

**Proposed SHD at Lands at Former
Greenpark Racecourse, Limerick City**

Traffic & Transportation Assessment

September 2021

Document Control

Document Number: 191325-TTA-PL0

Revision	Description	Date	Prepared	Checked	Approved
PL0	Issued for Planning	24/09/2012	J Tiernan	D Gallery	A O'Connell

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1 Non-Technical Summary

1. The proposed development is residential in nature and comprises of 371 residential units and a 550m² creche. The proposed residential development is Phase 1 of an overall Masterplan for Greenpark. The masterplan development will include additional residential units, office accommodation, neighbourhood centre, a café and a nursing home.
2. For the purposes of our assessment, the TRICS database and existing survey from Limerick City were consulted to provide equivalent trip rates for the proposed development site.
3. It is proposed to access the proposed SHD residential development from the Greenpark Roundabout on the Dock Road.
4. Capacity analysis was carried out on the Greenpark Roundabout for the proposed residential traffic and the level of service is deemed acceptable in the context of an existing urban environment.
5. As demonstrated in the capacity analysis, the surrounding road network will not experience significant impact from the proposed SHD development.
6. Capacity analysis was also carried out on the Greenpark Roundabout, Greenpark Avenue/South Circular Road junction, Log na gCapall/South Circular Road junction and the Cahirduff/Dock Road Signalised Junction for the full Masterplan development traffic as additional information requested by Limerick City and County Council and it is not the subject of this assessment.
7. It is proposed to provide 510 parking spaces within the development which include GoCar parking spaces which provide an equivalent parking provision of 566 spaces.
8. Cycle parking along with cycle facilities have been provided to promote the use of sustainable modes of transport and to reduce car dependency associated with the development.
9. All houses with on-curtilage car parking will be first fixed for EV charge points. All common area parking spaces will have ducting run to them to facilitate future installation of additional EV charge points. 10% of common area parking spaces will have EV charge points installed.

2 Introduction

PUNCH Consulting Engineers were commissioned to undertake a Traffic and Transportation Assessment (TTA) for a proposed residential development on lands known as Greenpark, Limerick City which will form Phase 1 of an overall Masterplan for Greenpark.

The TTA is prepared in accordance with the TII's Traffic and Transportation Assessment Guidelines (2014) and makes reference to the Guidelines for Traffic Impact Assessment published by the Institution of Highways and Transportation (1994).

The purpose of the report is to assess the potential impact of the proposed development on the existing surrounding road network. The report will assess whether the existing surrounding road network will have adequate capacity to carry the additional traffic generated by the proposed development along with the future growth in existing road traffic to the design year.

2.1 Scoping

Scoping was carried out with Limerick City & County Council (LCCC) as to what analysis would be required for the TTA for the proposed SHD development. It was agreed that an assessment of the overall Masterplan should be included in the analysis for the SHD.

Preliminary results for both the proposed SHD residential development and the masterplan were shared with LCCC during design development of the project and this report takes account of comments provided by LCCC.

3 Proposed Development

The proposed development is residential in nature and comprises of 371 no. residential units consisting of 157 no. semi-detached and terraced houses; 76 no. duplex units, 138 no. apartments and a 550m² creche.

The development will also include all relevant infrastructure including parking areas, access roads, drainage, internal roads, pedestrian and cycle routes, services provisions, landscaping and boundary treatment and all associated site development and excavation works.

The proposed works are outlined in a series of architectural drawings prepared by Reddy Architecture & Urbanism, engineering drawings by PUNCH Consulting Engineers and Woods PS, landscape architect drawings by Murray & Associates and supplementary information by Tom Philips & Associates.

The proposed residential development is Phase 1 of an overall Masterplan for Greenpark. The masterplan development will include additional residential units, office accommodation, neighbourhood centre, a café and a nursing home.

The overall Greenpark site is bordered to the east by a number of established residential estates, to the north-west by the N69 Dock road, to the north-east by a number of residences and the Dock Road Industrial Estate, while the Ballynaclough River runs close to the southern perimeter of the subject lands. The proposed residential development (Phase 1) site is bordered north by the former Greenpark Racecourse, to the south by Vance's Land and the Ballynaclough River, to the east by Log Na gCapall residential estate/Greenpark Avenue and to the west by Limerick greyhound racing stadium. Refer to Figure 3.1.



Figure 3-1: Location of the proposed SHD development

3.1 Proposed Vehicular Development Access

Access for this proposed residential development (Phase 1) will be provided through Greenpark Roundabout on the Dock Road.

It is likely that the future Masterplan will be accessed by a number of proposed integrated routes which will be subject to future separate planning applications:

- i. 31 of the proposed additional residential units from the masterplan will have vehicular access from Greenpark Avenue
- ii. The proposed nursing home (planning application: 21/1222) will have vehicular access via Log na gCapall and onto South Circular Road
- iii. The remaining development will have vehicular access via Greenpark Roundabout on the Dock Road (as per Phase 1) and a potential future link road to the Alandale Roundabout

Refer to Figure 3-2 for illustration of proposed access arrangements for the proposed development including future masterplan proposals.

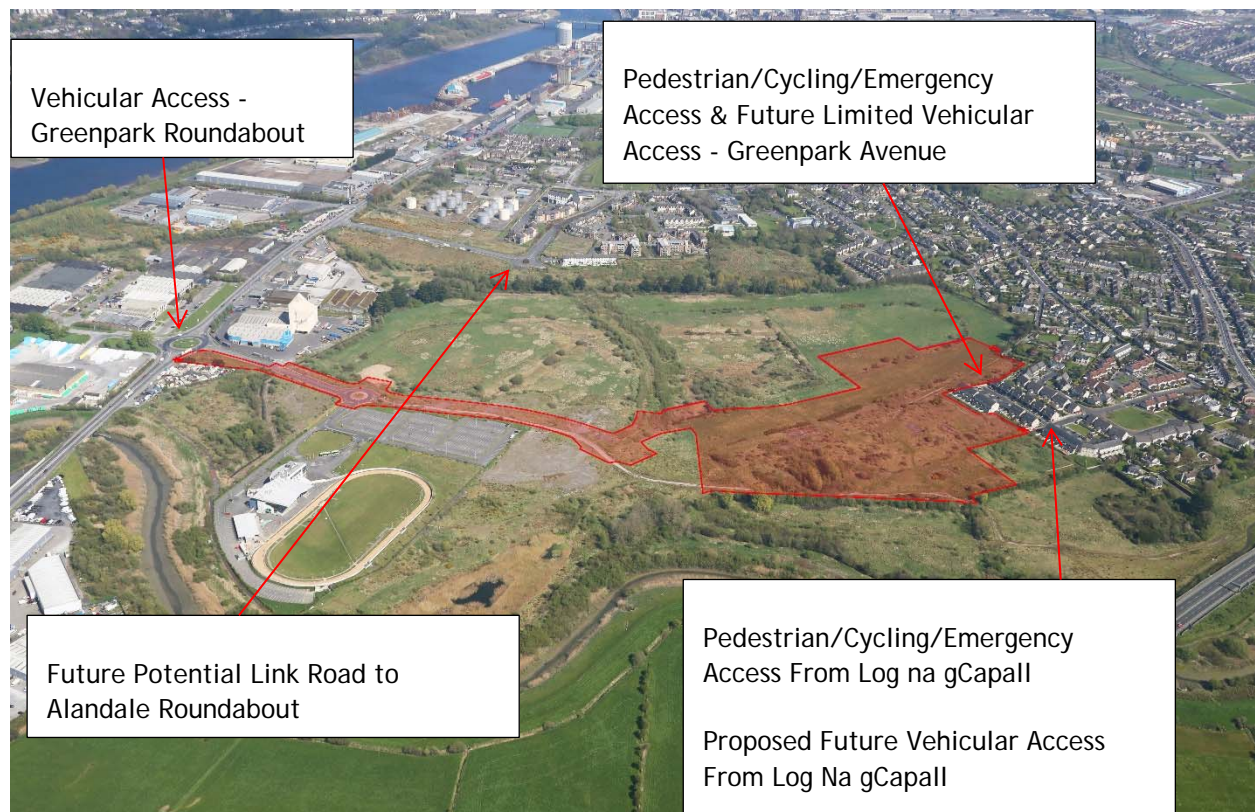


Figure 3-2: Location access points for proposed development/masterplan

3.2 Proposed Cyclist/Pedestrian Development Access

Internal cycle lanes and footways form part of the proposed residential development and have been located adjacent to proposed Link Streets to encourage pedestrian movement and cycling in line with the requirements of the Limerick City Development Plan 2010-2016 (as amended) and in accordance with the Draft Limerick/ Shannon Transport Strategy 2040. The proposed residential development includes cycle lane/footpath connectivity through the site to facilitate connecting the Dock Road and the South Circular Road. Additional pedestrian/ cycle access points have been provided to the boundary of Log na gCapall and Greenpark Avenue. Subject to the required planning permissions, the Masterplan development will also provide cycling and pedestrian connectivity with Alandale via the potential link road to Alandale Roundabout. Refer to Figure 3-2 for illustration of proposed access arrangements for the proposed development including future masterplan proposals.

4 Existing Conditions

4.1 Existing Road Network and Site Location

The proposed development is located in Greenpark, approximately 2km southwest of Limerick City. The main access to the site is via a Link Road off the Limerick Greyhound Stadium Roundabout. The Greyhound Roundabout further links north to the Greenpark Roundabout on the Dock Road. The site location in relation to the wider road network is detailed in Figure 4-1. The N69 is a two way road serving as one of the main accesses for the city during peak commuter traffic times.

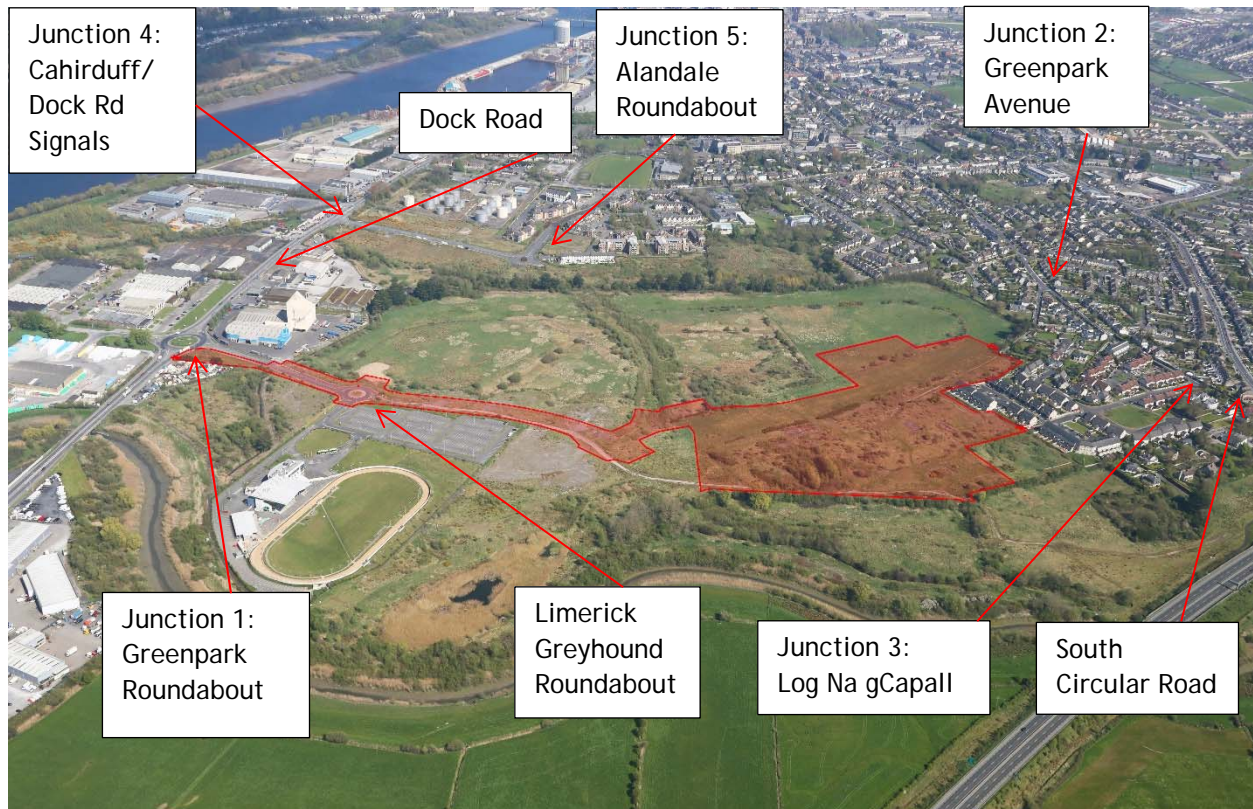


Figure 4-1: Site Location in Red (<https://www.google.com/maps>)

4.1.1 Dock Road (N69)

The Dock Road (N69) is the link between Tralee and Limerick City. The Dock Road is a two-way carriageway with wide footpaths on both sides of the carriageway and no existing designated cycle lanes.



