Road (East)	L	0.101	7.5	9.2	A
	T	0.543	22.2	139.9	C
	R	0.626	26.9	36.7	C
Days Road (South)	L	0.630	72.9	69.6	E
	T	1.511	388.6	466.3	F
	R	1.511	521.0	466.3	F

The results indicate that a number of movements are currently oversaturated during the am and pm peak hours. Of particular note, the through and left-turn movements from Days Road (North) and the through and right-turn movements from Days Road (South) experience degrees of saturation above 1.0 and a Level of Service of 'F' (with exception to Days Road north during the am peak hour – Level of Service 'E').

Consideration was given to optimising the existing am and pm scenarios (i.e. balancing the degree of saturation and improving performance at the intersection). By optimising the phase timing, the following the following SIDRA results were achieved (Table 4 and Table 5):

Table 4 – Key am peak hour optimised base case results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.825	52.2	279.4	D
	T	0.825	44.6	279.4	D
	R	0.342	40.8	23.1	D
Days Road (North)	L	0.870	71.0	169.8	E
	T	0.870	66.4	169.8	E
	R	0.276	61.4	44.3	E
Regency Road (East)	L	0.088	8.1	10.6	A
	T	0.777	41.2	193.1	D
	R	0.802	55.2	35.9	E
Days Road (South)	L	0.360	55.0	74.5	E
	T	0.863	55.1	146.5	E
	R	0.863	62.7	146.5	E

Table 5 – Key pm peak hour optimised base case results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.901	61.3	316.5	E
	T	0.901	52.9	316.5	D
	R	0.526	40.2	38.3	D
Days Road (North)	L	0.936	74.7	208.0	E
	T	0.936	70.1	208.0	E
	R	0.296	59.8	49.7	E
Regency Road (East)	L	0.102	8.9	12.5	A
	T	0.877	48.1	218.9	D
	R	0.889	48.2	52.5	D
Days Road (South)	L	0.388	59.4	70.0	E
	T	0.929	63.2	149.0	E
	R	0.929	72.4	149.0	E

The above results were achieved by only changing the phase times for the am and pm peak hours. Table 6 below, identifies the changes made to the peak hour phase times.

Table 6 – Optimised peak hour phase times for the existing base case

Optimised peak hour phase timing				
Phase	A	D	E	F
Existing am Phase Time (sec)	74	32	33	11
Optimised am Phase Time (sec)	63	36	43	8
Existing pm Phase Time (sec)	88	26	25	11
Optimised pm Phase Time (sec)	59	38	38	15

The optimised phase times reduced the degree of saturation to less than one for all movements during the am and pm peak hours. The optimisation of the phase times also improved the Level of Service to greater than 'E'.

6.2 SUBJECT DPA IMPACTS (SCENARIO 1)

Scenario 1 has been analysed to allow consideration of the impacts of the rezoning and redevelopment of the subject site. The following sub-sections detail the results of the Scenario 1 analyses.

6.2.1 REGENCY ROAD/DAYS ROAD

The existing intersection layout was assessed with the anticipated future rezoning volumes. The SIDRA analysis indicated that the intersection would become over saturated as a result of the additional traffic volumes associated with redevelopment of the site (following rezoning). Accordingly, upgrade options have been reviewed to ensure the intersection accommodates the additional movements and operates within its capacity. The identified upgrades involve alteration to the geometry of the intersection comprising lengthening of the dual lanes (to 100 m) and new short (30 m) high-angled left-turn lanes for the northern and southern arms of Days Road. In addition, the right-turn lane from Regency Road (west) would be lengthened to 110 m. The layout of the SIDRA model is illustrated in Figure 6, below.

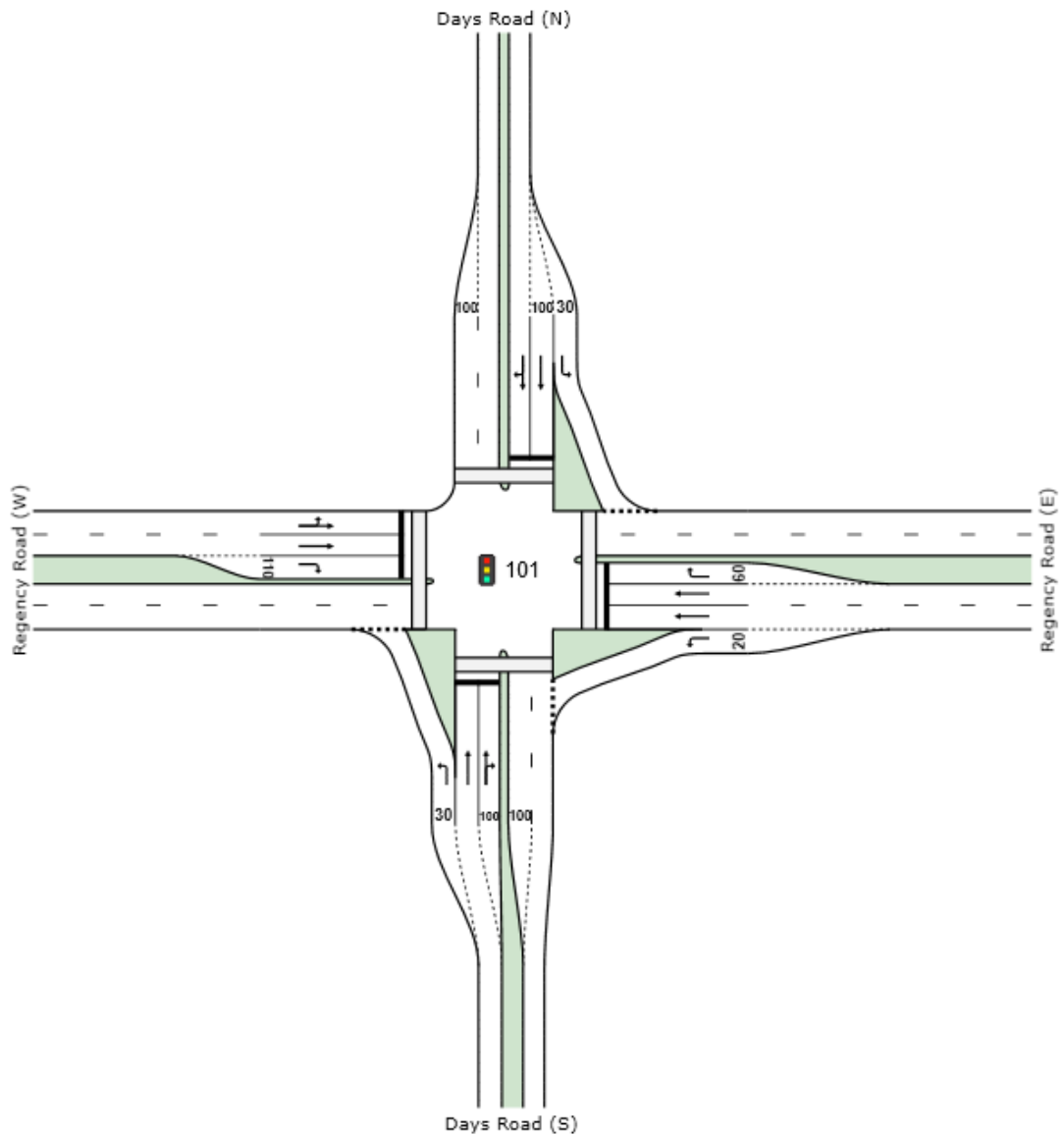


Figure 6 – Potential intersection upgrade identified by SIDRA

The key SIDRA results for Scenario 1 for Regency Road/Days Road are identified in Table 7 and Table 8. The results are based upon the intersection layout shown in Figure 6.

Table 7 – Key am peak hour Scenario 1 results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.880	59.3	293.7	E
	T	0.880	53.0	293.7	D
	R	0.533	83.6	38.1	F
Days Road (North)	L	0.124	20.4	25.5	C
	T	0.783	62.8	107.0	E
	R	0.458	65.6	73.1	E
Regency Road (East)	L	0.095	8.6	13.1	A
	T	0.808	46.3	207.3	D
	R	0.778	85.2	55.3	F
Days Road (South)	L	0.102	13.2	18.8	B
	T	0.884	58.6	190.9	E
	R	0.884	68.6	190.9	E

Table 8 – Key pm peak hour Scenario 1 results for Regency Road/Days Road

Arm	Movement	Degree of Saturation (v/c)	Average Delay (sec)	95% Back of Queue Distance (m)	Level of Service
Regency Road (West)	L	0.870	58.3	284.2	E
	T	0.870	51.3	284.2	D
	R	0.960	90.7	94.2	F
Days Road (North)	L	0.169	17.2	34.0	B
	T	0.966	73.8	154.7	E
	R	0.565	64.6	99.8	E
Regency Road (East)	L	0.162	12.1	30.7	B
	T	0.950	62.0	286.1	E
	R	0.913	85.8	84.7	F
Days Road (South)	L	0.090	16.7	17.8	B
	T	0.927	66.1	181.8	E
	R	0.927	77.0	181.8	E

The Scenario 1 SIDRA analysis indicates that the intersection would require the suggested geometry changes to perform at a similar level to the optimised base case. The suggested intersection upgrades would retain the current status quo at the intersection of Regency Road/Days Road (i.e. the proposed rezoning and development would require minor intersection upgrades to perform at a similar level to the existing situation).

It must be noted that the volumes and impact upon the Regency Road and Days Road intersection is considered conservative. The impact upon the intersection

is likely to be less than indicated by the SIDRA results, hence possibly requiring a lesser extent of upgrade to the intersection than suggested. However, further detailed analysis can be undertaken during future development applications.

In addition to the above, consideration has been given to potential trigger points for the requirement to upgrade the signals. The analysis indicates the following potential yields prior to an upgrade being required (albeit alternative development mixes would also be possible):

- Residential dwellings only (no commercial development) – 450 dwellings; or
- Commercial and residential – 1,645 m² of food related retail and 280 m² of non-food retail plus 265 dwellings.

6.2.2 SITE ACCESS (INTERSECTIONS)

Based on the forecast future traffic volumes, SIDRA analysis has also been prepared to consider access provisions for the site. A high-level SIDRA analysis was undertaken with two priority-controlled access points (T-intersection) for the subject site. This comprised of one access point on Regency Road and one on Days Road. The movements at each access point are illustrated in Figure 4. In reality, as noted above, additional intersections/access points may be provided, however this approach provides a conservative assessment of potential conditions (i.e. if additional access points are provided, the traffic volumes experienced in each location will be lower than assumed for the assessment).

The Days Road access point was modelled as a single stage T-intersection with a single ingress and egress lane into the site. The analysis indicated that each arm would operate with a degree of saturation of less than 0.633 and a Level of Service of 'C' or greater.

The Regency Road intersection was modelled as a single stage T-intersection with a single ingress and egress lane into the site. The SIDRA analysis indicates that the egress movements out of the site would be oversaturated, however this has only been modelled as a 'single stage' right-turn. In reality, the intersection treatments could be designed to accommodate 'two-stage' right-turns (i.e. via a sufficient median opening to accommodate car storage) which would reduce the degree of saturation to an acceptable level (degree of saturation of less than 0.38 and a Level of Service of 'C' or greater). Furthermore, provision of additional intersections and/or access points (subject to appropriate design) would further improve conditions. Alternatively, consideration could be given to the restriction of right-out turns, given the associated movements could be accommodated via left-out to Days Road (and either straight through or right-turn movements at its intersection with Regency Road). This could be assessed further during future planning and design stages.

In addition to the above results, a 'networked' analysis has also been undertaken using SIDRA to include consideration of queuing impacts of the signalised intersection on the potential site access points. For the purpose of the assessment, it has been assumed that each new access point is 180 m from the Regency Road/Days Road signals (which provides a reasonable separation and avoids other constraints on both roads for each potential access point).

The networked analysis results are provided in Appendix E. The network analysis indicates similar results to the individual models detailed above. Notably, the analysis does not suggest that queues associated with the signalised intersection will significantly impact capacity at the priority-controlled site access points. Nevertheless, further design and analysis should be undertaken as part of future stages to confirm the appropriateness of the proposed number of access points and their location. Additionally, design of future treatments should also include consideration of provisions for pedestrians and cyclists.

7. SUMMARY

The subject rezoning (DPA) within Croydon Park will facilitate the future redevelopment of the study area for residential and commercial development. It is anticipated that in the order of 758 low density dwellings plus 5,500 m² of commercial floor area could ultimately be developed within the overall site.

The redevelopment of the site will present an opportunity to consolidate access provisions on Regency Road and Days Road, improving the safety and efficiency of movements into and out of the site. Of particular note, the future redevelopment will be likely to reduce the number of heavy commercial vehicle movements (including B-Doubles) associated with the site which will provide traffic capacity and safety benefits.

It is considered desirable that at least two primary local road intersections be provided to service the subject site, albeit additional intersections and minor direct access may be considered (subject to appropriate analysis, design and liaison with Council and DPTI). The provision of at least two primary connections will adequately accommodate movements into and out of the site while minimising impact on through movements. These intersections can be provided as priority-controlled T-intersections but should be treated with separated right-turn lanes, provision for two-stage right-out movements (if right-turn movements out of the site are proposed) and, desirably, allowance for on-road bicycle lanes.

The primary intersections should connect to an internal road network designed and constructed in accordance with the City of Port Adelaide Enfield's requirements. The planning and design of the internal layout shall ensure adequate provisions for on-street parking, waste collection vehicle movements and appropriate traffic control treatments within the site.

An assessment has been undertaken of the traffic generation associated with the subject site. This includes a forecast of existing generation as well as that associated with the anticipated future yields. The forecasts identify that there will be an increase in traffic generation associated with the ultimate redevelopment of the site, albeit heavy vehicle proportions will reduce.

SIDRA intersection modelling software has been used to compare the impacts of existing site volumes against the future forecasts. The SIDRA analyses indicate that the impacts of the proposal on the adjacent road network will likely require improvements to the Regency Road and Days Road intersection. The conservative assessment indicates that the intersection will require short high-angled left-turn lanes on the northern and southern arms on Days Road and a lengthened right-turn lane on the western arm of Regency Road. However, due to the conservatism of the assessment, it is possible that the rezoning and development of the site will generate less movements than indicated, hence

reducing the impact on the Regency Road and Days Road intersection compared to conditions identified on a conservative basis

APPENDIX A

SUBJECT SITE EXISTING TRAFFIC GENERATION

SUBJECT SITE - EXISTING TRAFFIC GENERATION

Allotment Number	Allotment Size	Property Number	Street	Suburb	Site Location	Use	Number of buildings	Building Area	Rate description	AM Rate	per		AM Peak Trips	%CVs	CVs	PM Rate	per		PM Peak Trips	%CVs	CVs
102	4.705	121	Regency Rd	Croydon Park	Main Building	Adelaide integrated precast	1	8550	Factory	1	100	m2 GFA	85.5	5%	4.275	1	100	m2 GFA	85.5	5%	4.275
					north west		1	735	Office	1.6	100	m2 GFA	11.76	0%	0	1.2	100	m2 GFA	8.82	0%	0
					south west		1	1780	Factory	1	100	m2 GFA	17.8	5%	0.89	1	100	m2 GFA	17.8	5%	0.89
					mid west		2	635	Factory	1	100	m2 GFA	6.35	5%	0.3175	1	100	m2 GFA	6.35	5%	0.3175
					north east		1	1050	Factory	1	100	m2 GFA	10.5	5%	0.525	1	100	m2 GFA	10.5	5%	0.525
1	0.148	141	Regency Rd	Croydon Park		Bridgestone Tyre & Auto	1	1500	Car tyre retail outlet	1	100	n2 site are	15	2%	0.3	1	100	n2 site are	15	2%	0.3
9	0.088	92	Days Road	Croydon Park		office/workshop/warehouse	1	570	Office	1.6	100	m2 GFA	9.12	0%	0	1.2	100	m2 GFA	6.84	0%	0
1	0.081	90	Days Road	Croydon Park		Mechanic	1	800	Car tyre retail outlet	1	100	n2 site are	8	2%	0.16	1	100	n2 site are	8	2%	0.16
2	0.081	88	Days Road	Croydon Park		vacant land/storage		0													
3	0.081	86-88	Days Road	Croydon Park		vacant land/storage		0													
111	2.86	80-83	Days Road	Croydon Park		vacant land/storage		0													
114	0.186	76-78	Days Road	Croydon Park		vacant land/storage		0													
202	2.053	75A (76 on SAPPA)	Days Road	Croydon Park	Main Building	Regency building supplies	1	8040	Factory	1	100	m2 GFA	80.4	5%	4.02	1	100	m2 GFA	80.4	5%	4.02
					southern boundary building		1	610	Office	1.6	100	m2 GFA	9.76	0%	0	1.2	100	m2 GFA	7.32	0%	0
								1640	Office	1.6	100	m2 GFA	26.24	0%	0	1.2	100	m2 GFA	19.68	0%	0
200	0.599	748	Days Road	Croydon Park		vacant land/storage		0													
29	0.981	72	Days Road	Croydon Park		vacant land/storage		0													
33	0.082	70	Days Road	Croydon Park		resi dwelling	1	225	low density dwelling	0.71	1	dwelling	0.71	0%	0	0.78	1	dwelling	0.78	0%	0
32	0.072	68	Days Road	Croydon Park		resi dwelling	1	415	low density dwelling	0.71	1	dwelling	0.71	0%	0	0.78	1	dwelling	0.78	0%	0
										Total			281.85		10.4875	Total			267.77		10.4875

AM

Northern Industrial Business (Fronting Regency Rd & Days Rd) - Adelaide Integrated Precast + Bridgestone

	In	% Movements	
		50%	73.455
	Out	50%	73.455
		50%	73.455

to/from	%	Regency Rd		Days Rd		Regency Rd		Days Rd	
		Left-in	Right-in	Left-in	Right-in	Left-out	Right-out	Left-out	Right-out
North	20%	20%	10%		10%		5%	15%	
East	30%	20%						5%	25%
South	25%	5%		20%				5%	20%
West	25%		20%		5%	20%		5%	
	100%								

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	7	1	8%
	3	T	7	1	8%
	4	R	7	1	8%
	3	L	7	1	8%
2	4	T	15	1	8%
	1	R			
	4	L	7	1	8%
	1	T	11	1	8%
3	2	R	18	1	8%
	1	L	4	0	8%
	2	T	4	0	8%
	3	R	7	1	8%

Days Rd fronting businesses - All remaining properties

	In	% Movements	
		50%	67.47
	Out	50%	67.47
		50%	67.47

to/from	%	Regency Rd		Days Rd		Regency Rd		Days Rd	
		Left-in	Right-in	Left-in	Right-in	Left-out	Right-out	Left-out	Right-out
North	20%				20%			20%	
East	30%				30%			30%	
South	25%								25%
West	25%				25%			25%	
	100%								

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	13	1	8%
	3	T			
	4	R			
	3	L	20	2	8%
2	4	T			
	1	R			
	4	L	17	1	8%
	1	T	13	1	8%
3	2	R	20	2	8%
	1	L			
	2	T			
	3	R	17	1	8%

Existing Movements from properties (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	21	2	8%
	3	T	7	1	8%
	3	L	28	2	8%
	4	T	15	1	8%
2	4	T			
	1	R			
	4	L	24	2	8%
	1	T	25	2	8%
3	2	R	39	3	8%
	1	L	4	0	8%
	2	T	4	0	8%
	3	R	24	2	8%

Existing Movements from Vehicle Turning Movement Survey 22/10/2018 (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	102	4	3.9%
	3	T	217	7	3.2%
	4	R	90	8	8.9%
	3	L	113	4	3.5%
2	4	T	800	52	6.5%
	1	R	97	3	3.1%
	4	L	72	7	9.7%
	1	T	231	10	4.3%
3	2	R	147	2	1.4%
	1	L	132	9	6.8%
	2	T	872	44	5.0%
	3	R	58	8	13.8%

Existing Movements from Vehicle Turning Movement Survey 22/10/2018 - subject site movements (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	102	4	3.9%
	3	T	196	5	2.7%
	4	R	83	7	9.0%
	3	L	85	2	2.1%
2	4	T	785	51	6.5%
	1	R	97	3	3.1%
	4	L	48	5	10.6%
	1	T	206	8	3.9%
3	2	R	108	-1	-1.0%
	1	L	128	9	6.8%
	2	T	868	44	5.0%
	3	R	34	6	17.9%

PM

Northern Industrial Business (Fronting Regency Rd & Days Rd) - Adelaide Integrated Precast + Bridgestone

	In	% Movements	
		50%	71.985
	Out	50%	71.985
		50%	71.985

to/from	%	Regency Rd		Days Rd		Regency Rd		Days Rd	
		Left-in	Right-in	Left-in	Right-in	Left-out	Right-out	Left-out	Right-out
North	20%	20%	10%		10%		5%	15%	
East	30%	20%						5%	25%
South	25%	5%		20%				5%	20%
West	25%		20%		5%	20%		5%	
	100%								

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	7	1	8%
	3	T	7	1	8%
	4	R	7	1	8%
	3	L	7	1	8%
2	4	T	14	1	8%
	1	R			
	4	L	7	1	8%
	1	T	11	1	8%
3	2	R	18	1	8%
	1	L	4	0	8%
	2	T	4	0	8%
	3	R	7	1	8%

Days Rd fronting businesses - All remaining properties

	In	% Movements	
		50%	61.9
	Out	50%	61.9
		50%	61.9

to/from	%	Regency Rd		Days Rd		Regency Rd		Days Rd	
		Left-in	Right-in	Left-in	Right-in	Left-out	Right-out	Left-out	Right-out
North	20%				20%			20%	
East	30%				30%			30%	
South	25%								25%
West	25%				25%			25%	
	100%								

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	12	1	8%
	3	T			
	4	R			
	3	L	19	1	8%
2	4	T			
	1	R			
	4	L	15	1	8%
	1	T	12	1	8%
3	2	R	19	1	8%
	1	L			
	2	T			
	3	R	15	1	8%

Existing Movements from properties (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	20	2	8%
	3	T	7	1	8%
	3	L	26	2	8%
	4	T	14	1	8%
2	4	T			
	1	R			
	4	L	23	2	8%
	1	T	23	2	8%
3	2	R	37	3	8%
	1	L	4	0	8%
	2	T	4	0	8%
	3	R	23	2	8%

Existing Movements from Vehicle Turning Movement Survey 22/10/2018 (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	153	2	1.3%
	3	T	216	3	1.4%
	4	R	109	1	0.9%
	3	L	125	1	0.8%
2	4	T	867	26	3.0%
	1	R	143	7	4.9%
	4	L	59	5	8.5%
	1	T	251	5	2.0%
3	2	R	108	2	1.9%
	1	L	164	7	4.3%
	2	T	816	26	3.2%
	3	R	112	3	2.7%

Existing Movements from Vehicle Turning Movement Survey 22/10/2018 - subject site movements (Regency Rd/Days Rd intersection)

(Regency Rd/Days Rd intersection)

Arm	Exit Arm	Movement	Total Veh	CVs	CV %
1	2	L	153	2	1.3%
	3	T	198	1	0.7%
	4	R	102	0	0.4%
	3	L	99	-1	-1.1%
2	4	T	853	25	2.9%
	1	R	143	7	4.9%
	4	L	36	3	8.8%
	1	T	228	3	1.4%
3	2	R	71	-1	-1.3%
	1	L	160	7	4.2%
	2	T	812	26	3.2%
	3	R	89	1	1.3%

APPENDIX B

SUBJECT SITE FUTURE TRAFFIC GENERATION

Table A11: Movements for single points also access full day movements - Days B1						
	Arm	Exit Arm	Movement	Total Veh	C/v	C/V%
AM	1	2	T	322	13	4.1%
		3	R	107	2	2.0%
	2	3	L	67	1	2.0%
		1	T	551	16	2.9%
	3	1	L	248	5	2.0%
		2	R	111	2	2.0%

Please PM movements for simple entries (do not add any movements) - Day 04						
	Arm	Exit Arm	Movement	Total Veh	CVs	CV %
PM	1	2	T	400	2	0.5%
		3	R	257	5	2.0%
		3	L	154	3	2.0%
		2	T	396	7	1.7%
	3	1	L	202	4	2.0%
		2	R	95	2	2.0%

APPENDIX C

BASE CASE MODELLING RESULTS

APPENDIX C1

REGENCY ROAD/DAYS ROAD

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM existing]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	28.5 km/h	2.1 km/h	27.7 km/h
Travel Distance (Total)	2970.8 veh-km/h	7.9 ped-km/h	3572.8 pers-km/h
Travel Time (Total)	104.4 veh-h/h	3.8 ped-h/h	129.1 pers-h/h
Demand Flows (Total)	3085 veh/h	211 ped/h	3913 pers/h
Percent Heavy Vehicles (Demand)	5.4 %		
Degree of Saturation	1.138	0.024	
Practical Spare Capacity	-20.9 %		
Effective Intersection Capacity	2711 veh/h		
Control Delay (Total)	48.37 veh-h/h	2.11 ped-h/h	60.15 pers-h/h
Control Delay (Average)	56.4 sec	36.0 sec	55.3 sec
Control Delay (Worst Lane)	199.1 sec		
Control Delay (Worst Movement)	201.4 sec	50.5 sec	201.4 sec
Geometric Delay (Average)	1.4 sec		
Stop-Line Delay (Average)	55.0 sec		
Idling Time (Average)	54.4 sec		
Intersection Level of Service (LOS)	LOS E	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	40.2 veh		
95% Back of Queue - Distance (Worst Lane)	288.5 m		
Queue Storage Ratio (Worst Lane)	0.30		
Total Effective Stops	2505 veh/h	143 ped/h	3149 pers/h
Effective Stop Rate	0.81 per veh	0.68 per ped	0.80 per pers
Proportion Queued	0.82	0.68	0.81
Performance Index	392.8	4.6	397.3
Cost (Total)	3197.10 \$/h	95.37 \$/h	3292.47 \$/h
Fuel Consumption (Total)	354.6 L/h		
Carbon Dioxide (Total)	843.7 kg/h		
Hydrocarbons (Total)	0.077 kg/h		
Carbon Monoxide (Total)	0.831 kg/h		
NOx (Total)	1.656 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,480,926 veh/y	101,053 ped/y	1,878,164 pers/y
Delay	23,216 veh-h/y	1,011 ped-h/y	28,871 pers-h/y
Effective Stops	1,202,499 veh/y	68,698 ped/y	1,511,697 pers/y
Travel Distance	1,425,986 veh-km/y	3,769 ped-km/y	1,714,952 pers-km/y
Travel Time	50,110 veh-h/y	1,817 ped-h/y	61,948 pers-h/y
Cost	1,534,606 \$/y	45,779 \$/y	1,580,384 \$/y
Fuel Consumption	170,225 L/y		
Carbon Dioxide	404,973 kg/y		
Hydrocarbons	37 kg/y		
Carbon Monoxide	399 kg/y		
NOx	795 kg/y		