Figure 4-2: Existing Site Access at Greenpark Roundabout-looking south east (Ref: Google Maps)



Figure 4-3: North east of Greenpark Roundabout-looking north east (Ref: Google maps)



Figure 4-4: South west of Greenpark Roundabout-looking south west

4.1.2 Greenpark Avenue

Greenpark Avenue is a two-way single carriageway residential road of approximately 240m in length which connects to South Circular Road. There is a footpath on the north side of the carriageway which extends approximately 100m from South Circular Road. There are no designated cycle lanes.



Figure 4-5: Existing Greenpark Ave-South Circular Road Junction-looking north east



Figure 4-6: Greenpark Avenue-looking south west



Figure 4-7: End of Greenpark Ave-looking south west

4.1.3 Log Na gCapall

Log Na gCapall is a residential road which connects to South Circular Road. It has designated footpaths on both sides of the road and no designated cycle lanes.



Figure 4-8: Existing Log Na gCapall-South Circular Road Junction-looking north east



Figure4-9: Log Na gCapall looking north west



Figure 4-10: End of Log Na gCapall-looking north west

4.2 Existing Traffic Flows

Due to existing Covid-19 work and travel restrictions in place during the development of the design for this proposed development, a number of existing historical traffic surveys have been utilised for this report. Refer to Appendix A for traffic survey information used.

The existing Dock Rd Greenpark Roundabout (Junction 1) traffic survey was undertaken by IDASO on Tuesday 6th of February 2018. The survey was carried out while schools were in term. The survey found that the morning peak hour traffic flow occurred between 08:00 and 09:00 for the existing Dock Rd Roundabout. The evening peak hour occurred between 15:45 and 16:45. The survey results are summarised in Figure 4-11 below.

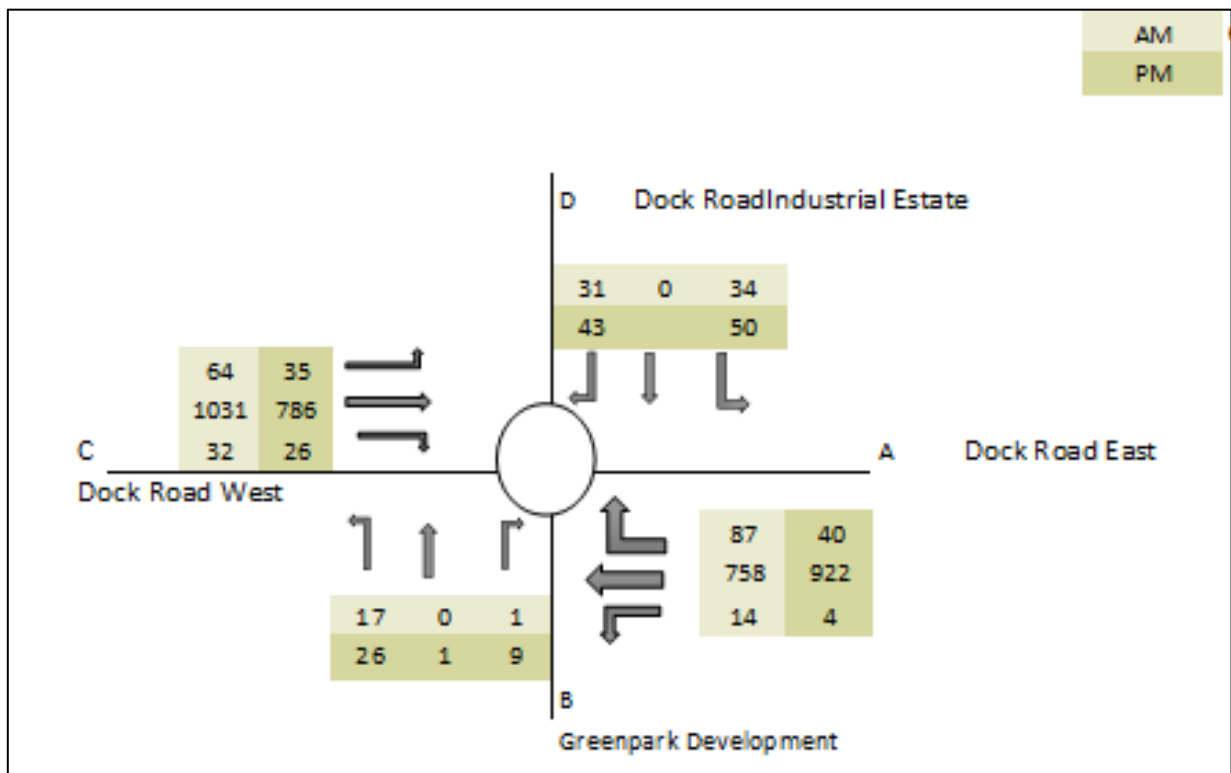


Figure 4-11: Illustration of distribution of AM/ PM Peak traffic (PCUs) at existing Greenpark Roundabout (Junction 1) as per traffic survey Tuesday 6th February 2018

The existing Greenpark Avenue/South Circular Road junction (Junction 2) traffic survey was undertaken by Abacus Transportation Surveys on Tuesday 26th September 2017. This survey information was taken from information available in Planning Grant 17/1190 (ABP-302015-18) for a 31 unit residential development for M.A. Ryan & Sons. The survey was carried out while schools were in term. The survey found that the morning peak hour traffic flow occurred between 08:00 and 09:00 for the existing Greenpark Avenue/South Circular Road junction. The evening peak hour occurred between 17:00 and 18:00. The survey results are summarised in Figure 4-12 below.

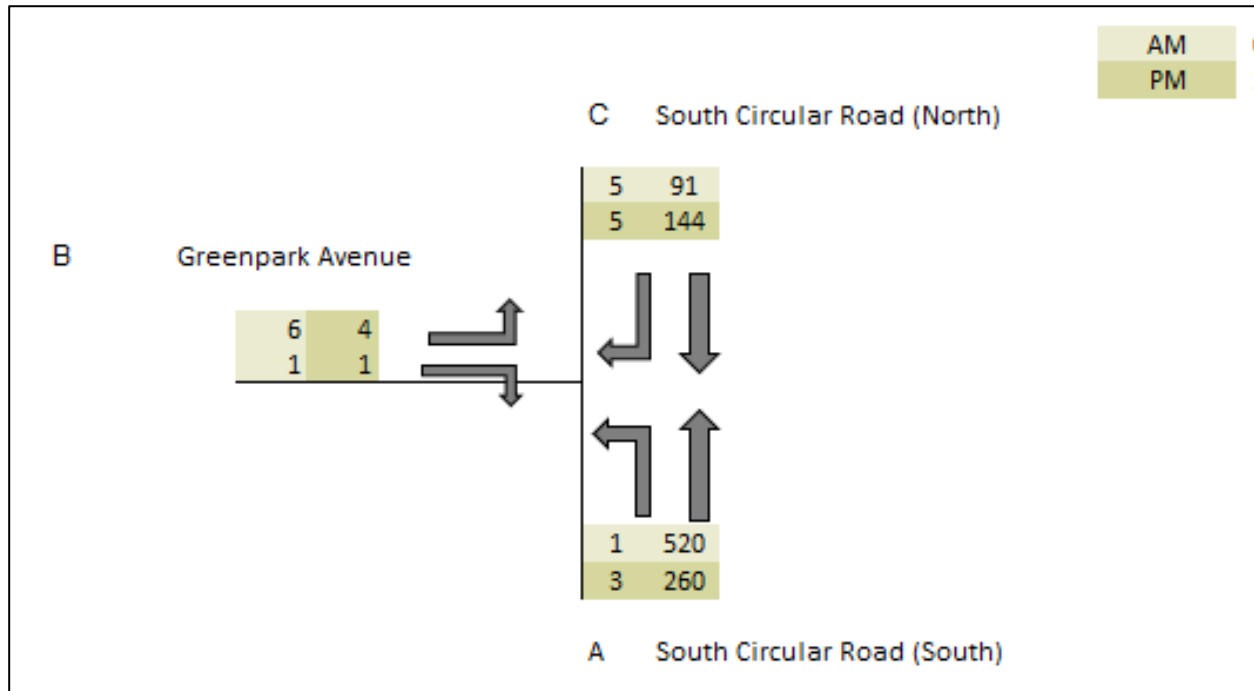


Figure 4-12: Illustration of distribution of AM/ PM Peak traffic (PCUs) at existing Greenpark Avenue/South Circular Road junction (Junction 2) as per traffic survey Tuesday 26th September 2017

The existing Log na gCapall/South Circular Road junction (Junction 3) traffic survey was undertaken by Abacus Transportation Surveys on Tuesday 3rd February 2015. This survey information was taken from information available in Planning Refusal 15/428 (ABP-30.246035) for a 110 unit residential development for the Limerick Race Company PLC. The survey was carried out while schools were in term. The survey found that the morning peak hour traffic flow occurred between 08:00 and 09:00 for the existing Log na gCapall/South Circular Road junction. The evening peak hour occurred between 16:45 and 17:45. The survey results are summarised in Figure 4-13 below.

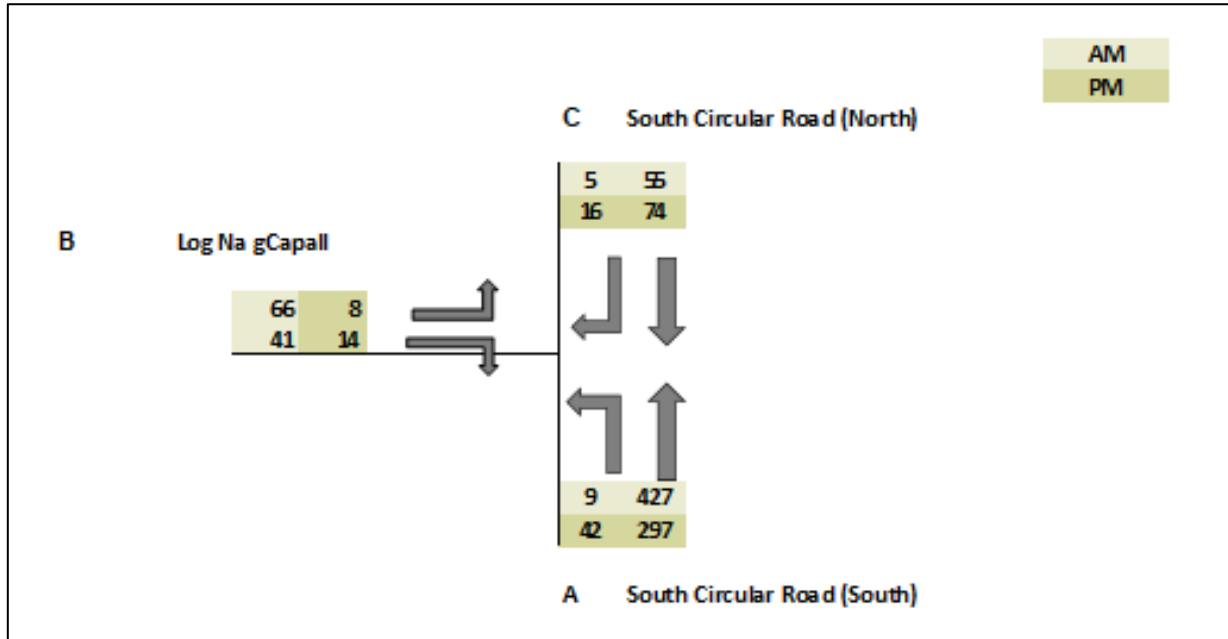


Figure 4-13: Illustration of distribution of AM/ PM Peak traffic (PCUs) at existing Log na gCapall/South Circular Road (Junction 3) as per traffic survey Tuesday 3rd February 2015

The existing Dock Rd Greenpark Roundabout (Junction 1) traffic survey information was used to generate existing traffic flows at the Cahirduff/Dock Road junction (Junction 4). This junction is set up as a signalised junction but the Cahirduff arm is not open to traffic. The survey results are summarised in Figure 4-14 below.

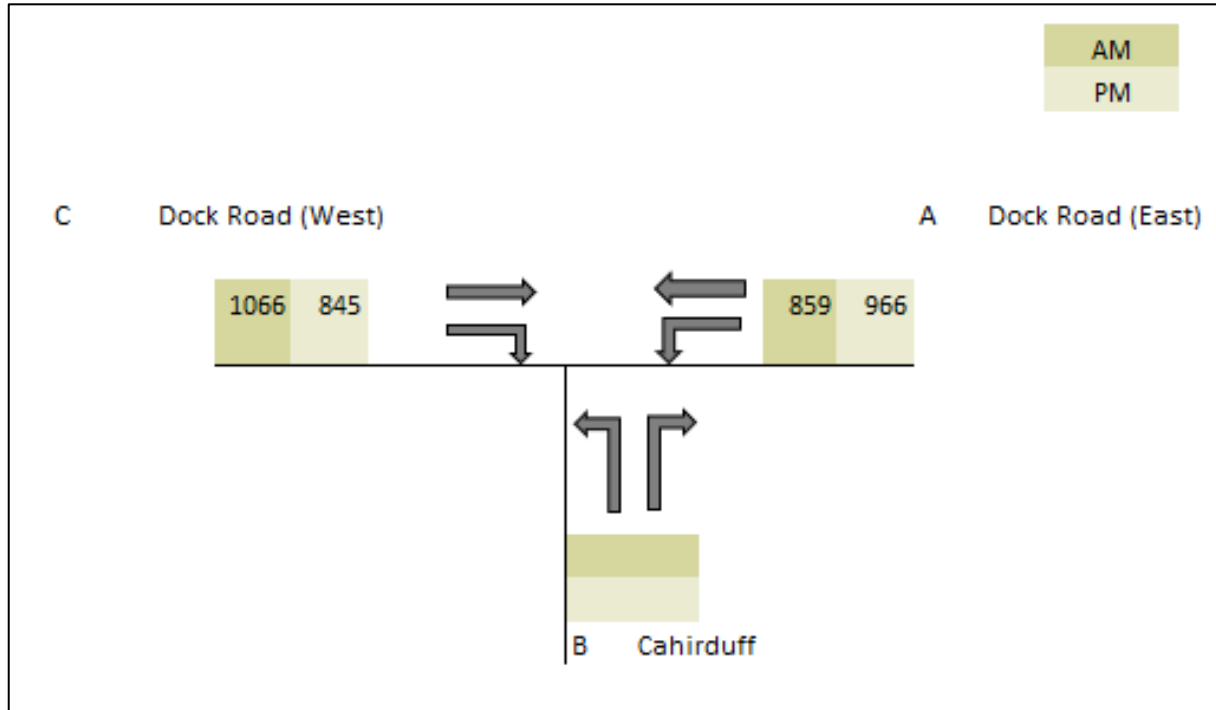


Figure 4-14: Illustration of distribution of AM/ PM Peak traffic (PCUs) at existing Cahirduff/Dock Road junction (Junction 4) as per traffic survey Tuesday 6th February 2018

4.3 Future Transport Proposals

General proposals and objectives as noted in the Development Plan are to reduce car dependency and increase the use of sustainable means of transport such as walking, cycling and the use of public transport.

Currently there are discussions ongoing between Limerick City and County Council (LCCC) and the National Transport Authority (NTA) in relation to the upgrade of the Dock Road to have enhanced public transportation/ alternative modal facilities including priority bus corridors and dedicated cycle lanes.

As part of the constraints assessment for the Limerick Northern Distribution Road (LNDR), a traffic study was undertaken by Roughan O'Donovan to provide forecasted values for the junctions surrounding Limerick City and the potential associated reduction in traffic in the city. With the opening of the LNDR it is envisaged that a portion of the traffic utilising the Dock Road will decrease in the AM and PM peaks as more viable routes become available in the city. The impact of the LNDR on Greenpark Roundabout capacity will be further explored once further information is available from LCCC. For now the traffic assessment is based on the existing scenario which is the more onerous and conservative approach. The Draft Limerick/ Shannon Metropolitan Area Transport Strategy 2040 (LSMATS) notes the N69 Dock Road being reclassified as a Regional Road in the future.

The proposed residential development has taken consideration of the LSMATS. Under the strategy, cycling infrastructure will be developed along a number of primary routes. Namely, a Primary Radial Route between Mungret to City Centre along the R510, R526 Ballinacurra Rd, South Circular Road and Henry Street to be delivered in the short to medium term. A Secondary Cycle Network from Dock Road via Ashbourne Avenue to Rosbrien Road and a Greenway Cycle Network for the Limerick Docks parallel to the N69 to be delivered in the long term. Refer to Figure 4-15 below.



Figure 4-15 Proposed Limerick Cycle Networks as per LSMATS

In addition, there will be a bus route via the Dock Road which will help alleviate traffic as people accessing the city will be able to use public buses rather than cars. The network shows links as far as Shannon Airport. Refer to Figure 4-16 below.



Figure 4-16 Proposed 2040 Bus Network as per LSMATS

The implementation of the objectives of the LSMATS will bring with it a modal shift for the development area which should drastically change the transportation environment and use of sustainable modes of transport in the area over the design years discussed in the report. Any analysis in this report cannot account for this modal shift directly but our traffic analysis can be assumed to be the worst case scenario given the existing baseline used.

5 Generation of Development Traffic and Trip Distribution

5.1 Future Baseline Traffic Growth

Rather than applying the TII Growth factors for Limerick Metropolitan area, as agreed with LCCC Transportation Department, it was assumed that baseline traffic will continue to grow at the levels similar to those currently experienced in the Limerick City area. Traffic Data from the Online TII Traffic Data Site (Table 5-1Table 5-1) at the location of the R445 between Castletroy and Annacotty Roundabouts, Annacotty, Co. Limerick (as shown in Figure 5-1) was used to establish the actual rate of traffic growth in the city. This is the closest relevant existing TII counter available in the area.

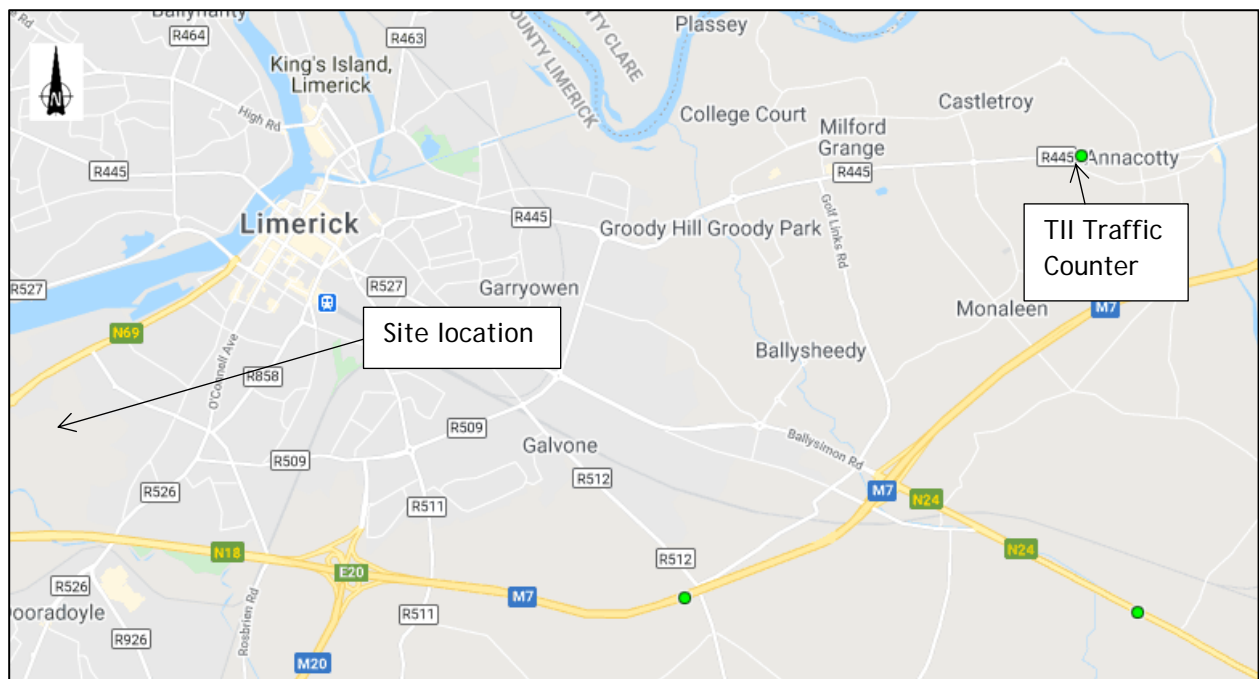


Figure 5-1: Location of Traffic counter on R445 relative to site

	2020	2019	2018	2017	2016
AADT	14770	17724	17541	17390	17121
% HGV	1.5%	1.3%	1.5%	1.6%	1.5%
Coverage	62.6%	92.2%	99.7%	99.7%	99.7%

Table 5-1: Summary Table of T11 AADT for R445 counter

Please note the 2020 figures have been excluded in any calculations due to the travel restrictions enforced during that time due to the Covid-19 pandemic.

The observed data above represents an annual average growth of +1.161% vehicles.

The TII recommended growth factors in the Project Appraisal Guidelines (PAG) - Unit 5.3 - Travel Demand Projections publication by the TII (May 2019) would suggest applying a growth factor of 1.74% for 2016-

2030 and 0.7% beyond 2030 when using the Central growth factors for Limerick. We believe these figures are too high and too onerous for this specific city centre site given the lower recently observed rates and the mode share targets stated in the current Draft Limerick Shannon Metropolitan Area Transport Strategy. This strategy has been agreed in advance with LCCC.

Our proposed traffic growth rate to be applied to the baseline data is as follows:

	Limerick Growth Factor
2020-2030	1.0116
2030-2040	1.0013

Table 5-2 Proposed Limerick Growth Factors

Estimated future baseline traffic flows on the road network in the vicinity of the proposed development were calculated by applying the above stated Limerick growth factors to the surveyed flows.

6 Vehicle Trip Rate Calculation

Strategic Housing Development

Different elements of the proposed development will generate different levels of traffic. The proposed SHD development requires two different trip rate calculations based on the following development types:

- Residential
- Creche

Trip rates generated from survey information gathered in Planning Reference 16/1196 was used for the proposed residential development as advised by LCCC as being the most appropriate rate for local area traffic generation.

TRICS was used to calculate the remaining trip rate/ trip generation from the proposed development. Refer to Appendix B for TRICS rates applied.

Please refer to Table 6-1 for trip rates associated with the proposed SHD development (Phase 1).

Land Use	Calculation Factor		Trip rate				Additional Number of Trips			
			AM Peak		PM Peak		AM Peak		PM Peak	
			08:00 - 09:00		15:45 - 16:45		08:00 - 09:00		15:45 - 16:45	
	GFA m2	No. of Units	AM Arriv	AM Depart	PM Arriv	PM Depart	AM Arriv	AM Depart	PM Arriv	PM Depart
Residential		371	0.118	0.667	0.435	0.220	44	247	161	82
Creche	550		3.603	2.695	2.207	2.831	20	15	12	16
Total							64	262	173	98

Table 6-1 Predicted Trip Generation for proposed SHD development (Phase 1)

Masterplan

The Masterplan development requires a number of different trip rate calculations based on the following development types:

- Residential
- Creche
- Offices
- Nursing Home
- Neighbourhood Centre

Please refer to Table 6-2 for trip rates associated with the overall Masterplan.

Land Use	Calculation Factor		Trip rate				Additional Number of Trips			
			AM Peak		PM Peak		AM Peak		PM Peak	
			08:00 - 09:00		15:45 - 16:45		08:00 - 09:00		15:45 - 16:45	
	GFA m2	No. of Units	AM Arriv	AM Depart	PM Arriv	PM Depart	AM Arriv	AM Depart	PM Arriv	PM Depart
Residential (Incl Phase1)		920	0.118	0.667	0.435	0.220	109	614	400	202
Creche (Incl Phase1)	1,400		3.603	2.695	2.207	2.831	50	38	31	40
Offices	39,500		1.203	0.152	0.117	1.04	475	60	46	411
Nursing Home		126	0.122	0.067	0.121	0.14	15	8	15	18
Neighbour Centre	1,000		3.274	2.944	4.494	4.867	33	29	45	49
Total							682	749	537	720

Table 6-2: Predicted Trip Generation for Overall Masterplan Development

The above figures do not allow for the effect of internal bypass traffic inherent in the Neighbourhood Centre and Creche usages adjacent to the residential developments. This is a conservative approach showing the worst-case scenario for the proposed masterplan development.

The estimated opening years for the Masterplan development are 2024 for everything except the offices and 2029 for the office. The traffic analysis presented later in this report assumes these opening years for the Masterplan traffic. The estimated opening year for the Masterplan Development represents the worst case scenario from a traffic modelling perspective.