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM existing]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	17.8 km/h	2.1 km/h	17.5 km/h
Travel Distance (Total)	3171.8 veh-km/h	7.9 ped-km/h	3814.1 pers-km/h
Travel Time (Total)	178.5 veh-h/h	3.8 ped-h/h	217.9 pers-h/h
Demand Flows (Total)	3289 veh/h	211 ped/h	4158 pers/h
Percent Heavy Vehicles (Demand)	2.8 %		
Degree of Saturation	1.511	0.033	
Practical Spare Capacity	-40.4 %		
Effective Intersection Capacity	2178 veh/h		
Control Delay (Total)	115.46 veh-h/h	2.08 ped-h/h	140.63 pers-h/h
Control Delay (Average)	126.4 sec	35.5 sec	121.8 sec
Control Delay (Worst Lane)	518.2 sec		
Control Delay (Worst Movement)	521.0 sec	56.5 sec	521.0 sec
Geometric Delay (Average)	1.6 sec		
Stop-Line Delay (Average)	124.8 sec		
Idling Time (Average)	125.6 sec		
Intersection Level of Service (LOS)	LOS F	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	76.4 veh		
95% Back of Queue - Distance (Worst Lane)	540.6 m		
Queue Storage Ratio (Worst Lane)	0.25		
Total Effective Stops	3098 veh/h	138 ped/h	3856 pers/h
Effective Stop Rate	0.94 per veh	0.66 per ped	0.93 per pers
Proportion Queued	0.74	0.66	0.73
Performance Index	637.9	4.5	642.4
Cost (Total)	5511.15 \$/h	94.61 \$/h	5605.76 \$/h
Fuel Consumption (Total)	424.5 L/h		
Carbon Dioxide (Total)	1003.5 kg/h		
Hydrocarbons (Total)	0.099 kg/h		
Carbon Monoxide (Total)	0.929 kg/h		
NOx (Total)	1.050 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,578,948 veh/y	101,053 ped/y	1,995,790 pers/y
Delay	55,420 veh-h/y	997 ped-h/y	67,500 pers-h/y
Effective Stops	1,487,061 veh/y	66,335 ped/y	1,850,808 pers/y
Travel Distance	1,522,487 veh-km/y	3,769 ped-km/y	1,830,754 pers-km/y
Travel Time	85,657 veh-h/y	1,802 ped-h/y	104,590 pers-h/y
Cost	2,645,350 \$/y	45,415 \$/y	2,690,765 \$/y
Fuel Consumption	203,783 L/y		
Carbon Dioxide	481,680 kg/y		
Hydrocarbons	47 kg/y		
Carbon Monoxide	446 kg/y		
NOx	504 kg/y		

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM existing]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	76	9.7	0.475	65.3	LOS E	11.0	81.3	0.92	0.78	27.7
2	T1	243	4.3	1.138	145.7	LOS F	40.2	288.5	0.97	1.18	16.2
3	R2	155	1.4	1.138	201.4	LOS F	40.2	288.5	1.00	1.43	12.5
Approach		474	4.2	1.138	151.0	LOS F	40.2	288.5	0.97	1.20	15.8
East: Regency Road (E)											
4	L2	119	3.5	0.090	8.4	LOS A	1.5	11.1	0.24	0.61	48.0
5	T1	842	6.5	0.686	32.0	LOS C	24.8	183.1	0.74	0.65	38.3
6	R2	102	3.1	0.539	35.6	LOS D	4.1	29.4	0.86	0.77	34.2
Approach		1063	5.8	0.686	29.7	LOS C	24.8	183.1	0.70	0.66	38.7
North: Days Road (N)											
7	L2	107	3.9	1.002	79.0	LOS E	23.9	172.3	1.00	1.01	20.4
8	T1	228	3.2	1.002	74.4	LOS E	23.9	172.3	1.00	1.01	20.9
9	R2	95	8.9	0.318	65.6	LOS E	6.1	46.1	0.89	0.77	27.2
Approach		431	4.6	1.002	73.6	LOS E	23.9	172.3	0.98	0.96	21.9
West: Regency Road (W)											
10	L2	139	6.8	0.691	41.6	LOS D	33.4	244.7	0.84	0.78	34.8
11	T1	918	5.0	0.691	34.5	LOS C	33.4	244.7	0.80	0.73	37.0
12	R2	61	13.8	0.254	31.0	LOS C	2.4	18.7	0.74	0.72	37.0
Approach		1118	5.7	0.691	35.2	LOS D	33.4	244.7	0.81	0.74	36.7
All Vehicles		3085	5.4	1.138	56.4	LOS E	40.2	288.5	0.82	0.81	28.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	21.9	LOS C	0.1	0.1	0.54	0.54	
P2	East Full Crossing	53	50.5	LOS E	0.2	0.2	0.82	0.82	
P3	North Full Crossing	53	21.9	LOS C	0.1	0.1	0.54	0.54	
P4	West Full Crossing	53	49.7	LOS E	0.2	0.2	0.82	0.82	
All Pedestrians		211	36.0	LOS D			0.68	0.68	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM existing]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	62	8.5	0.630	72.9	LOS E	9.5	69.6	0.95	0.78	26.3
2	T1	264	2.0	1.511	388.6	LOS F	65.5	466.3	0.99	1.82	7.6
3	R2	114	1.9	1.511	521.0	LOS F	65.5	466.3	1.00	2.23	5.6
Approach		440	2.9	1.511	378.2	LOS F	65.5	466.3	0.99	1.78	7.7
East: Regency Road (E)											
4	L2	132	0.8	0.101	7.5	LOS A	1.3	9.2	0.22	0.61	48.6
5	T1	913	3.0	0.543	22.2	LOS C	19.5	139.9	0.63	0.56	43.1
6	R2	151	4.9	0.626	26.9	LOS C	5.0	36.7	0.78	0.77	37.5
Approach		1195	3.0	0.626	21.1	LOS C	19.5	139.9	0.60	0.59	42.8
North: Days Road (N)											
7	L2	161	1.3	1.482	482.8	LOS F	76.4	540.6	1.00	2.02	5.8
8	T1	229	1.4	1.482	478.2	LOS F	76.4	540.6	1.00	2.02	6.2
9	R2	115	0.9	0.474	72.8	LOS E	7.9	55.8	0.95	0.78	25.9
Approach		505	1.3	1.482	387.6	LOS F	76.4	540.6	0.99	1.74	7.3
West: Regency Road (W)											
10	L2	173	4.3	0.580	30.3	LOS C	28.4	204.5	0.70	0.69	38.9
11	T1	859	3.2	0.580	23.3	LOS C	28.4	204.5	0.66	0.62	42.1
12	R2	118	2.7	0.395	24.1	LOS C	3.8	27.4	0.68	0.74	39.8
Approach		1149	3.3	0.580	24.4	LOS C	28.4	204.5	0.67	0.64	41.3
All Vehicles		3289	2.8	1.511	126.4	LOS F	76.4	540.6	0.74	0.94	17.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	15.0	LOS B	0.1	0.1	0.45	0.45	
P2	East Full Crossing	53	55.6	LOS E	0.2	0.2	0.86	0.86	
P3	North Full Crossing	53	15.0	LOS B	0.1	0.1	0.45	0.45	
P4	West Full Crossing	53	56.5	LOS E	0.2	0.2	0.87	0.87	
All Pedestrians		211	35.5	LOS D			0.66	0.66	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM existing - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	31.6 km/h	2.1 km/h	30.7 km/h
Travel Distance (Total)	2970.8 veh-km/h	7.9 ped-km/h	3572.8 pers-km/h
Travel Time (Total)	93.9 veh-h/h	3.8 ped-h/h	116.5 pers-h/h
Demand Flows (Total)	3085 veh/h	211 ped/h	3913 pers/h
Percent Heavy Vehicles (Demand)	5.4 %		
Degree of Saturation	0.870	0.021	
Practical Spare Capacity	3.4 %		
Effective Intersection Capacity	3544 veh/h		
Control Delay (Total)	41.09 veh-h/h	2.13 ped-h/h	51.43 pers-h/h
Control Delay (Average)	47.9 sec	36.4 sec	47.3 sec
Control Delay (Worst Lane)	67.9 sec		
Control Delay (Worst Movement)	71.0 sec	47.3 sec	71.0 sec
Geometric Delay (Average)	1.4 sec		
Stop-Line Delay (Average)	46.5 sec		
Idling Time (Average)	42.4 sec		
Intersection Level of Service (LOS)	LOS D	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	38.1 veh		
95% Back of Queue - Distance (Worst Lane)	279.4 m		
Queue Storage Ratio (Worst Lane)	0.34		
Total Effective Stops	2450 veh/h	146 ped/h	3086 pers/h
Effective Stop Rate	0.79 per veh	0.69 per ped	0.79 per pers
Proportion Queued	0.88	0.69	0.87
Performance Index	358.7	4.6	363.3
Cost (Total)	2868.05 \$/h	95.99 \$/h	2964.03 \$/h
Fuel Consumption (Total)	345.6 L/h		
Carbon Dioxide (Total)	822.5 kg/h		
Hydrocarbons (Total)	0.074 kg/h		
Carbon Monoxide (Total)	0.818 kg/h		
NOx (Total)	1.685 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,480,926 veh/y	101,053 ped/y	1,878,164 pers/y
Delay	19,721 veh-h/y	1,023 ped-h/y	24,688 pers-h/y
Effective Stops	1,175,892 veh/y	70,048 ped/y	1,481,119 pers/y
Travel Distance	1,425,986 veh-km/y	3,769 ped-km/y	1,714,953 pers-km/y
Travel Time	45,082 veh-h/y	1,828 ped-h/y	55,926 pers-h/y
Cost	1,376,663 \$/y	46,073 \$/y	1,422,736 \$/y
Fuel Consumption	165,882 L/y		
Carbon Dioxide	394,779 kg/y		
Hydrocarbons	35 kg/y		
Carbon Monoxide	393 kg/y		
NOx	809 kg/y		

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM existing - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	30.0 km/h	2.0 km/h	29.2 km/h
Travel Distance (Total)	3171.8 veh-km/h	7.9 ped-km/h	3814.1 pers-km/h
Travel Time (Total)	105.6 veh-h/h	3.9 ped-h/h	130.7 pers-h/h
Demand Flows (Total)	3289 veh/h	211 ped/h	4158 pers/h
Percent Heavy Vehicles (Demand)	2.8 %		
Degree of Saturation	0.936	0.020	
Practical Spare Capacity	-3.8 %		
Effective Intersection Capacity	3516 veh/h		
Control Delay (Total)	49.06 veh-h/h	2.24 ped-h/h	61.11 pers-h/h
Control Delay (Average)	53.7 sec	38.3 sec	52.9 sec
Control Delay (Worst Lane)	72.0 sec		
Control Delay (Worst Movement)	74.7 sec	45.7 sec	74.7 sec
Geometric Delay (Average)	1.6 sec		
Stop-Line Delay (Average)	52.1 sec		
Idling Time (Average)	47.6 sec		
Intersection Level of Service (LOS)	LOS D	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	43.9 veh		
95% Back of Queue - Distance (Worst Lane)	316.5 m		
Queue Storage Ratio (Worst Lane)	0.39		
Total Effective Stops	2797 veh/h	150 ped/h	3506 pers/h
Effective Stop Rate	0.85 per veh	0.71 per ped	0.84 per pers
Proportion Queued	0.91	0.71	0.90
Performance Index	410.9	4.7	415.6
Cost (Total)	3187.30 \$/h	98.66 \$/h	3285.97 \$/h
Fuel Consumption (Total)	345.3 L/h		
Carbon Dioxide (Total)	817.1 kg/h		
Hydrocarbons (Total)	0.074 kg/h		
Carbon Monoxide (Total)	0.808 kg/h		
NOx (Total)	1.054 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,578,948 veh/y	101,053 ped/y	1,995,790 pers/y
Delay	23,551 veh-h/y	1,074 ped-h/y	29,335 pers-h/y
Effective Stops	1,342,507 veh/y	71,905 ped/y	1,682,913 pers/y
Travel Distance	1,522,488 veh-km/y	3,769 ped-km/y	1,830,755 pers-km/y
Travel Time	50,704 veh-h/y	1,879 ped-h/y	62,724 pers-h/y
Cost	1,529,904 \$/y	47,359 \$/y	1,577,264 \$/y
Fuel Consumption	165,747 L/y		
Carbon Dioxide	392,198 kg/y		
Hydrocarbons	35 kg/y		
Carbon Monoxide	388 kg/y		
NOx	506 kg/y		