6.1 Trip Assignment and Distribution

For the Phase 1 SHD residential development alone, development traffic will utilise the Greenpark Roundabout (Junction 1).

The proposed development traffic will be apportioned during the analysis in accordance with the directional flow of the surveyed traffic at each junction.

For the Masterplan traffic assessment, it is assumed that 50% of the overall development traffic (minus the 31 units accessing via Greenpark Avenue and the nursing home accessing via Log na gCapall) will utilise Greenpark Roundabout (Junction 1) and the remaining 50% will utilise Alandale Roundabout (Junction 3) and access the Dock Road via the Cahirduff/Dock Road signalised junction (Junction 4). In reality some users will also avoid the Dock Road by travelling via Asbourne Avenue, however the case presented in this report is deemed the worst case scenario and appropriate for capacity assessment purposes.

7 Junction Analysis

The junctions identified for analysis were assessed for the following AM and PM peak hour traffic flow scenarios with and without the proposed development in place:

- Opening Year
- Opening Year +5 years
- Opening Year +15 years

Estimated turning movements for each of the above scenarios were calculated by applying growth factors to the baseline traffic movements and adding the predicted generated flows from the proposed development and the expanded base flows. The following sections summarise the findings of the capacity modelling for the Junctions assessed.

Linsig software was used for the analysis of the signalised junctions. Junctions 9 ARCADY software was used for the roundabouts. The Junctions 9 PICADY software was used for priority junction analysis.

Analysis Note:

The ratio of flow to capacity (RFC) is an indicator of the likely performance of a junction under design year loading. Due to site to site variation, there may be a standard error of prediction of the entry capacity by the formulae of + or - 15% for any site. Thus, queuing should not occur in the various turning movements in the chosen design year peak hour in 5 out of 6 peak hour periods or sites if a maximum RFC of about 85% is used. Once the RFC is at 1.0 the Junctions 9 modelling software produces results regarding queues and delays that is unrepresentative of the actual or likely effects.

7.1 Junction 1: Greenpark Roundabout

7.1.1 SHD Scenario

It is proposed that the Phase 1 SHD residential development vehicular access will be via the existing Dock Road Greenpark Roundabout. The existing Greenpark Roundabout was modelled with an intercept slope to mimic existing queuing (observed in the 2018 traffic survey) on the roundabout in the peak times. The Junctions 9 output is summarised in Table 7-1 below and a full report is included in Appendix C.

	Without Development	With Proposed SHD Development
Peak Hour Flow	Maximum RFC	Maximum RFC
AM 2018 Existing Survey	0.76	-
AM 2024 Opening Year	0.81	0.86
AM 2029 Design Year	0.86	0.91
AM 2039 Design Year	0.89	0.93
PM 2018 Existing Survey	0.85	-
PM 2024 Opening Year	0.92	1.06
PM 2029 Design Year	0.98	1.12
PM 2039 Design Year	1.00	1.15

Table 7-1 - Summary of Junctions 9 Analysis Results for Greenpark Roundabout Junction with SHD Traffic only

The above analysis predicts that by the Design Year 2039 the existing roundabout without the proposed SHD development would be operating above the design threshold (85% is the desired capacity for roundabout) at 100% RFC in the PM Peak. With the addition of the proposed SHD development traffic, the roundabout RFC would increase to 115%.

Results shown above 100% (1.00) RFC should be read with caution. Once the RFC is 100% the Junctions 9 modelling software produces results regarding queues and delays that is unrepresentative of the actual or likely effects.

The results should be viewed more for a comparative assessment of “with” and “without” the proposed development which in this case is deemed to be low with a maximum difference of 15% in the PM peak with the development in place and only 5% in the AM Peak.

Therefore, the Greenpark Roundabout will not experience significant impact from the proposed SHD development.

It is considered that in urban areas a certain level of congestion is to be expected during peak times. As noted previously, the worst-case scenario is presented in the results above by not allowing for bypass traffic inherent in the Creche usages adjacent to the residential development. Accounts for improved transportation facilities and sustainable modes of transport as set out in the Draft Limerick/ Shannon

Metropolitan Area Transport Strategy 2040 (LSMATS) have not been included in this analysis but should only serve to improve the predicted results.

There are existing road junctions operating at similar capacities in Limerick City that have had additional development traffic approved similar to the above such as the development for Planning Grant 20/25.

As anticipated, LCCC did not note any concerns with preliminary results shared similar to Table 7-1 for the proposed SHD development during design development of the project.

7.1.2 Masterplan Scenario

The traffic assessment for the Masterplan development is preliminary in nature and provided as additional information requested by LCCC, it is not the subject of this assessment.

LCCC requested that we also carry out an assessment of Greenpark Roundabout with the Masterplan development traffic applied.

Once the Masterplan development is in place it has been agreed with LCCC to assume that 50% of the overall development traffic (minus the 31 units accessing via Greenpark Avenue and the nursing home accessing via Log na gCapall) will utilise the Alandale Roundabout route to the Dock Road for access to the site rather than accessing the site solely off the Greenpark Roundabout.

The opening year for the Masterplan development is assumed as 2024 with the offices open by 2029.

The existing Greenpark Roundabout was modelled with an intercept slope to mimic existing queuing (observed in the 2018 traffic survey) on the roundabout in the peak times. The Junctions 9 output is summarised in Table 7-2 below and a full report is included in Appendix D.

	Without Development	With Proposed SHD Development	With Proposed Masterplan Development (50% loading)
Peak Hour Flow	Maximum RFC	Maximum RFC	Maximum RFC
AM 2018 Existing Survey	0.76	-	-
AM 2024 Opening Year	0.81	0.86	1.02
AM 2029 Design Year	0.86	0.91	1.30
AM 2039 Design Year	0.89	0.93	1.33
PM 2018 Existing Survey	0.85	-	-
PM 2024 Opening Year	0.92	1.06	1.18
PM 2029 Design Year	0.98	1.12	1.38
PM 2039 Design Year	1.00	1.15	1.40

Table 7-2 - Summary of Junctions 9 Analysis Results for Greenpark Roundabout Junction comparable with Masterplan Traffic

The above analysis predicts that by the Design Year 2039 with the addition of the proposed SHD development the roundabout RFC would increase to 115% in the PM Peak and with the additional traffic volumes generated by the Masterplan development (including allowance for the additional distributed Masterplan traffic from Junction 4) the roundabout would be at a theoretical capacity of 140%.

This junction would see increased capacity and safety improvements if it was changed from a roundabout to a signalised junction in the future to accommodate the Masterplan development traffic. Please refer to Section 7.4 for results of a signalised junction on the Dock Road which has similar traffic loadings.

Again, the worst case scenario has been presented and with the implementation of the LSMATS, it is very likely that traffic patterns in the vicinity of the Dock Road will change considerably in the medium term especially by the time the Masterplan development is completed.

7.2 Junction 2: Greenpark Avenue/South Circular Road (Masterplan Only - 31 Residential Units)

It is proposed to have 31 of the residential units from the Masterplan development to have access through Greenpark Avenue onto the South Circular Road. The additional traffic loading for this type of development is low and predicted to have very little impact on the existing capacity of the junction as summarised below in Table 7-3. Additional traffic loading from Planning Grant 17/1190 (ABP-302015-18) for residential development has also been included in this junction analysis).

	Without Development	With Proposed Development
Peak Hour Flow	Maximum RFC	Maximum RFC
AM 2025 Opening Year	0.07	0.16
AM 2030 Design Year	0.07	0.16
AM 2040 Design Year	0.07	0.16
PM 2025 Opening Year	0.04	0.07
PM 2030 Design Year	0.05	0.07
PM 2040 Design Year	0.05	0.07

Table 7-3 - Summary of Junctions 9 Analysis Results for Greenpark Avenue/South Circular Road Junction

The above analysis predicts that by the Design Year 2040 the worst-case additional impact of the proposed development utilising this existing junction would be an additional maximum 9% RFC and is well below the design threshold during both the AM and PM peak hours. Negligible increases in queuing will be experienced at the junction during the peak times (maximum predicted queuing remains below 1 PCU).

It should also be noted that under Planning Grant 17/1190, Greenpark Avenue will be upgraded which includes: extension of existing footpath widths, cushion ramps, parallel parking bays and a realignment of Greenpark Avenue/South Circular Road junction.

7.3 Junction 3: Log na gCapall/South Circular Road (Masterplan Only - Nursing Home)

It is proposed to have the nursing home access from the Masterplan development through the existing Log na gCapall development. The nursing home application is currently under review under planning number 21/1222 and detailed calculations are presented in the TTA for that development. The additional traffic loading for this type of development is low and predicted to have very little impact on the existing capacity of the existing Log na gCapall/South Circular Road junction as summarised below in Table 7-4. (Additional traffic loading distributed from Junction 2 above has also been included in this junction analysis)

	Without Development	With Proposed Development
Peak Hour Flow	Maximum RFC	Maximum RFC
AM 2015 Existing Survey	0.25	-
AM 2024 Opening Year	0.29	0.31
AM 2029 Design Year	0.32	0.34
AM 2039 Design Year	0.32	0.35
PM 2015 Existing Survey	0.05	-
PM 2024 Opening Year	0.06	0.11
PM 2029 Design Year	0.06	0.11
PM 2039 Design Year	0.07	0.11

Table 7-4 - Summary of Junctions 9 Analysis Results for Log na gCapall/South Circular Road Junction

The above analysis predicts that by the Design Year 2039 the worst-case additional impact of the proposed development utilising this existing junction would be an additional maximum 5% RFC which is well below any requirement for junction capacity assessment. Negligible increases in queuing will be experienced at the junction during the peak times (maximum predicted queuing remains below 1 PCU). Additionally, it is worth noting that the predicted total additional daily traffic from a nursing home is generally very low compared to a regular residential development.

7.4 Junction 4: Cahirduff/Dock Road Signalised Junction (Masterplan Only)

The traffic assessment for the Masterplan development is preliminary in nature and provided as additional information requested by LCCC, it is not the subject of this assessment.

Please note that the Cahirduff/Dock Road signalised junction is currently not operating as a signalised junction, the Cahirduff arm is closed from the Dock Road for vehicular traffic.

It is proposed that the SHD development vehicular access will be via the existing Dock Road Greenpark Roundabout. Once the Masterplan development is in place it has been assumed that 50% of the overall development traffic (minus the 31 units accessing via Greenpark Avenue and the nursing home accessing via Log na gCapall) will utilise the Cahirduff/Dock Road signalised junction/Alandale Roundabout route for access to the site rather than accessing the site solely off the Greenpark Roundabout. The opening year for the remainder of the Masterplan development is assumed as 2024 with the offices open by 2029.

The Linsig software output is summarised in Table 7-5 below and a full report is included in Appendix E. The analysis assumes a 120 second cycle and calling pedestrians every second cycle during peak times.

	With Proposed Masterplan Development (50% loading)
Peak Hour Flow	Maximum DOS
AM 2024 Opening Year	101.1%
AM 2029 Design Year	114.0%
AM 2039 Design Year	116.1%
PM 2024 Opening Year	97.8%
PM 2029 Design Year	103.6%
PM 2039 Design Year	105.5%

Table 7-5 - Summary of Linsig Analysis Results for Cahirduff/Dock Road signalised junction

The above analysis predicts that by the Design Year 2039 the addition of the proposed traffic volumes generated by the masterplan development (including allowance for the distributed Masterplan traffic from Junction 1) the signal-controlled junction would be at a theoretical capacity of 116%. This level of service for a signalised junction is considered acceptable in an urban environment. There are always opportunities available for signalised junction improvements in the future on the ground by altering the cycle time to respond to actual traffic loading or by providing on-crossing detectors to improve pedestrian impact on the junction capacity.

Again, with the implementation of the LSMATS, it is very likely that traffic patterns in the vicinity of the Dock Road will change considerably in the medium term especially by the time the Masterplan development is completed.

7.5 Junction 5: Alandale Roundabout (Masterplan Only)

Please note that the Alandale Roundabout is currently not open to vehicular traffic.

It is proposed that the SHD residential development vehicular access will be via the existing Dock Road Greenpark Roundabout. Once the Masterplan development is in place and vehicular connectivity is possible via the Alandale Roundabout, it has been assumed that 50% of the overall development traffic (minus the 31 units accessing via Greenpark Avenue and the nursing home accessing via Log na gCapall) will utilise the Alandale Roundabout route for access to/from the site rather than accessing the site solely off the Greenpark Roundabout. From the Alandale Roundabout users will have the opportunity to access the Dock Road by a signalised junction (Junction 4) with the Carhirduff arm or travel via Ashbourne Avenue to/from the city.

The opening year for the remainder of the Masterplan development and the provision of vehicular connectivity to Alandale Roundabout is assumed as 2024 with the offices open by 2029.

The existing Alandale Roundabout is a large diameter roundabout that would have ample capacity to cater for the Masterplan development traffic. There is no available background traffic flow data available as it is not open to traffic currently. Therefore, detailed capacity assessment of this roundabout has not been completed as it is not deemed necessary.

7.6 Junction Assessment Summary

	Without Development	With Proposed SHD Development	With Proposed Masterplan Development
Junction	2039 Max RFC/DOS	2039 Max RFC/DOS	2039 Max RFC/DOS
Junction 1 Greenpark Roundabout	1.00	1.15	1.40
Junction 2 Greenpark Avenue/SCR Priority Junction	0.07	N/A	0.16
Junction 3 Log na gCapall/SCR Priority Junction	0.32	N/A	0.35
Junction 4 Cahirduff/Dock Road Signalised Junction	N/A	N/A	1.16

Table 7-6 - Summary of Junction Analysis Results of surrounding road network

The surrounding road network will not experience significant impact from the proposed SHD development.

It is considered that in urban areas a certain level of congestion is to be expected during peak times. As noted previously, the worst-case scenario is presented in the results above by not allowing for bypass traffic inherent in the Neighbourhood Centre and Creche usages adjacent to the residential developments. Accounts for improved transportation facilities and sustainable modes of transport as set out in the LSMATS have not been included in this analysis but should only serve to improve the predicted results.

There are existing road junctions operating at similar capacities in Limerick City that have had additional development traffic approved similar to the above, such as the development for Planning Grant 20/25.

As anticipated, LCCC did not note any concerns with preliminary results shared similar to Table 7-6 for both the proposed SHD residential development and the masterplan during design development of the project.

The traffic assessment for the Masterplan development is preliminary in nature and provided as additional information requested by LCCC, it is not the subject of this assessment.

8 Modal Split

According to 2016 Census data in Limerick, 70% of commutes were taken in single passenger vehicles, 15% were on foot, 8% were in Buses, minibuses or coaches, 4% were in vans, 2% were by bicycle, motorbike, or scooter and 1% were by trains. Refer to Figure 2-1 below.

A Mobility Manager or Travel Officer will be appointed for the commercial element of the masterplan development as recommended in the Management Mobility Plan that has been prepared as a separate report for this planning application. The Travel Plan includes details of how this modal shift may be achieved and sets out the targets for achievement.

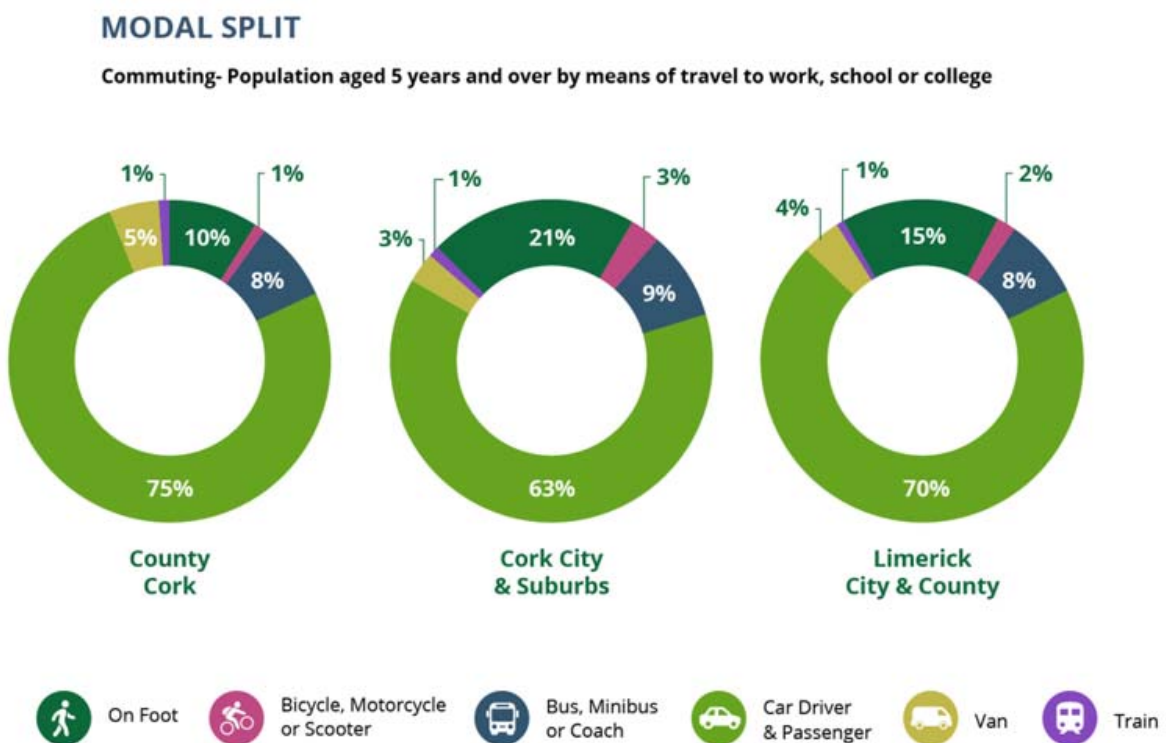


Figure 8-1: 2016 Census Modal Split (Ref: <https://corklimerick.ie/statistics/>)

9 Internal Layout

The layout of the proposed development is detailed in the architect and landscape architect's drawings submitted as part of this application.

9.1 DMURS

The proposed development has been assessed for compliance with the "Design Manual for Urban Roads and Streets" (DMURS) published by the Department of Transport, Tourism and Sport & the Department of Environment, Community and Local Government.

DMURS sets out design guidance and standards for constructing new and reconfigured existing urban roads and streets. It also sets out practical design measures to encourage more sustainable travel patterns in urban areas.

The primary objectives of DMURS are as follows:

- a) Prioritise pedestrians and cyclists in urban settings without unduly compromising vehicular movement.
- b) Provide good pedestrian permeability and connectivity in urban environments in order to encourage walking.
- c) Implement speed reduction measures to provide safe interaction between pedestrians, cyclists and motorists.
- d) Create attractive streetscapes through the design of roads and footpaths with careful consideration given to landscaping and selection of surface finishes.

Internal cycle lanes and footways forms part of the proposed development and have been located adjacent to proposed Link streets and local streets to encourage pedestrian movement and cycling in line with the requirements of the Limerick City and County Development Plan 2010-2016 (as amended) and in accordance with the Draft Limerick/ Shannon Transport Strategy 2040. The proposed residential development includes cycle lane/footpath connectivity through the site to facilitate connecting the Dock Road and the South Circular Road. Additional pedestrian/ cycle access points have been provided to the boundary of Log na gCapall and Greenpark Avenue.

The hierarchy of the streets within the residential development are all local in nature which reflects the end destination typology of the site. The design speed for the site is 30kph, and appropriate speed restriction signs will be set out at the site entrance.

The street from the Greyhound Stadium Roundabout to the proposed residential development is a link street. The design speed for the site is 50kph, and appropriate speed restriction signs will be set out at the site entrance.

A DMURS compliance statement has been prepared and forms part of the planning application.

9.2 Parking

9.2.1 Development Plan Parking Standards

In accordance with Map 6 (Parking Zones) of the Development Plan, the proposed development is designated to accommodate Zone 3 parking standards. Please refer to Figure 9-1 for extract of Map 6 and Figure 9-2 for extract of Table 16.1 (General Parking Standards) of the Development Plan.

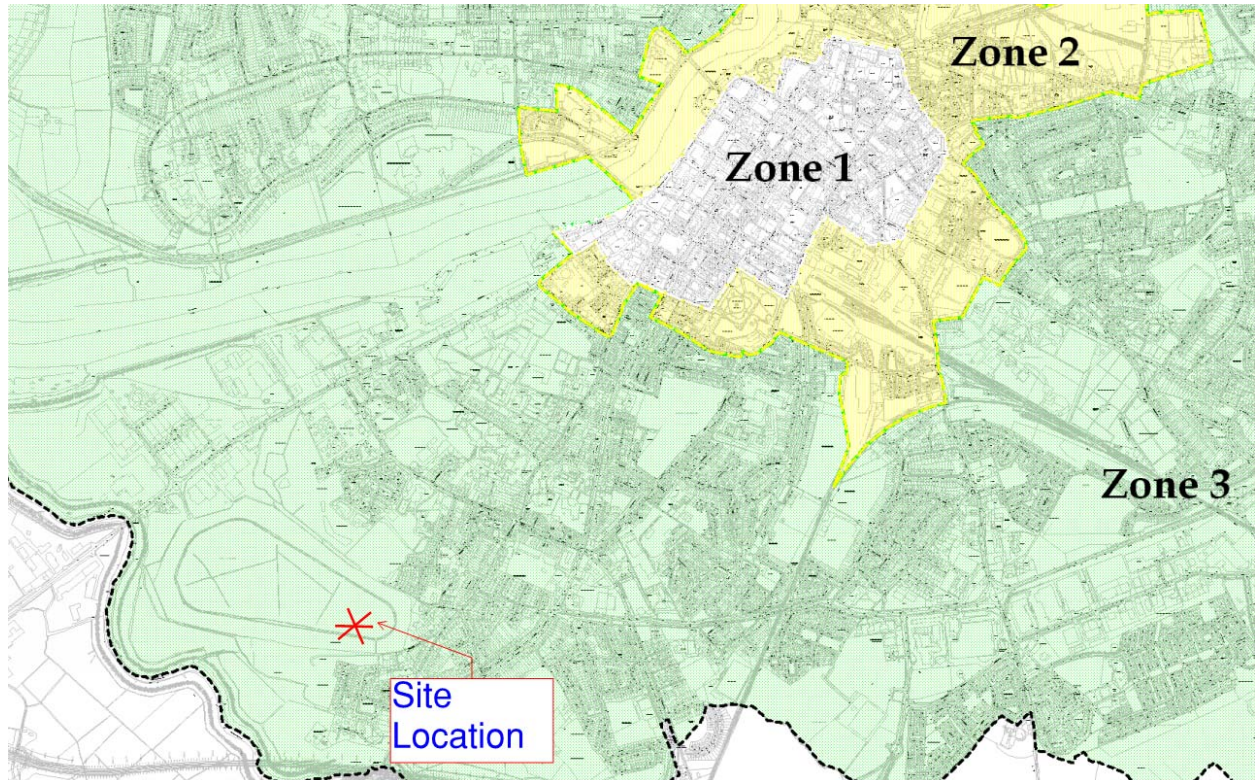


Figure 9-1: Extract from Map 6 (Parking Zones) of the Development Plan

Land Use	Zone 1 Central Core (Maximum)	Zone 2 Outer Core (Recommended)	Zone 3 Suburban (Minimum)
PS5 - Non-Residential Institutions Places of Worship Schools (non-residential) Further & Higher Education Crèche Clinics/Surgeries/Primary Health Care Centre Hospital	1: 25 Seats 1: Classroom 1: Staff Member 1: Employee 2: Consulting Room Negotiable	1: 10 Seats 1: Classroom 1: Staff & 1 per 10 Students 1: 8 children 2: Consulting Room 1 Staff Member & Visitor Space negotiable	1: 5 Seats 1.25: Classroom 1: staff & 1: 6 students 1: staff & 1: 5 children 1: Staff & 2: Consulting Room 1: Staff Member 1 & 1: Bed
PS6 - Residential House Apartment	1: House Unit 1: Apartment	1: 3 Bed House & 2: 4 Bed House 1: Apartment	2: house & 25% Visitor 1:25/ Apartment & 25% Visitor

Figure 9-2: Extract from Table 16.1 (General Parking Standards) of the Development Plan

9.2.2 Car Parking

As part of the proposed development, it is proposed to promote the use of sustainable modes of transport to reduce car dependency associated with the development. Please refer to section 10.4 for details of smarter travel initiatives.

Car parking serving the development is substantially compliant with the Limerick City Development Plan 2010-2016 (as amended). The development plan requires a total of 431 parking spaces to be provided, however the proposed development has provided a total of 510 parking spaces. The minimum car parking requirements as per the Development Plan are noted in Table 9-1 and the proposed parking spaces provided are noted in Table 9-2 below.