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM existing - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	76	9.7	0.360	55.0	LOS E	10.1	74.5	0.84	0.73	30.1
2	T1	243	4.3	0.863	55.1	LOS E	20.4	146.5	0.90	0.79	28.1
3	R2	155	1.4	0.863	62.7	LOS E	20.4	146.5	0.94	0.83	27.3
Approach		474	4.2	0.863	57.6	LOS E	20.4	146.5	0.90	0.79	28.1
East: Regency Road (E)											
4	L2	119	3.5	0.088	8.1	LOS A	1.5	10.6	0.23	0.61	48.2
5	T1	842	6.5	0.777	41.2	LOS D	26.1	193.1	0.84	0.74	34.7
6	R2	102	3.1	0.802	55.2	LOS E	5.0	35.9	0.99	0.83	28.6
Approach		1063	5.8	0.802	38.9	LOS D	26.1	193.1	0.79	0.73	35.1
North: Days Road (N)											
7	L2	107	3.9	0.870	71.0	LOS E	23.6	169.8	1.00	0.93	25.6
8	T1	228	3.2	0.870	66.4	LOS E	23.6	169.8	1.00	0.93	26.0
9	R2	95	8.9	0.276	61.4	LOS E	5.9	44.3	0.86	0.76	28.1
Approach		431	4.6	0.870	66.4	LOS E	23.6	169.8	0.97	0.89	26.3
West: Regency Road (W)											
10	L2	139	6.8	0.825	52.2	LOS D	38.1	279.4	0.95	0.86	31.6
11	T1	918	5.0	0.825	44.6	LOS D	38.1	279.4	0.91	0.82	33.3
12	R2	61	13.8	0.342	40.8	LOS D	3.0	23.1	0.84	0.73	33.6
Approach		1118	5.7	0.825	45.4	LOS D	38.1	279.4	0.91	0.82	33.1
All Vehicles		3085	5.4	0.870	47.9	LOS D	38.1	279.4	0.88	0.79	31.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	28.3	LOS C	0.1	0.1	0.61	0.61	
P2	East Full Crossing	53	47.3	LOS E	0.2	0.2	0.80	0.80	
P3	North Full Crossing	53	28.3	LOS C	0.1	0.1	0.61	0.61	
P4	West Full Crossing	53	41.9	LOS E	0.2	0.2	0.75	0.75	
All Pedestrians		211	36.4	LOS D			0.69	0.69	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM existing - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	62	8.5	0.388	59.4	LOS E	9.6	70.0	0.87	0.74	29.1
2	T1	264	2.0	0.929	63.2	LOS E	20.9	149.0	0.93	0.84	26.5
3	R2	114	1.9	0.929	72.4	LOS E	20.9	149.0	0.96	0.89	25.4
Approach		440	2.9	0.929	65.1	LOS E	20.9	149.0	0.93	0.84	26.6
East: Regency Road (E)											
4	L2	132	0.8	0.102	8.9	LOS A	1.8	12.5	0.28	0.63	47.7
5	T1	913	3.0	0.877	48.1	LOS D	30.5	218.9	0.89	0.81	32.4
6	R2	151	4.9	0.889	48.2	LOS D	7.2	52.5	1.00	0.82	30.4
Approach		1195	3.0	0.889	43.8	LOS D	30.5	218.9	0.84	0.79	33.3
North: Days Road (N)											
7	L2	161	1.3	0.936	74.7	LOS E	29.4	208.0	1.00	0.99	24.9
8	T1	229	1.4	0.936	70.1	LOS E	29.4	208.0	1.00	0.99	25.2
9	R2	115	0.9	0.296	59.8	LOS E	7.0	49.7	0.86	0.77	28.5
Approach		505	1.3	0.936	69.2	LOS E	29.4	208.0	0.97	0.94	25.8
West: Regency Road (W)											
10	L2	173	4.3	0.901	61.3	LOS E	43.9	316.5	1.00	0.94	29.2
11	T1	859	3.2	0.901	52.9	LOS D	43.9	316.5	0.94	0.88	30.8
12	R2	118	2.7	0.526	40.2	LOS D	5.4	38.3	0.90	0.78	33.8
Approach		1149	3.3	0.901	52.8	LOS D	43.9	316.5	0.94	0.88	30.8
All Vehicles		3289	2.8	0.936	53.7	LOS D	43.9	316.5	0.91	0.85	30.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	30.8	LOS D	0.1	0.1	0.64	0.64	
P2	East Full Crossing	53	45.7	LOS E	0.2	0.2	0.78	0.78	
P3	North Full Crossing	53	30.8	LOS D	0.1	0.1	0.64	0.64	
P4	West Full Crossing	53	45.7	LOS E	0.2	0.2	0.78	0.78	
All Pedestrians		211	38.3	LOS D			0.71	0.71	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

APPENDIX D

FUTURE MODELLING RESULTS

APPENDIX D1

REGENCY ROAD/DAYS ROAD

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM future - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	30.5 km/h	2.0 km/h	29.7 km/h
Travel Distance (Total)	3289.3 veh-km/h	7.9 ped-km/h	3955.0 pers-km/h
Travel Time (Total)	107.8 veh-h/h	3.9 ped-h/h	133.3 pers-h/h
Demand Flows (Total)	3399 veh/h	211 ped/h	4289 pers/h
Percent Heavy Vehicles (Demand)	4.9 %		
Degree of Saturation	0.884	0.023	
Practical Spare Capacity	1.8 %		
Effective Intersection Capacity	3844 veh/h		
Control Delay (Total)	49.04 veh-h/h	2.27 ped-h/h	61.11 pers-h/h
Control Delay (Average)	51.9 sec	38.8 sec	51.3 sec
Control Delay (Worst Lane)	85.2 sec		
Control Delay (Worst Movement)	85.2 sec	48.9 sec	85.2 sec
Geometric Delay (Average)	1.5 sec		
Stop-Line Delay (Average)	50.4 sec		
Idling Time (Average)	46.2 sec		
Intersection Level of Service (LOS)	LOS D	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	40.1 veh		
95% Back of Queue - Distance (Worst Lane)	293.7 m		
Queue Storage Ratio (Worst Lane)	0.36		
Total Effective Stops	2763 veh/h	151 ped/h	3466 pers/h
Effective Stop Rate	0.81 per veh	0.72 per ped	0.81 per pers
Proportion Queued	0.89	0.72	0.88
Performance Index	362.0	4.8	366.8
Cost (Total)	3299.82 \$/h	99.46 \$/h	3399.28 \$/h
Fuel Consumption (Total)	383.2 L/h		
Carbon Dioxide (Total)	911.0 kg/h		
Hydrocarbons (Total)	0.082 kg/h		
Carbon Monoxide (Total)	0.899 kg/h		
NOx (Total)	1.745 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,631,495 veh/y	101,053 ped/y	2,058,846 pers/y
Delay	23,538 veh-h/y	1,089 ped-h/y	29,335 pers-h/y
Effective Stops	1,326,122 veh/y	72,411 ped/y	1,663,758 pers/y
Travel Distance	1,578,869 veh-km/y	3,769 ped-km/y	1,898,412 pers-km/y
Travel Time	51,752 veh-h/y	1,894 ped-h/y	63,997 pers-h/y
Cost	1,583,915 \$/y	47,740 \$/y	1,631,655 \$/y
Fuel Consumption	183,945 L/y		
Carbon Dioxide	437,266 kg/y		
Hydrocarbons	39 kg/y		
Carbon Monoxide	431 kg/y		
NOx	838 kg/y		

INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM future - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	28.9 km/h	2.0 km/h	28.2 km/h
Travel Distance (Total)	3682.7 veh-km/h	7.9 ped-km/h	4427.1 pers-km/h
Travel Time (Total)	127.3 veh-h/h	4.0 ped-h/h	156.7 pers-h/h
Demand Flows (Total)	3797 veh/h	211 ped/h	4767 pers/h
Percent Heavy Vehicles (Demand)	2.6 %		
Degree of Saturation	0.966	0.022	
Practical Spare Capacity	-6.8 %		
Effective Intersection Capacity	3931 veh/h		
Control Delay (Total)	61.23 veh-h/h	2.30 ped-h/h	75.78 pers-h/h
Control Delay (Average)	58.1 sec	39.4 sec	57.2 sec
Control Delay (Worst Lane)	90.7 sec		
Control Delay (Worst Movement)	90.7 sec	48.1 sec	90.7 sec
Geometric Delay (Average)	1.7 sec		
Stop-Line Delay (Average)	56.3 sec		
Idling Time (Average)	51.7 sec		
Intersection Level of Service (LOS)	LOS E	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	39.9 veh		
95% Back of Queue - Distance (Worst Lane)	286.1 m		
Queue Storage Ratio (Worst Lane)	0.41		
Total Effective Stops	3276 veh/h	152 ped/h	4083 pers/h
Effective Stop Rate	0.86 per veh	0.72 per ped	0.86 per pers
Proportion Queued	0.89	0.72	0.88
Performance Index	423.8	4.8	428.6
Cost (Total)	3836.44 \$/h	100.30 \$/h	3936.74 \$/h
Fuel Consumption (Total)	402.6 L/h		
Carbon Dioxide (Total)	952.0 kg/h		
Hydrocarbons (Total)	0.086 kg/h		
Carbon Monoxide (Total)	0.928 kg/h		
NOx (Total)	1.141 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,822,484 veh/y	101,053 ped/y	2,288,034 pers/y
Delay	29,393 veh-h/y	1,105 ped-h/y	36,376 pers-h/y
Effective Stops	1,572,443 veh/y	72,918 ped/y	1,959,850 pers/y
Travel Distance	1,767,693 veh-km/y	3,769 ped-km/y	2,125,001 pers-km/y
Travel Time	61,107 veh-h/y	1,911 ped-h/y	75,239 pers-h/y
Cost	1,841,489 \$/y	48,146 \$/y	1,889,635 \$/y
Fuel Consumption	193,236 L/y		
Carbon Dioxide	456,959 kg/y		
Hydrocarbons	41 kg/y		
Carbon Monoxide	446 kg/y		
NOx	548 kg/y		

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM future - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	104	7.1	0.102	13.2	LOS B	2.5	18.8	0.38	0.62	44.9
2	T1	325	3.6	0.884	58.6	LOS E	26.9	190.9	0.93	0.79	27.6
3	R2	222	0.5	0.884	68.6	LOS E	26.9	190.9	1.00	0.89	26.0
Approach		652	3.1	0.884	54.8	LOS D	26.9	190.9	0.87	0.80	28.8
East: Regency Road (E)											
4	L2	132	2.4	0.095	8.6	LOS A	1.8	13.1	0.24	0.62	47.8
5	T1	864	6.3	0.808	46.3	LOS D	28.1	207.3	0.89	0.78	33.0
6	R2	102	3.1	0.778	85.2	LOS F	7.7	55.3	1.00	0.78	22.9
Approach		1098	5.6	0.808	45.4	LOS D	28.1	207.3	0.82	0.76	32.9
North: Days Road (N)											
7	L2	107	3.9	0.124	20.4	LOS C	3.5	25.5	0.51	0.66	40.3
8	T1	255	2.9	0.783	62.8	LOS E	14.9	107.0	0.94	0.79	26.9
9	R2	117	7.2	0.458	65.6	LOS E	9.9	73.1	0.91	0.78	27.4
Approach		479	4.2	0.783	54.0	LOS D	14.9	107.0	0.84	0.76	29.1
West: Regency Road (W)											
10	L2	162	6.5	0.880	59.3	LOS E	40.1	293.7	0.99	0.91	29.7
11	T1	941	5.0	0.880	53.0	LOS D	40.1	293.7	0.98	0.90	30.8
12	R2	67	10.9	0.533	83.6	LOS F	5.0	38.1	0.98	0.76	24.2
Approach		1171	5.6	0.880	55.7	LOS E	40.1	293.7	0.98	0.89	30.1
All Vehicles		3399	4.9	0.884	51.9	LOS D	40.1	293.7	0.89	0.81	30.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65	
P2	East Full Crossing	53	48.9	LOS E	0.2	0.2	0.81	0.81	
P3	North Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65	
P4	West Full Crossing	53	43.4	LOS E	0.2	0.2	0.76	0.76	
All Pedestrians		211	38.8	LOS D			0.72	0.72	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM future - optimised]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)											
1	L2	84	6.3	0.090	16.7	LOS B	2.4	17.8	0.44	0.63	43.1
2	T1	331	1.6	0.927	66.1	LOS E	25.7	181.8	0.95	0.83	26.1
3	R2	166	0.6	0.927	77.0	LOS E	25.7	181.8	1.00	0.92	24.5
Approach		581	2.0	0.927	62.1	LOS E	25.7	181.8	0.89	0.83	27.2
East: Regency Road (E)											
4	L2	205	0.5	0.162	12.1	LOS B	4.4	30.7	0.35	0.65	45.6
5	T1	973	2.9	0.950	62.0	LOS E	39.9	286.1	0.92	0.93	28.7
6	R2	151	4.9	0.913	85.8	LOS F	11.6	84.7	1.00	0.84	22.8
Approach		1328	2.8	0.950	57.0	LOS E	39.9	286.1	0.84	0.88	29.5
North: Days Road (N)											
7	L2	161	1.3	0.169	17.2	LOS B	4.8	34.0	0.47	0.66	42.0
8	T1	323	1.3	0.966	73.8	LOS E	21.9	154.7	0.96	0.94	24.9
9	R2	169	1.2	0.565	64.6	LOS E	14.1	99.8	0.93	0.81	27.7
Approach		654	1.3	0.966	57.5	LOS E	21.9	154.7	0.83	0.83	28.3
West: Regency Road (W)											
10	L2	192	4.4	0.870	58.3	LOS E	39.4	284.2	0.99	0.90	29.9
11	T1	878	3.2	0.870	51.3	LOS D	39.4	284.2	0.96	0.87	31.2
12	R2	164	1.9	0.960	90.7	LOS F	13.2	94.2	1.00	0.88	23.1
Approach		1234	3.2	0.960	57.7	LOS E	39.4	284.2	0.97	0.88	29.6
All Vehicles		3797	2.6	0.966	58.1	LOS E	39.9	286.1	0.89	0.86	28.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

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.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65	
P2	East Full Crossing	53	46.5	LOS E	0.2	0.2	0.79	0.79	
P3	North Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65	
P4	West Full Crossing	53	48.1	LOS E	0.2	0.2	0.80	0.80	
All Pedestrians		211	39.4	LOS D			0.72	0.72	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

APPENDIX D2

DAYS ROAD ACCESS

INTERSECTION SUMMARY

▽ Site: 101 [Days Road/Site Access AM Future]

New Site

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	46.3 km/h	46.3 km/h
Travel Distance (Total)	1402.3 veh-km/h	1682.7 pers-km/h
Travel Time (Total)	30.3 veh-h/h	36.3 pers-h/h
Demand Flows (Total)	1495 veh/h	1794 pers/h
Percent Heavy Vehicles (Demand)	3.0 %	
Degree of Saturation	0.633	
Practical Spare Capacity	26.4 %	
Effective Intersection Capacity	2361 veh/h	
Control Delay (Total)	2.07 veh-h/h	2.48 pers-h/h
Control Delay (Average)	5.0 sec	5.0 sec
Control Delay (Worst Lane)	13.7 sec	
Control Delay (Worst Movement)	18.6 sec	18.6 sec
Geometric Delay (Average)	1.8 sec	
Stop-Line Delay (Average)	3.2 sec	
Idling Time (Average)	0.9 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	4.2 veh	
95% Back of Queue - Distance (Worst Lane)	29.8 m	
Queue Storage Ratio (Worst Lane)	0.02	
Total Effective Stops	565 veh/h	679 pers/h
Effective Stop Rate	0.38 per veh	0.38 per pers
Proportion Queued	0.32	0.32
Performance Index	42.6	42.6
Cost (Total)	723.62 \$/h	723.62 \$/h
Fuel Consumption (Total)	108.1 L/h	
Carbon Dioxide (Total)	256.3 kg/h	
Hydrocarbons (Total)	0.018 kg/h	
Carbon Monoxide (Total)	0.205 kg/h	
NOx (Total)	0.323 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	717,474 veh/y	860,968 pers/y
Delay	994 veh-h/y	1,192 pers-h/y
Effective Stops	271,439 veh/y	325,727 pers/y
Travel Distance	673,080 veh-km/y	807,696 pers-km/y
Travel Time	14,527 veh-h/y	17,432 pers-h/y
Cost	347,340 \$/y	347,340 \$/y
Fuel Consumption	51,887 L/y	
Carbon Dioxide	123,036 kg/y	
Hydrocarbons	8 kg/y	
Carbon Monoxide	99 kg/y	
NOx	155 kg/y	

INTERSECTION SUMMARY

▽ Site: 101 [Days Road/Site Access PM Future]

New Site

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	46.0 km/h	46.0 km/h
Travel Distance (Total)	1492.0 veh-km/h	1790.4 pers-km/h
Travel Time (Total)	32.4 veh-h/h	38.9 pers-h/h
Demand Flows (Total)	1585 veh/h	1902 pers/h
Percent Heavy Vehicles (Demand)	1.7 %	
Degree of Saturation	0.505	
Practical Spare Capacity	58.4 %	
Effective Intersection Capacity	3140 veh/h	
Control Delay (Total)	2.39 veh-h/h	2.86 pers-h/h
Control Delay (Average)	5.4 sec	5.4 sec
Control Delay (Worst Lane)	11.9 sec	
Control Delay (Worst Movement)	19.0 sec	19.0 sec
Geometric Delay (Average)	2.2 sec	
Stop-Line Delay (Average)	3.3 sec	
Idling Time (Average)	1.0 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	4.2 veh	
95% Back of Queue - Distance (Worst Lane)	29.9 m	
Queue Storage Ratio (Worst Lane)	0.03	
Total Effective Stops	631 veh/h	757 pers/h
Effective Stop Rate	0.40 per veh	0.40 per pers
Proportion Queued	0.38	0.38
Performance Index	47.1	47.1
Cost (Total)	777.68 \$/h	777.68 \$/h
Fuel Consumption (Total)	113.9 L/h	
Carbon Dioxide (Total)	269.0 kg/h	
Hydrocarbons (Total)	0.019 kg/h	
Carbon Monoxide (Total)	0.215 kg/h	
NOx (Total)	0.245 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	760,926 veh/y	913,112 pers/y
Delay	1,146 veh-h/y	1,375 pers-h/y
Effective Stops	302,888 veh/y	363,466 pers/y
Travel Distance	716,160 veh-km/y	859,392 pers-km/y
Travel Time	15,559 veh-h/y	18,671 pers-h/y
Cost	373,289 \$/y	373,289 \$/y
Fuel Consumption	54,654 L/y	
Carbon Dioxide	129,112 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	103 kg/y	
NOx	117 kg/y	

MOVEMENT SUMMARY

▽ Site: 101 [Days Road/Site Access AM Future]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Days Road (S)											
1	L2	72	2.9	0.315	4.6	LOS A	0.0	0.0	0.00	0.06	49.1
2	T1	580	2.9	0.315	0.0	LOS A	0.0	0.0	0.00	0.06	49.6
Approach		652	2.9	0.315	0.5	NA	0.0	0.0	0.00	0.06	49.5
North: Days Road (N)											
8	T1	340	4.3	0.300	2.2	LOS A	1.6	11.8	0.42	0.19	47.2
9	R2	114	2.8	0.300	8.9	LOS A	1.6	11.8	0.42	0.19	46.5
Approach		454	3.9	0.300	3.9	NA	1.6	11.8	0.42	0.19	47.0
West: Site Access (W)											
10	L2	262	2.0	0.633	11.3	LOS B	4.2	29.8	0.75	1.13	41.1
12	R2	127	2.5	0.633	18.6	LOS C	4.2	29.8	0.75	1.13	41.6
Approach		389	2.2	0.633	13.7	LOS B	4.2	29.8	0.75	1.13	41.3
All Vehicles		1495	3.0	0.633	5.0	NA	4.2	29.8	0.32	0.38	46.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

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.

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MOVEMENT SUMMARY

▽ Site: 101 [Days Road/Site Access PM Future]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Days Road (S)											
1	L2	162	2.6	0.281	4.6	LOS A	0.0	0.0	0.00	0.15	48.6
2	T1	418	1.8	0.281	0.0	LOS A	0.0	0.0	0.00	0.15	49.0
Approach		580	2.0	0.281	1.3	NA	0.0	0.0	0.00	0.15	48.9
North: Days Road (N)											
8	T1	421	0.5	0.490	3.7	LOS A	4.2	29.9	0.60	0.36	45.9
9	R2	272	2.3	0.490	9.5	LOS A	4.2	29.9	0.60	0.36	45.3
Approach		693	1.2	0.490	5.9	NA	4.2	29.9	0.60	0.36	45.7
West: Site Access (W)											
10	L2	213	2.5	0.505	8.6	LOS A	2.8	20.3	0.62	0.94	42.0
12	R2	100	2.1	0.505	19.0	LOS C	2.8	20.3	0.62	0.94	42.5
Approach		313	2.4	0.505	11.9	LOS B	2.8	20.3	0.62	0.94	42.2
All Vehicles		1585	1.7	0.505	5.4	NA	4.2	29.9	0.38	0.40	46.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

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.

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APPENDIX D3

REGENCY ROAD ACCESS

INTERSECTION SUMMARY



Site: 1 [Regency Road/Site Access Stage 1 - AM Future]



**Network: N101 [Regency Rd/
Site Access 2 Stage - AM Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	55.5 km/h	55.5 km/h
Travel Distance (Total)	1027.9 veh-km/h	1233.5 pers-km/h
Travel Time (Total)	18.5 veh-h/h	22.2 pers-h/h
Demand Flows (Total)	1288 veh/h	1546 pers/h
Arrival Flows (Total)	1288 veh/h	1546 pers/h
Percent Heavy Vehicles (Demand)	6.0 %	
Percent Heavy Vehicles (Arrivals)	6.0 %	
Degree of Saturation	0.331	
Practical Spare Capacity	141.6 %	
Effective Intersection Capacity	3891 veh/h	
Control Delay (Total)	1.00 veh-h/h	1.20 pers-h/h
Control Delay (Average)	2.8 sec	2.8 sec
Control Delay (Worst Lane)	16.3 sec	
Control Delay (Worst Movement)	23.4 sec	23.4 sec
Geometric Delay (Average)	1.4 sec	
Stop-Line Delay (Average)	1.4 sec	
Idling Time (Average)	1.0 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.5 veh	
95% Back of Queue - Distance (Worst Lane)	10.9 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	245 veh/h	295 pers/h
Effective Stop Rate	0.19 per veh	0.19 per pers
Proportion Queued	0.11	0.11
Performance Index	22.7	22.7
Cost (Total)	371.12 \$/h	371.12 \$/h
Fuel Consumption (Total)	79.4 L/h	
Carbon Dioxide (Total)	190.1 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.209 kg/h	
NOx (Total)	0.349 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	618,442 veh/y	742,131 pers/y
Arrival Flows (Total)	618,442 veh/y	
Delay	480 veh-h/y	576 pers-h/y
Effective Stops	117,818 veh/y	141,382 pers/y
Travel Distance	493,393 veh-km/y	592,071 pers-km/y
Travel Time	8,894 veh-h/y	10,673 pers-h/y

INTERSECTION SUMMARY



Site: 1 [Regency Road/Site Access Stage 1 - PM Future]



**Network: N101 [Regency Rd/
Site Access 2 Stage - PM Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	54.2 km/h	54.2 km/h
Travel Distance (Total)	1195.8 veh-km/h	1435.0 pers-km/h
Travel Time (Total)	22.1 veh-h/h	26.5 pers-h/h
Demand Flows (Total)	1484 veh/h	1781 pers/h
Arrival Flows (Total)	1484 veh/h	1781 pers/h
Percent Heavy Vehicles (Demand)	2.8 %	
Percent Heavy Vehicles (Arrivals)	2.8 %	
Degree of Saturation	0.376	
Practical Spare Capacity	112.7 %	
Effective Intersection Capacity	3945 veh/h	
Control Delay (Total)	1.58 veh-h/h	1.90 pers-h/h
Control Delay (Average)	3.8 sec	3.8 sec
Control Delay (Worst Lane)	19.5 sec	
Control Delay (Worst Movement)	29.2 sec	29.2 sec
Geometric Delay (Average)	1.7 sec	
Stop-Line Delay (Average)	2.1 sec	
Idling Time (Average)	1.5 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.7 veh	
95% Back of Queue - Distance (Worst Lane)	12.5 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	353 veh/h	423 pers/h
Effective Stop Rate	0.24 per veh	0.24 per pers
Proportion Queued	0.13	0.13
Performance Index	27.8	27.8
Cost (Total)	447.65 \$/h	447.65 \$/h
Fuel Consumption (Total)	86.2 L/h	
Carbon Dioxide (Total)	204.5 kg/h	
Hydrocarbons (Total)	0.015 kg/h	
Carbon Monoxide (Total)	0.234 kg/h	
NOx (Total)	0.238 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	712,421 veh/y	854,905 pers/y
Arrival Flows (Total)	712,421 veh/y	
Delay	759 veh-h/y	911 pers-h/y
Effective Stops	169,376 veh/y	203,251 pers/y
Travel Distance	573,986 veh-km/y	688,783 pers-km/y
Travel Time	10,586 veh-h/y	12,704 pers-h/y

MOVEMENT SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - AM Future]**

 **Network: N101 [Regency Rd/
Site Access 2 Stage - AM Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Arrival 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 per veh	Average Speed km/h
South: Site Access (S)													
1	L2	88	2.4	88	2.4	0.331	11.5	LOS B	1.5	10.9	0.66	1.03	43.6
2	T1	61	3.4	61	3.4	0.331	23.4	LOS C	1.5	10.9	0.66	1.03	35.7
Approach		149	2.8	149	2.8	0.331	16.3	LOS C	1.5	10.9	0.66	1.03	41.2
East: Regency Road (E)													
4	L2	74	2.9	74	2.9	0.291	5.6	LOS A	0.0	0.0	0.00	0.08	56.8
5	T1	1012	6.8	1012	6.8	0.291	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		1085	6.5	1085	6.5	0.291	0.4	NA	0.0	0.0	0.00	0.04	59.3
West: Regency Road (W)													
12	R2	54	3.9	54	3.9	0.128	13.6	LOS B	0.5	3.4	0.73	0.89	44.8
Approach		54	3.9	54	3.9	0.128	13.6	NA	0.5	3.4	0.73	0.89	44.8
All Vehicles		1288	6.0	1288	6.0	0.331	2.8	NA	1.5	10.9	0.11	0.19	55.5

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - PM Future]**

 **Network: N101 [Regency Rd/ Site Access 2 Stage - PM Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Arrival Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access (S)													
1	L2	81	2.6	81	2.6	0.376	12.4	LOS B	1.7	12.5	0.69	1.06	42.1
2	T1	59	3.6	59	3.6	0.376	29.2	LOS D	1.7	12.5	0.69	1.06	33.7
Approach		140	3.0	140	3.0	0.376	19.5	LOS C	1.7	12.5	0.69	1.06	39.4
East: Regency Road (E)													
4	L2	149	2.1	149	2.1	0.322	5.6	LOS A	0.0	0.0	0.00	0.14	56.2
5	T1	1076	2.9	1076	2.9	0.322	0.0	LOS A	0.0	0.0	0.00	0.06	59.2
Approach		1225	2.8	1225	2.8	0.322	0.7	NA	0.0	0.0	0.00	0.07	58.8
West: Regency Road (W)													
12	R2	119	2.7	119	2.7	0.334	17.8	LOS C	1.4	10.0	0.82	0.98	42.6
Approach		119	2.7	119	2.7	0.334	17.8	NA	1.4	10.0	0.82	0.98	42.6
All Vehicles		1484	2.8	1484	2.8	0.376	3.8	NA	1.7	12.5	0.13	0.24	54.2

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

INTERSECTION SUMMARY

▽ Site: 2 [Regency Road/Site Access Stage 2 - AM Future]

⚡ Network: N101 [Regency Rd/
Site Access 2 Stage - AM Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.