Development type	No Units	Minimum Requirement per Development Plan	Required No. of Spaces
Houses	157	2 spaces per house	314
Duplexs	76	1 space per 25 units	3
Apartments	138	1 space per 25 units	6
Visitor	323 (spaces)	25% of residential requirement	81
Creche	14 staff, 65 children	1 per staff & 1 per 5 children	27
Total			431

Table 9-1: Car Parking Requirement Development Plan

Development type	No Units	Parking Spaces per Unit	Parking Spaces Provided
Houses - 2 Bed	37	1.5 space per house	56
Houses - 3/4 Bed	120	2 spaces per house	240
Duplexs	76	1 space per 1.43 units (0.70/unit)	53
Apartments	138	1 space per 1.43 units (0.70/unit)	97
Visitor	446 (spaces)	11.0% of residential requirement	49
Creche	14 staff, 65 children		15
Total			510

Table 9-2: Car Parking Requirement Provided

Please refer to Reddy Architecture & Urbanism drawing 20133-RAU-ZZ-ZZ-DR-A-02.1008 for proposed car and cycle parking allocation.

We note that the parking provision local to the creche (15 parking spaces) is below the Development Plan standard (1 per staff & 1 per 5 children). However, we consider the following should be taken into consideration:

- a) It is expected that the creche will be generally occupied by children of the proposed development who are within walking distance of the creche.
- b) A Travel Plan will be prepared by the creche which will require the creche development to implement sustainable travel options. Lower levels of car parking provision can assist with encouraging other modes of transport.

The Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2020 outlines that for all types of locations, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure facilities for car sharing club vehicles.

The key benefits of car sharing club vehicle (GoCar) parking include:

- i. Each GoCar replaces approximately 15 private cars
- ii. Carsharing reduces car ownership, car dependency, congestion, noise, and air pollution
- iii. Helps increase walking, cycling, and use of public transport
- iv. Allows individuals to have the benefits of a private car, without having the large costs and responsibility associated with car ownership

4 No. parking spaces dedicated for car club (GoCar) use only are proposed for inclusion in the parking spaces provided. GoCar advise that 1 No. GoCar vehicle space can replace up to 20 private cars. Applying this rationale results in an equivalent parking provision of 506 (regular spaces) + (4 x 15) = 566 spaces. Please refer to Appendix F for letter from GoCar.

9.2.3 EV Charge Points

All houses with on-curtilage car parking will be first fixed for EV charge points. All common area parking spaces will have ducting run to them to facilitate future installation of additional EV charge points. 10% of common area parking spaces will have EV charge points installed.

Please refer to Reddy Architecture & Urbanism drawing 20133-RAU-ZZ-ZZ-DR-A-02.1008 for proposed car and cycle parking allocation which include EV charge points.

9.2.4 Cycle Parking

Cycle parking serving the development is provided in accordance with the Limerick City Development Plan 2010-2016 (as amended). The development plan requires a total of 371 spaces to be provided, however the proposed development has provided a total of 498 spaces. The applicable cycle parking standards are noted in Table 9-3 below:

Development Type	No Units	Minimum Requirement per Development Plan	Required No. of Spaces	Cycle Parking Provided
Residential	371	1 stand/space per unit	371	371
Creche	-	-	-	20
Visitor Parking at Apartments/Duplex's		-	-	107
Total			371	498

Table 9-3: Cycle parking space requirements

9.3 Visibility Splays

The site layout has been developed to provide adequate turning provision and fire tender access. Forward visibility and visibility splays have been provided on the basis of the requirements of Sections 4.4.4 and 4.4.5 of the DMURS manual. Compliance with the requirements is set out on the relevant PUNCH drawings.

9.4 Vehicle Manoeuvring

Autotrack analysis has been undertaken to ensure there are no issues with swept paths and manoeuvrability of fire appliances, refuse vehicles and cars.

10 Public Transport, Pedestrians/ Cyclists

To ensure future transport sustainability and to endeavour to make new developments as accessible as possible to travel by other modes of transport, an assessment has been made of the proposed and existing pedestrian, cyclist and public transport facilities. An Outline Mobility Management Plan is provided as a separate report with this planning application.

10.1 Public Transport

10.1.1 Train Services

The north eastern corner of the site is approximately 2.0km to Colbert Station in Limerick City Centre. Colbert Station has regular services linking Limerick to Dublin and Cork. There is a less frequent service to Galway.

10.1.2 Bus Services

The site Road is well served by the following bus routes. The nearest bus stops are 607071 and 607511 on Ballinacurra Road which are approximately 340 meters and 415 meters south east of the site respectively. These stops are serviced by:

- 301: Limerick City, Rosebrook Estate - Athlunkard, St Nicholas Church
- 304: University of Limerick - Dooradoyle, St Nessian's Church,
- 304A: University of Limerick - Raheen Roundabout, St Nessian's Road

All services run regularly.

Additionally, the Draft Limerick/ Shannon Transport Strategy 2040 (LSMATS) notes that there will be a bus route via the Dock Road which will help alleviate traffic as people accessing the city will be able to use public buses rather than cars. The network shows links as far as Shannon Airport. Refer to Figure 10-1 below.



Figure 10-1 Proposed 2040 Bus Network as per LSMATS

10.2 Pedestrians/Cyclists

Cycling enhances both the environment and quality of life of the surrounding area. Cycling has an important transport role, in reducing car usage. The consequential reduction in emissions improves air quality, aids the ecological system and results in less noise pollution.

Providing cycle and pedestrian links that are free of motorised traffic will encourage the use of cycling.

Internal cycle paths and footpaths form part of the proposed development and have been located adjacent to proposed Link streets and local streets to encourage pedestrian movement and cycling in line with the requirements of the Limerick City Development Plan 2010-2016 (as amended) and in accordance with the Draft Limerick/ Shannon Transport Strategy 2040 (LSMATS). The proposed residential development includes cycle path/footpath connectivity through the site to facilitate connecting the Dock Road and the South Circular Road. Additional pedestrian/ cycle access points have been provided to the boundary of Log na gCapall and Greenpark Avenue. The Masterplan development will also provide potential cycling and pedestrian connectivity with the Alandale Roundabout.

The proposed residential development has taken consideration of the LSMATS. Under the strategy, cycling infrastructure will be developed along a number of primary routes. Namely, a Primary Radial Route between Mungret to City Centre along the R510, R526 Ballinacurra Rd, South Circular Road and Henry Street to be delivered in the short to medium term. A Secondary Cycle Network from Dock Road via Ashbourne Avenue to Rosbrien Road and a Greenway Cycle Network for the Limerick Docks parallel to the N69 to be delivered in the long term. Refer to Figure 10-2 below.



Figure 10-2 Proposed Limerick Cycle Networks as per LSMATS

The implementation of the objectives of the LSMATS will bring with it a modal shift for the development area which should drastically change the transportation environment and use of sustainable modes of transport in the area over the design years discussed in the report.

10.3 Smarter Travel

As part of the proposed development, it is proposed to promote the use of sustainable modes of transport to reduce car dependency associated with the development. The key proposals include:

- a) Providing pedestrian and cycling facilities including bicycle parking and showering/storage facilities
 - i. It is proposed to provide 498 cycle parking spaces for the development.
 - ii. It is proposed to provide a cycle path on link street 1, link street 2, local street 1 and local street 6.
 - iii. It is proposed to provide shower/storage facilities within the proposed creche
- b) Promoting the use of public transport

There is a Coca-Cola bike station and bus stop on O'Connell Avenue within walking distance of the proposed development. Information and message boards will be provided to staff of the creche regarding these forms of transport and general information on sustainable transport.

- c) Promoting the achievement of sustainable transport targets, through the following measures for the proposed creche:
 - i. Develop a Workplace Travel Plan for employees in accordance with the National Transport Authority Workplace Travel Plans - A Guide for Implementers
 - ii. Appoint an Action Plan Coordinator in accordance with the National Transport Authority Workplace Travel Plans - A Guide for Implementers
 - iii. Monitor and review the Workplace Travel Plan to achieve the sustainable transport targets

The client is committed to developing a Workplace Travel Plan for the crèche which includes appointing an action plan coordinator and monitoring and reviewing the Workplace Travel Plan.

11 Summary and Conclusion

10. The proposed development is residential in nature and comprises of 371 residential units and a 550m² creche. The proposed residential development is Phase 1 of an overall Masterplan for Greenpark. The masterplan development will include additional residential units, office accommodation, neighbourhood centre, a café and a nursing home.
11. For the purposes of our assessment, the TRICS database and existing survey from Limerick City were consulted to provide equivalent trip rates for the proposed development site.
12. It is proposed to access the proposed SHD residential development from the Greenpark Roundabout on the Dock Road.
13. Capacity analysis was carried out on the Greenpark Roundabout for the proposed residential traffic and the level of service is deemed acceptable in the context of an existing urban environment.
14. As demonstrated in the capacity analysis, the surrounding road network will not experience significant impact from the proposed SHD development.
15. Capacity analysis was also carried out on the Greenpark Roundabout, Greenpark Avenue/South Circular Road junction, Log na gCapall/South Circular Road junction and the Cahirduff/Dock Road Signalised Junction for the full Masterplan development traffic as additional information requested by Limerick City and County Council and it is not the subject of this assessment.
16. It is proposed to provide 510 parking spaces within the development which include GoCar parking spaces which provide an equivalent parking provision of 566 spaces.
17. Cycle parking along with cycle facilities have been provided to promote the use of sustainable modes of transport and to reduce car dependency associated with the development.
18. All houses with on-curtilage car parking will be first fixed for EV charge points. All common area parking spaces will have ducting run to them to facilitate future installation of additional EV charge points. 10% of common area parking spaces will have EV charge points installed.

Appendix A Traffic Survey Data

IDASO

Survey Name : IDA-18-023 Greenpark
Site : 01
Date : 02/06/2018
Location : Greenpark Roundabout



A>=>A									A>=>B									A>=>C									A>=>D									
TIME	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACKELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACKELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACKELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACKELLAN	TOT	PCU				
07:00	0	0	1	0	0	0	0	1	1	0	0	2	0	0	0	0	2	2	0	0	75	19	10	0	0	0	104	117	0	0	1	0	0	0	1	1
07:15	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	96	16	8	1	0	0	121	132.4	0	0	2	0	0	0	2	2	
07:30	0	0	2	0	0	0	0	2	2	0	0	1	0	0	0	0	1	1	0	134	24	12	0	0	0	170	185.6	0	0	4	0	0	0	0	4	
07:45	0	0	2	1	0	0	0	3	3	0	0	3	1	0	0	0	4	4	0	162	24	13	0	0	0	199	215.9	2	0	10	3	1	0	0	16	
H/TOT	0	0	6	1	0	0	0	7	7	0	0	6	1	0	0	0	7	7	0	467	83	43	1	0	0	594	650.9	2	0	17	3	1	0	0	23	
08:00	0	0	0	0	1	0	0	1	2.3	0	0	1	0	0	0	0	1	1	1	152	18	8	1	0	0	180	190.6	0	0	21	1	3	0	0	25	
08:15	0	0	0	0	1	0	0	1	2.3	0	0	3	0	1	0	0	4	5.3	2	0	156	14	14	1	0	0	187	204.6	0	0	14	0	1	0	0	15
08:30	0	0	2	0	0	0	0	2	2	0	0	5	0	0	0	0	5	5	0	143	24	10	1	0	0	179	192.4	0	0	14	0	4	0	0	18	
08:45	0	0	2	0	0	0	0	2	2	0	0	0	3	0	0	0	3	3	0	135	13	9	1	0	0	158	170.7	0	0	11	1	3	0	0	15	
H/TOT	0	0	4	0	2	0	0	6	8.6	0	0	9	3	1	0	0	13	14.3	3	586	69	41	4	0	0	704	758.3	0	0	60	2	11	0	0	73	
09:00	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	1	1	0	143	16	14	0	0	0	173	191.2	0	0	5	2	3	1	0	11	
09:15	0	0	4	0	0	0	0	4	4	0	0	4	0	0	0	0	4	4	0	89	13	8	0	1	0	111	122.4	0	0	4	1	5	0	0	10	
09:30	0	0	1	0	0	0	0	1	1	0	0	1	3	0	0	0	4	4	0	106	18	15	1	0	1	141	162.5	0	0	5	0	3	0	0	8	
09:45	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3	0	89	32	5	0	0	0	126	132.5	0	0	9	1	5	0	0	15	
H/TOT	0	0	5	0	0	0	0	5	12	0	0	7	5	0	0	0	12	12	0	427	79	42	1	1	1	551	608.6	0	0	23	4	16	1	0	44	
10:00	0	0	2	0	0	0	0	2	2	0	0	2	0	0	0	0	2	2	0	90	24	11	0	0	0	125	139.3	0	0	1	2	0	0	0	3	
10:15	0	0	0	0	0	0	0	0	3	0	0	2	1	0	0	0	3	3	0	81	34	12	0	0	0	127	142.6	0	0	7	2	1	0	0	10	
10:30	0	0	1	1	1	0	0	3	4.3	0	0	1	0	0	0	0	1	1	0	88	20	11	0	0	0	119	133.3	0	0	1	1	4	0	0	6	
10:45	0	0	4	0	0	0	0	4	4	0	0	1	0	0	0	0	1	1	0	98	22	20	1	0	0	141	168	0	0	4	1	2	0	0	7	
H/TOT	0	0	7	1	1	0	0	9	10.3	0	0	6	1	0	0	0	7	7	0	357	100	54	1	0	0	512	583.2	0	0	13	6	7	0	0	26	
11:00	0	0	1	0	0	0	0	1	1	0	0	1	1	0	0	0	2	2	0	106	27	26	0	0	0	159	192.8	0	0	1	1	2	0	0	4	
11:15	0	0	1	1	0	0	0	2	2	0	0	2	0	0	0	0	2	2	0	79	23	9	0	0	1	112	124.7	0	0	3	1	3	0	0	7	
11:30	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	97	29	7	0	0	0	133	142.1	0	0	4	2	1	0	0	7	
11:45	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	3	0	120	30	10	1	0	1	162	177	0	0	4	0	4	0	0	8	
H/TOT	0	0	4	1	0	0	0	5	7	0	0	6	1	0	0	0	7	7	0	402	109	52	1	0	2	566	636.6	0	0	12	4	10	0	0	26	
12:00	0	0	2	0	1	0	0	3	4.3	0	0	3	0	0	0	0	3	3	0	111	26	18	1	0	0	156	180.4	0	0	6	0	2	0	0	8	
12:15	0	0	0	0	1	0	0	1	2.3	0	0	1	1	0	0	0	2	2	0	120	18	8	0	1	0	147	158.4	0	0	1	6	2	0	0	9	
12:30	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1	0	102	15	15	0	0	0	132	151.5	0	0	7	1	2	0	0	10	
12:45	0	0	3	0	0	0	0	3	3	0	0	2	0	1	0	0	3	4.3	0	118	17	11	1	0	1	148	164.3	0	0	8	1	2	0	0	11	
H/TOT	0	0	6	0	2	0	0	8	10.6	0	0	7	1	1	0	0	9	10.3	0	451	76	52	2	1	1	583	654.6	0	0	22	8	8	0	0	38	
13:00	0	0	2	1	0	0	0	3	3	0	0	4	0	0	0	0	4	4	0	133	22	15	0	0	0	170	189.5	0	0	4	1	2	0	0	7	
13:15	0	0	0	1	0	0	0	1	1	0	0	2	1	0	0	0	3	3	0	156	24	9	1	1	0	191	204.7	0	0	5	0	1	0	0	6	
13:30	0	0	7	0	1	0	0	8	9.3	0	0	3	0	0	0	0	3	3	0	126	33	18	0	0	0	177	200.4	0	0	7	0	1	0	0	8	
13:45	0	0	2	0	0	0	0	2	2	0	0	4	0	0	0	0	4	4	0	134	17	10	0	0	0	161	174	0	0	7	3	5	0	0	15	
H/TOT	0	0	11	2	1	0	0	14	15.3	0	0	13	1	0	0	0	14	14	0	549	96	52	1	1	0	699	768.6	0	0	23	4	9	0	0	36	
14:00	0	0	2	0	1	0	0	3	4.3	0	0	3	0	0	1	0	4	5	0	120	21	19	0	0	0	160	184.7	0	0	7	1	4	0	0	12	
14:15	0	0	0	1	0	0	0	1	1	0	0	3	1	3	0	0	7	10.9	0	150	18	15	1	1	0	185	206.5	0	0	2	3	3	0	0	8	
14:30	0	0	1	0	0	0	0	1	1	0	0	2	0	0	0	0	2	2	0	147	19	12	1	0	0	179	195.6	0	0	3	0	4	0	0	7	
14:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	145	20	13	2	2	0	182	202.9	0	0	5	0	3	0	0	8	
H/TOT	0	0	3	1	1	0	0	5	6.3	0	0	9	1	3	1	0	14	18.9	0	562	78	59														

IDASO

Survey Name : IDA-18-023 Greenpark
Site : 01
Date : 02/06/2018
Location : Greenpark Roundabout



	B=>A									B=>B										B=>C										B=>D									
TIME	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACK)	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACK)	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACK)	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BUSTRACK)	ELLAN	TOT	PCU			
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	4	7.6	0	0	0	0	0	0	0	0	0	0	
07:15	0	0	0	0	1	1	0	2	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	6.9	0	0	0	0	0	0	0	0	0	0	
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
07:45	0	0	0	0	2	0	0	2	4.6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	6.9	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	0	0	3	1	0	4	8.9	0	0	0	0	0	0	0	0	0	0	0	0	1	8	1	0	0	10	21.4	0	0	0	0	0	0	0	0	0	0	
08:00	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	0	0	0	5	8.9	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	10	16.5	0	0	0	0	0	0	0	0	0	0	
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	
09:15	0	0	1	1	1	0	0	3	4.3	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	3	4.3	0	0	0	0	0	0	0	0	0	0	0	
09:30	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	
09:45	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	5	1	2	0	0	0	8	10.6	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	3	1	1	0	0	5	6.3	0	0	0	0	0	0	0	0	0	0	0	7	4	3	0	0	0	14	17.9	0	0	0	0	0	0	0	0	0	0	
10:00	0	0	1	2	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	
10:15	0	0	2	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	4	5.3	0	0	0	0	0	0	0	0	0	0	
10:30	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	4	4	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	6	4	1	0	0	0	11	12.3	0	0	0	0	0	0	0	0	0	0	
11:00	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	0	5	6.3	0	0	0	0	0	0	0	0	0	0	
11:15	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	
11:30	0	0	3	1	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	
11:45	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	5.6	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	6	3	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	7	6	3	0	0	0	16	19.9	0	0	0	0	0	0	0	0	0	0	
12:00	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	0	
12:15	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	3	2	2	0	0	0	7	9.6	0	0	0	0	0	0	0	0	0	0	
12:30	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	4	1	3	0	0	0	8	11.9	0	0	0	0	0	0	0	0	0	0	
12:45	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	5	6.3	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	10	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	9	6	7	0	0	0	22	31.1	0	0	0	0	0	0	0	0	0	0	
13:00	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	10	3	2	0	0	0	15	17.6	0	0	0	0	0	0	0	0	0	0	
13:15	0	0	5	0	1	0	0	6	7.3	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	6	7.3	0	0	1	0	0	0	0	1	1	0	
13:30	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	5	4	1	0	0	0	10	11.3	0	0	0	0	0	0	0	0	0	0	
13:45	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	2	4	1	1	0	0	8	10.3	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	14	0	1	0	0	15	16.3	0	0	0	0	0	0	0	0	0	0	0	21	12	5	1	0	0	39	46.5	0	0	1	0	0	0	0	1	1	0	
14:00	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	
14:15	0	0	3	1	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	4	0	5	0	0	0	9	15.5	0	0	0	0	0	0	0	0	0	0	
14:30	0	0	0	0	1	0	0	1	2.3	0	0	0	0	0	0	0	0	0	0	0	2	0	3</																

IDASO

Survey Name : IDA-18-023 Greenpark
Site : 01
Date : 02/06/2018
Location : Greenpark Roundabout



	C>=>A									C>=>B										C>=>C										C>=>D											
TIME	PCL	MCL	CAR	LGV	HGV	SV(BU	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU	TRACT	ELLAN	TOT	PCU	
07:00	0	0	36	9	20	1	0	0	66	93	0	0	0	0	1	0	0	0	1	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	70	18	14	2	0	0	104	124.2	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	6	9.9
07:30	0	1	116	22	13	0	0	0	152	168.3	0	0	1	0	2	0	0	0	3	5.6	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	5	5	
07:45	0	2	171	28	11	0	0	0	212	225.1	0	0	4	1	2	0	0	0	7	9.6	0	0	0	0	0	0	0	0	0	0	0	0	12	1	0	0	0	0	13	13	
H/TOT	0	3	393	77	58	3	0	0	534	610.6	0	0	7	1	5	0	0	0	13	19.5	0	0	0	0	0	0	0	0	0	0	0	0	18	3	3	0	0	0	24	27.9	
08:00	0	0	187	36	9	1	1	0	234	247.7	0	0	4	1	2	0	0	0	7	9.6	0	0	1	0	1	0	0	0	2	3.3	0	0	8	4	0	0	0	0	12	12	
08:15	0	0	215	19	12	1	1	0	248	265.6	0	0	3	0	0	0	0	0	3	3	0	0	0	0	1	0	0	0	1	2.3	0	0	11	3	1	0	0	0	15	16.3	
08:30	0	0	223	20	13	0	0	0	256	272.9	0	0	3	0	1	0	0	0	4	5.3	0	0	1	0	1	0	0	0	2	3.3	0	0	14	1	0	0	0	0	15	15	
08:45	0	1	201	14	10	1	2	0	229	244.4	0	0	7	2	2	0	0	0	11	13.6	0	0	0	0	1	0	0	0	1	2.3	0	0	10	2	3	1	0	0	16	20.9	
H/TOT	0	1	826	89	44	3	4	0	967	1031	0	0	17	3	5	0	0	0	25	31.5	0	0	2	0	4	0	0	0	6	11.2	0	0	43	10	4	1	0	0	58	64.2	
09:00	0	0	144	10	12	0	0	1	167	183.6	0	0	1	0	1	0	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	4	5.3	
09:15	0	0	194	38	8	1	0	1	242	254.4	0	0	5	1	0	0	0	0	6	6	0	0	0	1	0	0	0	0	1	1	0	0	4	2	1	0	0	0	7	8.3	
09:30	0	0	139	26	15	0	1	1	182	203.5	0	0	4	0	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1	0	0	5	2	2	0	0	0	9	11.6	
09:45	0	0	139	24	10	1	0	0	174	188	0	0	3	1	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	5	6.3	
H/TOT	0	0	616	98	45	2	1	3	765	829.5	0	0	13	2	1	0	0	0	16	17.3	0	0	1	1	0	0	0	0	2	2	0	0	16	4	5	0	0	0	25	31.5	
10:00	0	0	117	28	15	2	0	0	162	183.5	0	0	2	1	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	6	7.3	
10:15	0	0	101	34	12	0	0	0	147	162.6	0	0	2	1	1	0	0	0	4	5.3	0	0	1	0	0	0	0	0	1	1	0	0	4	0	2	0	0	0	6	8.6	
10:30	0	0	103	23	9	0	0	0	135	146.7	0	0	1	1	0	0	0	0	2	2	0	0	0	2	0	0	0	0	2	2	0	0	7	1	0	0	0	0	8	8	
10:45	0	0	114	23	14	1	0	0	152	171.2	0	0	5	2	2	0	0	0	9	11.6	0	0	1	0	1	0	0	0	2	3.3	0	0	6	1	1	0	0	0	8	9.3	
H/TOT	0	0	435	108	50	3	0	0	596	664	0	0	10	5	3	0	0	0	18	21.9	0	0	2	2	1	0	0	0	5	6.3	0	0	22	2	4	0	0	0	28	33.2	
11:00	0	0	97	15	16	0	0	1	129	150.8	0	0	1	2	2	0	0	0	5	7.6	0	0	0	1	0	0	0	0	1	1	0	0	3	0	0	0	0	0	3	3	
11:15	0	0	99	27	9	0	0	0	135	146.7	0	0	4	2	1	0	0	0	7	8.3	0	0	2	0	0	0	0	0	2	2	0	0	1	2	1	1	0	0	5	7.3	
11:30	0	0	109	16	12	1	0	0	138	154.6	0	0	2	1	1	0	0	0	4	5.3	0	0	2	0	0	0	0	0	2	2	0	0	3	0	2	0	0	0	5	7.6	
11:45	0	0	84	25	10	3	0	0	122	138	0	0	2	3	1	0	0	0	6	7.3	0	0	0	1	0	0	0	0	1	1	0	0	4	0	0	0	0	0	4	4	
H/TOT	0	0	389	83	47	4	0	1	524	590.1	0	0	9	8	5	0	0	0	22	28.5	0	0	4	2	0	0	0	0	6	6	0	0	11	2	3	1	0	0	17	21.9	
12:00	0	0	91	30	12	1	0	1	135	152.6	0	0	2	0	2	0	0	0	4	6.6	0	0	2	0	0	0	0	0	2	2	0	0	0	2	2	0	0	0	4	6.6	
12:15	0	0	97	18	15	0	0	0	130	149.5	0	0	1	3	4	0	0	0	8	13.2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	4	7.9	
12:30	0	0	103	29	13	2	0	0	147	165.9	0	0	1	1	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6	7.3	
12:45	0	0	96	25	12	1	0	0	134	150.6	0	0	5	4	2	0	0	0	11	13.6	0	0	1	1	0	0	0	0	2	2	0	0	2	0	1	0	0	0	3	4.3	
H/TOT	0	0	387	102	52	4	0	1	546	618.6	0	0	9	8	8	0	0	0	25	35.4	0	0	3	1	0	0	0	0	4	4	0	0	2	8	7	0	0	0	17	26.1	
13:00	0	0	120	16	9	1	0	0	146	158.7	0	0	1	3	1	0	0	0	5	6.3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	1	0	0	9	15.2	
13:15	0	0	109	19	11	1	1	0	141	157.3	0	0	3	3	1	0	0	0	7	8.3	0	0	1	1	0	0	0	0	2	2	0	0	3	1	1	0	0	0	5	6.3	
13:30	0	0	118	20	16	0	0	0	154	174.8	0	0	5	0	3	1	0	0	9	13.9	0	0	0	1	1	0	0	0	2	3.3	0	0	5	1	1	0	0	0	7	8.3	
13:45	0	0	119	18	17	2	0	0	156	180.1	0	0	4	1	1	0	0	0	6	7.3	0	0	3	0	0	0	0	0	3	3	0	0	9	3	1	0	0	0	13	14.3	
H/TOT	0																																								