Give-way behaviour assumed at Stage 2.

Giveaway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	59.4 km/h	59.4 km/h
Travel Distance (Total)	1212.7 veh-km/h	1455.3 pers-km/h
Travel Time (Total)	20.4 veh-h/h	24.5 pers-h/h
Demand Flows (Total)	1231 veh/h	1477 pers/h
Arrival Flows (Total)	1231 veh/h	1477 pers/h
Percent Heavy Vehicles (Demand)	5.4 %	
Percent Heavy Vehicles (Arrivals)	5.4 %	
Degree of Saturation	0.311	
Practical Spare Capacity	215.6 %	
Effective Intersection Capacity	3962 veh/h	
Control Delay (Total)	0.13 veh-h/h	0.16 pers-h/h
Control Delay (Average)	0.4 sec	0.4 sec
Control Delay (Worst Lane)	7.2 sec	
Control Delay (Worst Movement)	7.2 sec	7.2 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	0.4 sec	
Idling Time (Average)	0.2 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.4 veh	
95% Back of Queue - Distance (Worst Lane)	2.5 m	
Queue Storage Ratio (Worst Lane)	0.15	
Total Effective Stops	45 veh/h	54 pers/h
Effective Stop Rate	0.04 per veh	0.04 per pers
Proportion Queued	0.04	0.04
Performance Index	22.0	22.0
Cost (Total)	435.40 \$/h	435.40 \$/h
Fuel Consumption (Total)	86.1 L/h	
Carbon Dioxide (Total)	205.7 kg/h	
Hydrocarbons (Total)	0.015 kg/h	
Carbon Monoxide (Total)	0.239 kg/h	
NOx (Total)	0.356 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	590,653 veh/y	708,783 pers/y
Arrival Flows (Total)	590,653 veh/y	
Delay	65 veh-h/y	78 pers-h/y
Effective Stops	21,589 veh/y	25,906 pers/y
Travel Distance	582,112 veh-km/y	698,534 pers-km/y
Travel Time	9,807 veh-h/y	11,769 pers-h/y

INTERSECTION SUMMARY

Site: 2 [Regency Road/Site Access Stage 2 - PM Future]

Network: N101 [Regency Rd/
Site Access 2 Stage - PM Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	59.4 km/h	59.4 km/h
Travel Distance (Total)	1276.5 veh-km/h	1531.8 pers-km/h
Travel Time (Total)	21.5 veh-h/h	25.8 pers-h/h
Demand Flows (Total)	1293 veh/h	1551 pers/h
Arrival Flows (Total)	1293 veh/h	1551 pers/h
Percent Heavy Vehicles (Demand)	3.1 %	
Percent Heavy Vehicles (Arrivals)	3.1 %	
Degree of Saturation	0.323	
Practical Spare Capacity	203.7 %	
Effective Intersection Capacity	4006 veh/h	
Control Delay (Total)	0.14 veh-h/h	0.17 pers-h/h
Control Delay (Average)	0.4 sec	0.4 sec
Control Delay (Worst Lane)	7.9 sec	
Control Delay (Worst Movement)	7.9 sec	7.9 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	0.4 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.5 veh	
95% Back of Queue - Distance (Worst Lane)	2.6 m	
Queue Storage Ratio (Worst Lane)	0.15	
Total Effective Stops	45 veh/h	54 pers/h
Effective Stop Rate	0.03 per veh	0.03 per pers
Proportion Queued	0.03	0.03
Performance Index	23.1	23.1
Cost (Total)	450.72 \$/h	450.72 \$/h
Fuel Consumption (Total)	83.5 L/h	
Carbon Dioxide (Total)	198.2 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.241 kg/h	
NOx (Total)	0.232 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	620,463 veh/y	744,556 pers/y
Arrival Flows (Total)	620,463 veh/y	
Delay	69 veh-h/y	82 pers-h/y
Effective Stops	21,430 veh/y	25,716 pers/y
Travel Distance	612,719 veh-km/y	735,262 pers-km/y
Travel Time	10,321 veh-h/y	12,385 pers-h/y

MOVEMENT SUMMARY

Site: 2 [Regency Road/Site Access Stage 2 - AM Future]

Network: N101 [Regency Rd/
Site Access 2 Stage - AM Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Arrival Flows 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 per veh	Average Speed km/h
South: Median Storage Area													
3	R2	61	3.4	61	3.4	0.146	7.2	LOS A	0.4	2.5	0.74	0.74	43.8
Approach		61	3.4	61	3.4	0.146	7.2	LOS A	0.4	2.5	0.74	0.74	43.8
West: Major Road West													
11	T1	1169	5.5	1169	5.5	0.311	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1169	5.5	1169	5.5	0.311	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1231	5.4	1231	5.4	0.311	0.4	NA	0.4	2.5	0.04	0.04	59.4

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.
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.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2 [Regency Road/Site Access Stage 2 - PM Future]

Network: N101 [Regency Rd/
Site Access 2 Stage - PM Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Arrival Flows 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 per veh	Average Speed km/h
South: Median Storage Area													
3	R2	59	3.6	59	3.6	0.152	7.9	LOS A	0.5	2.6	0.76	0.76	43.1
Approach		59	3.6	59	3.6	0.152	7.9	LOS A	0.5	2.6	0.76	0.76	43.1
West: Major Road West													
11	T1	1234	3.1	1234	3.1	0.323	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1234	3.1	1234	3.1	0.323	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1293	3.1	1293	3.1	0.323	0.4	NA	0.5	2.6	0.03	0.03	59.4

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 0.0 %

Number of Iterations: 5 (maximum specified: 10)

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APPENDIX E

NETWORKED SIDRA RESULTS

INTERSECTION SUMMARY

Site: 101 [Days Road/Site Access AM Future - Import]

Network: N101 [AM Network Future]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	44.7 km/h	44.7 km/h
Travel Distance (Total)	946.2 veh-km/h	1135.4 pers-km/h
Travel Time (Total)	21.2 veh-h/h	25.4 pers-h/h
Demand Flows (Total)	1495 veh/h	1794 pers/h
Arrival Flows (Total)	1495 veh/h	1794 pers/h
Percent Heavy Vehicles (Demand)	3.0 %	
Percent Heavy Vehicles (Arrivals)	3.0 %	
Degree of Saturation	0.682	
Practical Spare Capacity	17.3 %	
Effective Intersection Capacity	2192 veh/h	
Control Delay (Total)	2.17 veh-h/h	2.60 pers-h/h
Control Delay (Average)	5.2 sec	5.2 sec
Control Delay (Worst Lane)	14.5 sec	
Control Delay (Worst Movement)	19.5 sec	19.5 sec
Geometric Delay (Average)	1.8 sec	
Stop-Line Delay (Average)	3.5 sec	
Idling Time (Average)	1.0 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	4.5 veh	
95% Back of Queue - Distance (Worst Lane)	31.8 m	
Queue Storage Ratio (Worst Lane)	0.03	
Total Effective Stops	583 veh/h	700 pers/h
Effective Stop Rate	0.39 per veh	0.39 per pers
Proportion Queued	0.32	0.32
Performance Index	34.1	34.1
Cost (Total)	623.14 \$/h	623.14 \$/h
Fuel Consumption (Total)	78.8 L/h	
Carbon Dioxide (Total)	186.6 kg/h	
Hydrocarbons (Total)	0.013 kg/h	
Carbon Monoxide (Total)	0.151 kg/h	
NOx (Total)	0.246 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	717,474 veh/y	860,968 pers/y
Arrival Flows (Total)	717,474 veh/y	
Delay	1,040 veh-h/y	1,248 pers-h/y
Effective Stops	279,961 veh/y	335,953 pers/y
Travel Distance	454,157 veh-km/y	544,988 pers-km/y
Travel Time	10,165 veh-h/y	12,199 pers-h/y
Cost	299,109 \$/y	299,109 \$/y
Fuel Consumption	37,814 L/y	
Carbon Dioxide	89,554 kg/y	
Hydrocarbons	6 kg/y	
Carbon Monoxide	73 kg/y	
NOx	118 kg/y	

MOVEMENT SUMMARY

Site: 101 [Days Road/Site Access AM Future - Import]

Network: N101 [AM Network Future]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Days Road (S)													
1	L2	72	2.9	72	2.9	0.347	4.6	LOS A	0.0	0.0	0.00	0.06	49.1
2	T1	580	2.9	580	2.9	0.347	0.0	LOS A	0.0	0.0	0.00	0.06	49.3
Approach		652	2.9	652	2.9	0.347	0.5	NA	0.0	0.0	0.00	0.06	49.2
North: Days Road (N)													
8	T1	340	4.3	340	4.3	0.300	2.2	LOS A	1.6	11.8	0.42	0.19	46.3
9	R2	114	2.8	114	2.8	0.300	8.9	LOS A	1.6	11.8	0.42	0.19	45.4
Approach		454	3.9	454	3.9	0.300	3.9	NA	1.6	11.8	0.42	0.19	46.1
West: Site Access (W)													
10	L2	262	2.0	262	2.0	0.682	12.1	LOS B	4.5	31.8	0.75	1.17	35.9
12	R2	127	2.5	127	2.5	0.682	19.5	LOS C	4.5	31.8	0.75	1.17	41.2
Approach		389	2.2	389	2.2	0.682	14.5	LOS B	4.5	31.8	0.75	1.17	38.3
All Vehicles		1495	3.0	1495	3.0	0.682	5.2	NA	4.5	31.8	0.32	0.39	44.7

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

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Project: C:\Users\JeremyBayly\Cirqa Pty Ltd\Cirqa Pty Ltd Team Site - Public\2017\17065 Days Road-Regency Road Croydon Park DPA
SIDRA\17065_15AUG19.sip7

INTERSECTION SUMMARY

▽ Site: 2 [Regency Road/Site Access Stage 2 - AM Future - Import]

Network: N101 [AM Network Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.

Give-way behaviour assumed at Stage 2.

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.6 km/h	58.6 km/h
Travel Distance (Total)	597.5 veh-km/h	717.0 pers-km/h
Travel Time (Total)	10.2 veh-h/h	12.2 pers-h/h
Demand Flows (Total)	1231 veh/h	1477 pers/h
Arrival Flows (Total)	1231 veh/h	1477 pers/h
Percent Heavy Vehicles (Demand)	5.4 %	
Percent Heavy Vehicles (Arrivals)	5.4 %	
Degree of Saturation	0.580	
Practical Spare Capacity	69.0 %	
Effective Intersection Capacity	2123 veh/h	
Control Delay (Total)	0.21 veh-h/h	0.25 pers-h/h
Control Delay (Average)	0.6 sec	0.6 sec
Control Delay (Worst Lane)	8.0 sec	
Control Delay (Worst Movement)	8.0 sec	8.0 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	0.6 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.5 veh	
95% Back of Queue - Distance (Worst Lane)	2.7 m	
Queue Storage Ratio (Worst Lane)	0.16	
Total Effective Stops	48 veh/h	57 pers/h
Effective Stop Rate	0.04 per veh	0.04 per pers
Proportion Queued	0.04	0.04
Performance Index	10.8	10.8
Cost (Total)	397.99 \$/h	397.99 \$/h
Fuel Consumption (Total)	43.5 L/h	
Carbon Dioxide (Total)	103.0 kg/h	
Hydrocarbons (Total)	0.008 kg/h	
Carbon Monoxide (Total)	0.119 kg/h	
NOx (Total)	0.182 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	590,653 veh/y	708,783 pers/y
Arrival Flows (Total)	590,653 veh/y	
Delay	99 veh-h/y	119 pers-h/y
Effective Stops	22,999 veh/y	27,599 pers/y
Travel Distance	286,785 veh-km/y	344,142 pers-km/y
Travel Time	4,895 veh-h/y	5,875 pers-h/y
Cost	191,035 \$/y	191,035 \$/y
Fuel Consumption	20,898 L/y	
Carbon Dioxide	49,430 kg/y	
Hydrocarbons	4 kg/y	
Carbon Monoxide	57 kg/y	

MOVEMENT SUMMARY

▽ Site: 2 [Regency Road/Site Access Stage 2 - AM Future - Import]

Network: N101 [AM Network Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.

Give-way behaviour assumed at Stage 2.

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Median Storage Area													
3	R2	61	3.4	61	3.4	0.258	8.0	LOS A	0.5	2.7	0.74	0.78	5.5
Approach		61	3.4	61	3.4	0.258	8.0	LOS A	0.5	2.7	0.74	0.78	5.5
West: Major Road West													
11	T1	1169	5.5	1169	5.5	0.580	0.2	LOS A	0.0	0.0	0.00	0.00	59.6
Approach		1169	5.5	1169	5.5	0.580	0.2	NA	0.0	0.0	0.00	0.00	59.6
All Vehicles		1231	5.4	1231	5.4	0.580	0.6	NA	0.5	2.7	0.04	0.04	58.6

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

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INTERSECTION SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - AM Future - Import]**

 **Network: N101 [AM Network Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	55.0 km/h	55.0 km/h
Travel Distance (Total)	924.8 veh-km/h	1109.8 pers-km/h
Travel Time (Total)	16.8 veh-h/h	20.2 pers-h/h
Demand Flows (Total)	1288 veh/h	1546 pers/h
Arrival Flows (Total)	1288 veh/h	1546 pers/h
Percent Heavy Vehicles (Demand)	6.0 %	
Percent Heavy Vehicles (Arrivals)	6.0 %	
Degree of Saturation	0.331	
Practical Spare Capacity	141.6 %	
Effective Intersection Capacity	3891 veh/h	
Control Delay (Total)	1.00 veh-h/h	1.20 pers-h/h
Control Delay (Average)	2.8 sec	2.8 sec
Control Delay (Worst Lane)	16.3 sec	
Control Delay (Worst Movement)	23.4 sec	23.4 sec
Geometric Delay (Average)	1.4 sec	
Stop-Line Delay (Average)	1.4 sec	
Idling Time (Average)	1.0 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.5 veh	
95% Back of Queue - Distance (Worst Lane)	10.9 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	245 veh/h	295 pers/h
Effective Stop Rate	0.19 per veh	0.19 per pers
Proportion Queued	0.11	0.11
Performance Index	21.0	21.0
Cost (Total)	304.71 \$/h	304.71 \$/h
Fuel Consumption (Total)	72.0 L/h	
Carbon Dioxide (Total)	172.6 kg/h	
Hydrocarbons (Total)	0.013 kg/h	
Carbon Monoxide (Total)	0.189 kg/h	
NOx (Total)	0.315 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	618,442 veh/y	742,131 pers/y
Arrival Flows (Total)	618,442 veh/y	
Delay	479 veh-h/y	575 pers-h/y
Effective Stops	117,818 veh/y	141,382 pers/y
Travel Distance	443,905 veh-km/y	532,685 pers-km/y
Travel Time	8,068 veh-h/y	9,682 pers-h/y
Cost	146,259 \$/y	146,259 \$/y
Fuel Consumption	34,548 L/y	
Carbon Dioxide	82,852 kg/y	
Hydrocarbons	6 kg/y	
Carbon Monoxide	91 kg/y	

MOVEMENT SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - AM Future - Import]**

 **Network: N101 [AM Network Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV	Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Site Access (S)													
1	L2	88	2.4	88	2.4	0.331	11.5	LOS B	1.5	10.9	0.66	1.03	43.6
2	T1	61	3.4	61	3.4	0.331	23.4	LOS C	1.5	10.9	0.66	1.03	35.7
Approach		149	2.8	149	2.8	0.331	16.3	LOS C	1.5	10.9	0.66	1.03	41.2
East: Regency Road (E)													
4	L2	74	2.9	74	2.9	0.291	5.6	LOS A	0.0	0.0	0.00	0.08	56.4
5	T1	1012	6.8	1012	6.8	0.291	0.0	LOS A	0.0	0.0	0.00	0.04	59.4
Approach		1085	6.5	1085	6.5	0.291	0.4	NA	0.0	0.0	0.00	0.04	59.2
West: Regency Road (W)													
12	R2	54	3.9	54	3.9	0.128	13.6	LOS B	0.5	3.4	0.73	0.89	44.8
Approach		54	3.9	54	3.9	0.128	13.6	NA	0.5	3.4	0.73	0.89	44.8
All Vehicles		1288	6.0	1288	6.0	0.331	2.8	NA	1.5	10.9	0.11	0.19	55.0

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

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INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - AM future - optimised - networked]**

 **Network: N101 [AM Network Future]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	23.1 km/h	2.0 km/h	22.3 km/h
Travel Distance (Total)	1936.8 veh-km/h	7.9 ped-km/h	2332.0 pers-km/h
Travel Time (Total)	83.7 veh-h/h	3.9 ped-h/h	104.4 pers-h/h
Demand Flows (Total)	3399 veh/h	211 ped/h	4289 pers/h
Arrival Flows (Total)	3399 veh/h		4289 pers/h
Percent Heavy Vehicles (Demand)	4.9 %		
Percent Heavy Vehicles (Arrivals)	4.9 %		
Degree of Saturation	0.884	0.023	
Practical Spare Capacity	1.8 %		
Effective Intersection Capacity	3844 veh/h		
Control Delay (Total)	49.04 veh-h/h	2.27 ped-h/h	61.11 pers-h/h
Control Delay (Average)	51.9 sec	38.8 sec	51.3 sec
Control Delay (Worst Lane)	85.2 sec		
Control Delay (Worst Movement)	85.2 sec	48.9 sec	85.2 sec
Geometric Delay (Average)	1.5 sec		
Stop-Line Delay (Average)	50.4 sec		
Idling Time (Average)	46.2 sec		
Intersection Level of Service (LOS)	LOS D	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	40.1 veh		
95% Back of Queue - Distance (Worst Lane)	293.7 m		
Queue Storage Ratio (Worst Lane)	1.00		
Total Effective Stops	2763 veh/h	151 ped/h	3466 pers/h
Effective Stop Rate	0.81 per veh	0.72 per ped	0.81 per pers
Proportion Queued	0.89	0.72	0.88
Performance Index	338.0	4.8	342.8
Cost (Total)	2853.42 \$/h	99.46 \$/h	2952.87 \$/h
Fuel Consumption (Total)	288.7 L/h		
Carbon Dioxide (Total)	684.6 kg/h		
Hydrocarbons (Total)	0.067 kg/h		
Carbon Monoxide (Total)	0.664 kg/h		
NOx (Total)	1.351 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,631,495 veh/y	101,053 ped/y	2,058,846 pers/y
Arrival Flows (Total)	1,631,495 veh/y		
Delay	23,538 veh-h/y	1,089 ped-h/y	29,335 pers-h/y
Effective Stops	1,326,122 veh/y	72,411 ped/y	1,663,758 pers/y
Travel Distance	929,646 veh-km/y	3,769 ped-km/y	1,119,345 pers-km/y
Travel Time	40,186 veh-h/y	1,894 ped-h/y	50,118 pers-h/y
Cost	1,369,639 \$/y	47,740 \$/y	1,417,380 \$/y
Fuel Consumption	138,559 L/y		
Carbon Dioxide	328,597 kg/y		
Hydrocarbons	32 kg/y		
Carbon Monoxide	319 kg/y		
NOx	649 kg/y		

MOVEMENT SUMMARY

 Site: 101 [Regency Rd/Days Rd - AM future - optimised - networked]

 Network: N101 [AM Network Future]

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Days Road (S)													
1	L2	104	7.1	104	7.1	0.102	13.2	LOS B	2.5	18.8	0.38	0.62	26.3
2	T1	325	3.6	325	3.6	0.884	58.6	LOS E	26.9	190.9	0.93	0.79	22.9
3	R2	222	0.5	222	0.5	0.884	68.6	LOS E	26.9	190.9	1.00	0.89	20.9
Approach		652	3.1	652	3.1	0.884	54.8	LOS D	26.9	190.9	0.87	0.80	22.3
East: Regency Road (E)													
4	L2	132	2.4	132	2.4	0.095	8.6	LOS A	1.8	13.1	0.24	0.62	45.4
5	T1	864	6.3	864	6.3	0.808	46.3	LOS D	28.1	207.3	0.89	0.78	21.9
6	R2	102	3.1	102	3.1	0.778	85.2	LOS F	7.7	55.3	1.00	0.78	22.9
Approach		1098	5.6	1098	5.6	0.808	45.4	LOS D	28.1	207.3	0.82	0.76	23.4
North: Days Road (N)													
7	L2	107	3.9	107	3.9	0.124	20.4	LOS C	3.5	25.5	0.51	0.66	40.3
8	T1	255	2.9	255	2.9	0.783	62.8	LOS E	14.9	107.0	0.94	0.79	18.6
9	R2	117	7.2	117	7.2	0.458	65.6	LOS E	9.9	73.1	0.91	0.78	18.3
Approach		479	4.2	479	4.2	0.783	54.0	LOS D	14.9	107.0	0.84	0.76	22.8
West: Regency Road (W)													
10	L2	162	6.5	162	6.5	0.880	59.3	LOS E	40.1	293.7	0.99	0.91	24.2
11	T1	941	5.0	941	5.0	0.880	53.0	LOS D	40.1	293.7	0.98	0.90	24.6
12	R2	67	10.9	67	10.9	0.533	83.6	LOS F	5.0	38.1	0.98	0.76	7.5
Approach		1171	5.6	1171	5.6	0.880	55.7	LOS E	40.1	293.7	0.98	0.89	23.6
All Vehicles		3399	4.9	3399	4.9	0.884	51.9	LOS D	40.1	293.7	0.89	0.81	23.1

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.4 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65
P2	East Full Crossing	53	48.9	LOS E	0.2	0.2	0.81	0.81
P3	North Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65
P4	West Full Crossing	53	43.4	LOS E	0.2	0.2	0.76	0.76
All Pedestrians		211	38.8	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

INTERSECTION SUMMARY

▽ Site: 2 [Regency Road/Site Access Stage 2 - PM Future - Import]

Network: N101 [PM Network Future]

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.
Give-way behaviour assumed at Stage 2.
Giveaway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.7 km/h	58.7 km/h
Travel Distance (Total)	630.2 veh-km/h	756.2 pers-km/h
Travel Time (Total)	10.7 veh-h/h	12.9 pers-h/h
Demand Flows (Total)	1293 veh/h	1551 pers/h
Arrival Flows (Total)	1293 veh/h	1551 pers/h
Percent Heavy Vehicles (Demand)	3.1 %	
Percent Heavy Vehicles (Arrivals)	3.1 %	
Degree of Saturation	0.534	
Practical Spare Capacity	83.5 %	
Effective Intersection Capacity	2421 veh/h	
Control Delay (Total)	0.20 veh-h/h	0.24 pers-h/h
Control Delay (Average)	0.5 sec	0.5 sec
Control Delay (Worst Lane)	8.7 sec	
Control Delay (Worst Movement)	8.7 sec	8.7 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	0.5 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.5 veh	
95% Back of Queue - Distance (Worst Lane)	2.8 m	
Queue Storage Ratio (Worst Lane)	0.16	
Total Effective Stops	47 veh/h	57 pers/h
Effective Stop Rate	0.04 per veh	0.04 per pers
Proportion Queued	0.03	0.03
Performance Index	11.4	11.4
Cost (Total)	411.42 \$/h	411.42 \$/h
Fuel Consumption (Total)	42.2 L/h	
Carbon Dioxide (Total)	99.6 kg/h	
Hydrocarbons (Total)	0.007 kg/h	
Carbon Monoxide (Total)	0.120 kg/h	
NOx (Total)	0.119 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	620,463 veh/y	744,556 pers/y
Arrival Flows (Total)	620,463 veh/y	
Delay	94 veh-h/y	113 pers-h/y
Effective Stops	22,644 veh/y	27,173 pers/y
Travel Distance	302,487 veh-km/y	362,984 pers-km/y
Travel Time	5,152 veh-h/y	6,182 pers-h/y
Cost	197,483 \$/y	197,483 \$/y
Fuel Consumption	20,267 L/y	
Carbon Dioxide	47,805 kg/y	
Hydrocarbons	4 kg/y	
Carbon Monoxide	58 kg/y	

MOVEMENT SUMMARY

 **Site: 2 [Regency Road/Site Access Stage 2 - PM Future - Import]**

 **Network: N101 [PM Network Future]**

Staged crossing Stage 2 (Median) at three-way intersection with 5-lane major road.

Give-way behaviour assumed at Stage 2.

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Median Storage Area													
3	R2	59	3.6	59	3.6	0.230	8.7	LOS A	0.5	2.8	0.76	0.80	5.2
Approach		59	3.6	59	3.6	0.230	8.7	LOS A	0.5	2.8	0.76	0.80	5.2
West: Major Road West													
11	T1	1234	3.1	1234	3.1	0.534	0.2	LOS A	0.0	0.0	0.00	0.00	59.7
Approach		1234	3.1	1234	3.1	0.534	0.2	NA	0.0	0.0	0.00	0.00	59.7
All Vehicles		1293	3.1	1293	3.1	0.534	0.5	NA	0.5	2.8	0.03	0.04	58.7

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

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INTERSECTION SUMMARY

 **Site: 101 [Regency Rd/Days Rd - PM future - optimised - networked]**

 **Network: N101 [PM Network Future]**

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Intersection Performance - Hourly Values			
Performance Measure	Vehicles	Pedestrians	Persons
Travel Speed (Average)	21.5 km/h	2.0 km/h	20.9 km/h
Travel Distance (Total)	2142.5 veh-km/h	7.9 ped-km/h	2578.9 pers-km/h
Travel Time (Total)	99.8 veh-h/h	4.0 ped-h/h	123.7 pers-h/h
Demand Flows (Total)	3797 veh/h	211 ped/h	4767 pers/h
Arrival Flows (Total)	3797 veh/h		4767 pers/h
Percent Heavy Vehicles (Demand)	2.6 %		
Percent Heavy Vehicles (Arrivals)	2.6 %		
Degree of Saturation	0.966	0.022	
Practical Spare Capacity	-6.8 %		
Effective Intersection Capacity	3931 veh/h		
Control Delay (Total)	61.23 veh-h/h	2.30 ped-h/h	75.78 pers-h/h
Control Delay (Average)	58.1 sec	39.4 sec	57.2 sec
Control Delay (Worst Lane)	90.7 sec		
Control Delay (Worst Movement)	90.7 sec	48.1 sec	90.7 sec
Geometric Delay (Average)	1.7 sec		
Stop-Line Delay (Average)	56.3 sec		
Idling Time (Average)	51.7 sec		
Intersection Level of Service (LOS)	LOS E	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	39.9 veh		
95% Back of Queue - Distance (Worst Lane)	286.1 m		
Queue Storage Ratio (Worst Lane)	0.97		
Total Effective Stops	3276 veh/h	152 ped/h	4083 pers/h
Effective Stop Rate	0.86 per veh	0.72 per ped	0.86 per pers
Proportion Queued	0.89	0.72	0.88
Performance Index	396.6	4.8	401.4
Cost (Total)	3388.26 \$/h	100.30 \$/h	3488.56 \$/h
Fuel Consumption (Total)	305.5 L/h		
Carbon Dioxide (Total)	721.7 kg/h		
Hydrocarbons (Total)	0.070 kg/h		
Carbon Monoxide (Total)	0.682 kg/h		
NOx (Total)	0.911 kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values			
Performance Measure	Vehicles	Pedestrians	Persons
Demand Flows (Total)	1,822,484 veh/y	101,053 ped/y	2,288,034 pers/y
Arrival Flows (Total)	1,822,484 veh/y		
Delay	29,393 veh-h/y	1,105 ped-h/y	36,376 pers-h/y
Effective Stops	1,572,443 veh/y	72,918 ped/y	1,959,850 pers/y
Travel Distance	1,028,402 veh-km/y	3,769 ped-km/y	1,237,852 pers-km/y
Travel Time	47,881 veh-h/y	1,911 ped-h/y	59,368 pers-h/y
Cost	1,626,364 \$/y	48,146 \$/y	1,674,511 \$/y
Fuel Consumption	146,630 L/y		
Carbon Dioxide	346,417 kg/y		
Hydrocarbons	34 kg/y		
Carbon Monoxide	327 kg/y		
NOx	437 kg/y		

MOVEMENT SUMMARY

 Site: 101 [Regency Rd/Days Rd - PM future - optimised - networked]

 Network: N101 [PM Network Future]

New Site

Signals - Actuated Isolated Cycle Time = 150 seconds (User-Given Phase Times)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Days Road (S)													
1	L2	84	6.3	84	6.3	0.090	16.7	LOS B	2.4	17.8	0.44	0.63	23.3
2	T1	331	1.6	331	1.6	0.927	66.1	LOS E	25.7	181.8	0.95	0.83	21.4
3	R2	166	0.6	166	0.6	0.927	77.0	LOS E	25.7	181.8	1.00	0.92	19.5
Approach		581	2.0	581	2.0	0.927	62.1	LOS E	25.7	181.8	0.89	0.83	20.9
East: Regency Road (E)													
4	L2	205	0.5	205	0.5	0.162	12.1	LOS B	4.4	30.7	0.35	0.65	41.3
5	T1	973	2.9	973	2.9	0.950	62.0	LOS E	39.9	286.1	0.92	0.93	18.0
6	R2	151	4.9	151	4.9	0.913	85.8	LOS F	11.6	84.7	1.00	0.84	22.8
Approach		1328	2.8	1328	2.8	0.950	57.0	LOS E	39.9	286.1	0.84	0.88	20.6
North: Days Road (N)													
7	L2	161	1.3	161	1.3	0.169	17.2	LOS B	4.8	34.0	0.47	0.66	42.0
8	T1	323	1.3	323	1.3	0.966	73.8	LOS E	21.9	154.7	0.96	0.94	16.8
9	R2	169	1.2	169	1.2	0.565	64.6	LOS E	14.1	99.8	0.93	0.81	18.5
Approach		654	1.3	654	1.3	0.966	57.5	LOS E	21.9	154.7	0.83	0.83	22.2
West: Regency Road (W)													
10	L2	192	4.4	192	4.4	0.870	58.3	LOS E	39.4	284.2	0.99	0.90	24.3
11	T1	878	3.2	878	3.2	0.870	51.3	LOS D	39.4	284.2	0.96	0.87	25.1
12	R2	164	1.9	164	1.9	0.960	90.7	LOS F	13.2	94.2	1.00	0.88	6.9
Approach		1234	3.2	1234	3.2	0.960	57.7	LOS E	39.4	284.2	0.97	0.88	22.3
All Vehicles		3797	2.6	3797	2.6	0.966	58.1	LOS E	39.9	286.1	0.89	0.86	21.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65
P2	East Full Crossing	53	46.5	LOS E	0.2	0.2	0.79	0.79
P3	North Full Crossing	53	31.4	LOS D	0.1	0.1	0.65	0.65
P4	West Full Crossing	53	48.1	LOS E	0.2	0.2	0.80	0.80
All Pedestrians		211	39.4	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

INTERSECTION SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - PM Future - Import]**

 **Network: N101 [PM Network Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Stop (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	53.7 km/h	53.7 km/h
Travel Distance (Total)	1079.4 veh-km/h	1295.3 pers-km/h
Travel Time (Total)	20.1 veh-h/h	24.1 pers-h/h
Demand Flows (Total)	1484 veh/h	1781 pers/h
Arrival Flows (Total)	1484 veh/h	1781 pers/h
Percent Heavy Vehicles (Demand)	2.8 %	
Percent Heavy Vehicles (Arrivals)	2.8 %	
Degree of Saturation	0.376	
Practical Spare Capacity	112.7 %	
Effective Intersection Capacity	3945 veh/h	
Control Delay (Total)	1.58 veh-h/h	1.90 pers-h/h
Control Delay (Average)	3.8 sec	3.8 sec
Control Delay (Worst Lane)	19.5 sec	
Control Delay (Worst Movement)	29.2 sec	29.2 sec
Geometric Delay (Average)	1.7 sec	
Stop-Line Delay (Average)	2.1 sec	
Idling Time (Average)	1.5 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.7 veh	
95% Back of Queue - Distance (Worst Lane)	12.5 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	353 veh/h	423 pers/h
Effective Stop Rate	0.24 per veh	0.24 per pers
Proportion Queued	0.13	0.13
Performance Index	25.8	25.8
Cost (Total)	374.59 \$/h	374.59 \$/h
Fuel Consumption (Total)	78.8 L/h	
Carbon Dioxide (Total)	187.1 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.212 kg/h	
NOx (Total)	0.219 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	712,421 veh/y	854,905 pers/y
Arrival Flows (Total)	712,421 veh/y	
Delay	758 veh-h/y	910 pers-h/y
Effective Stops	169,376 veh/y	203,251 pers/y
Travel Distance	518,114 veh-km/y	621,737 pers-km/y
Travel Time	9,654 veh-h/y	11,585 pers-h/y
Cost	179,802 \$/y	179,802 \$/y
Fuel Consumption	37,833 L/y	
Carbon Dioxide	89,824 kg/y	
Hydrocarbons	7 kg/y	
Carbon Monoxide	102 kg/y	

MOVEMENT SUMMARY

 **Site: 1 [Regency Road/Site Access Stage 1 - PM Future - Import]**

 **Network: N101 [PM Network Future]**

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.

Stop (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV	Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Site Access (S)													
1	L2	81	2.6	81	2.6	0.376	12.4	LOS B	1.7	12.5	0.69	1.06	42.1
2	T1	59	3.6	59	3.6	0.376	29.2	LOS D	1.7	12.5	0.69	1.06	33.7
Approach		140	3.0	140	3.0	0.376	19.5	LOS C	1.7	12.5	0.69	1.06	39.4
East: Regency Road (E)													
4	L2	149	2.1	149	2.1	0.322	5.6	LOS A	0.0	0.0	0.00	0.14	55.7
5	T1	1076	2.9	1076	2.9	0.322	0.0	LOS A	0.0	0.0	0.00	0.06	59.1
Approach		1225	2.8	1225	2.8	0.322	0.7	NA	0.0	0.0	0.00	0.07	58.6
West: Regency Road (W)													
12	R2	119	2.7	119	2.7	0.334	17.8	LOS C	1.4	10.0	0.82	0.98	42.6
Approach		119	2.7	119	2.7	0.334	17.8	NA	1.4	10.0	0.82	0.98	42.6
All Vehicles		1484	2.8	1484	2.8	0.376	3.8	NA	1.7	12.5	0.13	0.24	53.7

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

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INTERSECTION SUMMARY

Site: 101 [Days Road/Site Access PM Future - Import]

Network: N101 [PM Network Future]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	44.7 km/h	44.7 km/h
Travel Distance (Total)	1067.6 veh-km/h	1281.1 pers-km/h
Travel Time (Total)	23.9 veh-h/h	28.7 pers-h/h
Demand Flows (Total)	1585 veh/h	1902 pers/h
Arrival Flows (Total)	1585 veh/h	1902 pers/h
Percent Heavy Vehicles (Demand)	1.7 %	
Percent Heavy Vehicles (Arrivals)	1.7 %	
Degree of Saturation	0.526	
Practical Spare Capacity	52.0 %	
Effective Intersection Capacity	3012 veh/h	
Control Delay (Total)	2.41 veh-h/h	2.89 pers-h/h
Control Delay (Average)	5.5 sec	5.5 sec
Control Delay (Worst Lane)	12.2 sec	
Control Delay (Worst Movement)	19.2 sec	19.2 sec
Geometric Delay (Average)	2.2 sec	
Stop-Line Delay (Average)	3.3 sec	
Idling Time (Average)	1.1 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	4.2 veh	
95% Back of Queue - Distance (Worst Lane)	29.9 m	
Queue Storage Ratio (Worst Lane)	0.07	
Total Effective Stops	635 veh/h	762 pers/h
Effective Stop Rate	0.40 per veh	0.40 per pers
Proportion Queued	0.38	0.38
Performance Index	38.8	38.8
Cost (Total)	641.80 \$/h	641.80 \$/h
Fuel Consumption (Total)	87.7 L/h	
Carbon Dioxide (Total)	207.1 kg/h	
Hydrocarbons (Total)	0.015 kg/h	
Carbon Monoxide (Total)	0.168 kg/h	
NOx (Total)	0.200 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	760,926 veh/y	913,112 pers/y
Arrival Flows (Total)	760,926 veh/y	
Delay	1,156 veh-h/y	1,388 pers-h/y
Effective Stops	304,904 veh/y	365,885 pers/y
Travel Distance	512,430 veh-km/y	614,916 pers-km/y
Travel Time	11,472 veh-h/y	13,766 pers-h/y
Cost	308,065 \$/y	308,065 \$/y
Fuel Consumption	42,102 L/y	
Carbon Dioxide	99,387 kg/y	
Hydrocarbons	7 kg/y	
Carbon Monoxide	81 kg/y	
NOx	96 kg/y	

MOVEMENT SUMMARY

Site: 101 [Days Road/Site Access PM Future - Import]

Network: N101 [PM Network Future]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Days Road (S)													
1	L2	162	2.6	162	2.6	0.293	4.6	LOS A	0.0	0.0	0.00	0.15	48.6
2	T1	418	1.8	418	1.8	0.293	0.0	LOS A	0.0	0.0	0.00	0.15	48.3
Approach		580	2.0	580	2.0	0.293	1.3	NA	0.0	0.0	0.00	0.15	48.4
North: Days Road (N)													
8	T1	421	0.5	421	0.5	0.490	3.7	LOS A	4.2	29.9	0.60	0.36	44.7
9	R2	272	2.3	272	2.3	0.490	9.5	LOS A	4.2	29.9	0.60	0.36	43.8
Approach		693	1.2	693	1.2	0.490	5.9	NA	4.2	29.9	0.60	0.36	44.4
West: Site Access (W)													
10	L2	213	2.5	213	2.5	0.526	8.8	LOS A	2.9	20.7	0.62	0.95	37.7
12	R2	100	2.1	100	2.1	0.526	19.2	LOS C	2.9	20.7	0.62	0.95	42.3
Approach		313	2.4	313	2.4	0.526	12.2	LOS B	2.9	20.7	0.62	0.95	39.8
All Vehicles		1585	1.7	1585	1.7	0.526	5.5	NA	4.2	29.9	0.38	0.40	44.7

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.

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.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 2.6 %

Number of Iterations: 10 (maximum specified: 10)

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