Survey Name : IDA-18-023 Greenpark
Site : 01
Date : 02/06/2018
Location : Greenpark Roundabout

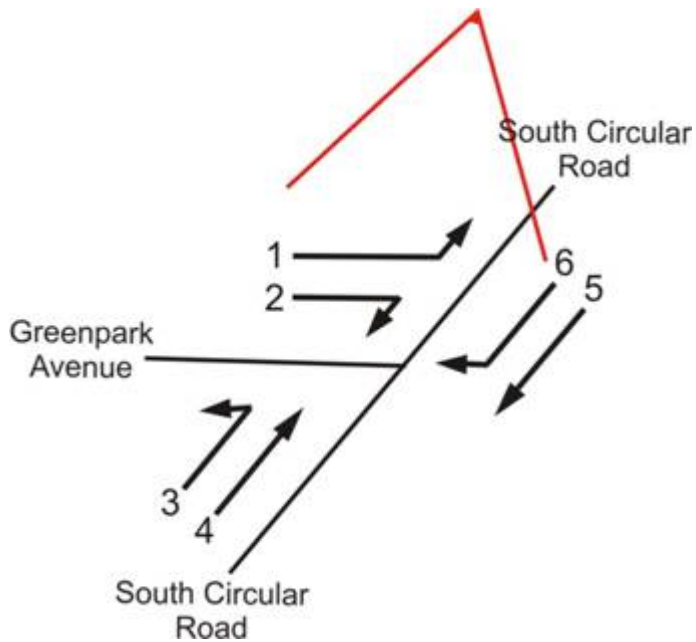


D=>A										D=>B										D=>C										D=>D												
TIME	PCL	MCL	CAR	LGV	HGV	SV(BU)	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU)	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU)	TRACT	ELLAN	TOT	PCU	PCL	MCL	CAR	LGV	HGV	SV(BU)	TRACT	ELLAN	TOT	PCU		
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	4.6	0	0	0	0	0	0	0	0	0	0	0	
07:15	0	0	1	0	1	0	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2.3	0	0	0	0	0	0	0	0	0	0	0		
07:45	0	0	0	0	1	0	0	0	1	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0		
H/TOT	0	0	1	0	2	0	0	0	3	5.6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5	8.9	0	0	0	0	0	0	0	0	0	0	0	
08:00	0	0	2	0	1	0	0	0	3	4.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0		
08:15	0	0	1	2	4	0	0	0	7	12.2	0	0	0	0	0	0	0	0	0	0	0	0	4	1	2	0	0	7	9.6	0	0	0	0	0	0	0	0	0	0	0	0	
08:30	0	0	1	0	1	0	0	0	2	3.3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	4	0	0	7	12.2	0	0	0	0	0	0	0	0	0	0	0	0	
08:45	0	0	1	2	5	0	0	0	8	14.5	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	5	4	11	0	0	0	20	34.3	0	0	0	0	0	0	0	0	0	0	0	0	10	3	8	0	0	21	31.4	0	0	0	0	0	0	0	0	0	0	0	0	
09:00	0	0	4	1	4	0	0	0	9	14.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6.9	0	0	0	0	0	0	0	0	0	0	0	0	
09:15	0	0	3	2	1	0	0	0	6	7.3	0	0	0	0	0	0	0	0	0	0	0	5	1	2	0	0	0	8	10.6	0	0	0	0	0	0	0	0	0	0	0	0	
09:30	0	0	3	2	6	1	0	0	12	20.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4.6	0	0	0	0	0	0	0	0	0	0	0	0	
09:45	0	0	5	0	7	0	0	0	12	21.1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	15	5	18	1	0	0	39	63.4	0	0	0	0	0	0	0	0	0	0	0	0	6	2	7	0	0	15	24.1	0	0	0	0	0	0	0	0	0	0	0	0	
10:00	0	0	5	3	4	0	0	0	12	17.2	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	0	5	7.6	0	0	0	0	0	0	0	0	0	0	0	0	
10:15	0	0	3	1	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	4	5.3	0	0	0	0	0	0	0	0	0	0	0	0	
10:30	0	0	3	1	3	0	0	0	7	10.9	0	0	0	0	0	0	0	0	0	0	0	0	6	1	1	0	0	8	9.3	0	0	0	0	0	0	0	0	0	0	0	0	
10:45	0	0	5	2	4	0	0	0	11	16.2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	16	7	11	0	0	0	34	48.3	0	0	0	0	0	0	0	0	0	0	0	0	15	4	4	0	0	23	28.2	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	6	1	2	0	0	0	9	11.6	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	6	9.9	0	0	0	0	0	0	0	0	0	0	0	0	
11:15	0	0	1	1	3	0	0	0	5	8.9	0	0	0	0	0	0	0	0	0	0	0	0	3	1	2	1	0	7	10.6	0	0	0	0	0	0	0	0	0	0	0	0	
11:30	0	0	5	0	2	0	0	0	7	9.6	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	
11:45	0	0	7	2	2	0	0	0	11	13.6	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	19	4	9	0	0	0	32	43.7	0	0	0	0	0	0	0	0	0	0	0	0	12	4	5	1	0	22	29.5	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	2	2	2	0	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4	6.6	0	0	0	0	0	0	0	0	0	0	0	0	
12:15	0	0	4	1	3	0	0	0	8	11.9	0	0	0	0	0	0	0	0	0	0	0	0	4	1	3	0	0	8	11.9	0	0	0	0	0	0	0	0	0	0	0	0	
12:30	0	0	4	3	5	0	0	0	12	18.5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	4.3	0	0	0	0	0	0	0	0	0	0	0	0	
12:45	0	0	7	2	1	0	0	0	10	11.3	0	0	0	0	0	0	0	0	0	0	0	0	6	1	1	0	0	8	9.3	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	17	8	11	0	0	0	36	50.3	0	0	0	0	0	0	0	0	0	0	0	0	12	4	7	0	0	23	32.1	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	21	1	2	0	0	0	24	26.6	0	0	0	0	0	0	0	0	0	0	0	0	11	1	1	0	0	14	16.3	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	4	0	2	0	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	4	3	4	0	0	11	16.2	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	2	1	1	0	0	1	5	7.3	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	
13:45	0	0	3	1	2	0	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	4	2	3	0	0	9	12.9	0	0	0	1	0	0	0	0	0	1	1	1	
H/TOT	0	0	30	3	7	0	0	1	41	51.1	0	0	0	0	0	0	0	0	0	0	0	0	21	7	8	1	0	37	48.4	0	0	0	1	0	0	0	0	1	1	1	1	
14:00	0	0	1	2	4	0	0	0	7	12.2	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	5	6.3	0	0	0	0	0	0	0	0	0	0	0	0	
14:15	0	0	2	0	2	0	0	0	4	6.6	0	0	0	0	0	0	0	0	0	0	0	0	5	2	1	0	0	8	9.3	0	0	0	0	0	0	0	0	0	0	0	0	
14:30	0	0	2	2	4	0	0	0	8	13.2	0	0	0	0	0	0	0	0	0	0	0	0	4	1	3	0	0	8	11.9	0	0	0	0	0	0	0	0	0	0	0	0	
14:45	0	0	3	2	5	0	0	0	10	16.5	0	0	0	0	0	0	0	0	0	0	0	0	3	1	2	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	0	0	8	6	15	0	0	0	29	48.5	0	0	0	0	0	0	0	0	0	0	0	0	15	5	7	0	0	27	36.1	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	1	2	3	0	0	0	6	9.9	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	6	8.6	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	2	0	3	0	0	0	5	8.9	0	0	0	0	0	0	0	0	0	0	0	0	4	4	2	0	0	10	12.6	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	4	1	6	0	0	0	11	18.8	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	
15:45	0	0	8	1	3	0	0	0	12	15.9	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	4	5.3	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	15	4	15	0	0	0	34	53.5	0	0	0	0	0	0	0	0	0	0	0	0	11	9	5	0	0	25	31.5	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	6	1	1	0	1	0	9	11.3	0	0	0	0																												

Site Location



Movement Numbering



ABACUS TRANSPORTATION SURVEYS

SEPTEMBER 2017
ATH/17/163

SITE:	01	DATE:	26th September 2017	SITE:	01	DATE:	26th September 2017
LOCATION:	Greenpark Avenue/South Circular Road	DAY:	Tuesday	LOCATION:	Greenpark Avenue/South Circular Road	DAY:	Tuesday

[illegible]

PCU's Through Junction
18
37
46
84
185
185
202
135
100
623
96
67
55
53
270
57
46
56
54
213
47
48
47
55
197
47
60
76
71
254

ABACUS TRANSPORTATION SURVEYS

SEPTEMBER 2017
ATH/17/163

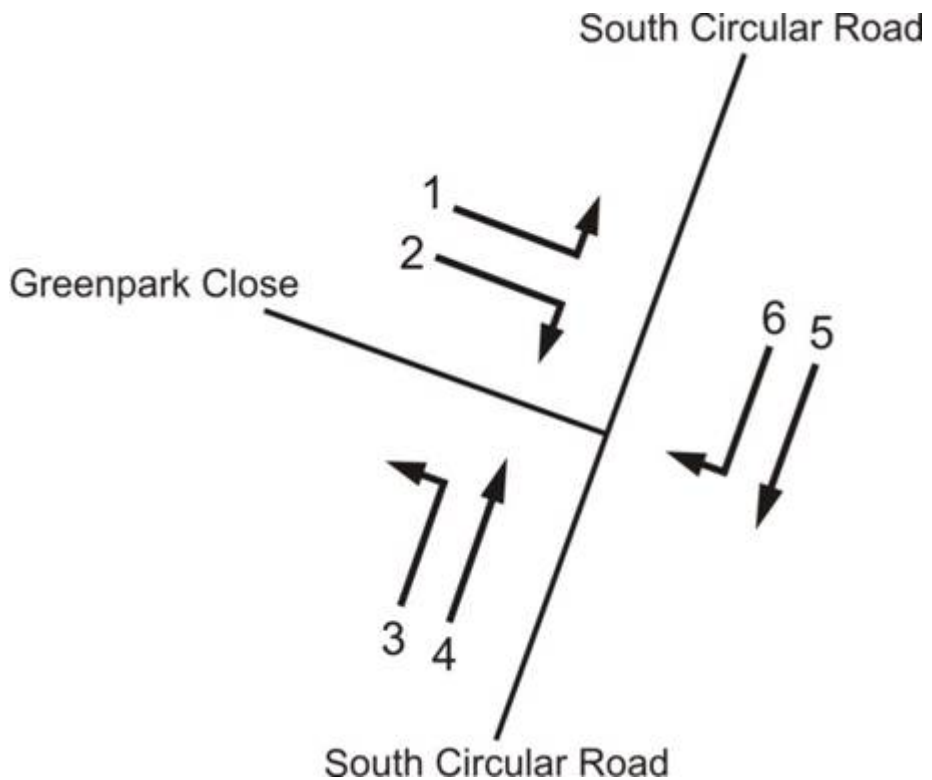
LOCATION:	Greenpark Avenue/South Circular Road	DAY:	Tuesday	LOCATION:	Greenpark Avenue/South Circular Road	DAY:	Tuesday
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MOVEMENT 1										MOVEMENT 2										MOVEMENT 3										MOVEMENT 4										MOVEMENT 5										MOVEMENT 6										PCU's Through Junction
TIME	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	PED	PCL	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU					
13:00	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:00	4	2	44	4	3	0	0	51	53	6	1	16	2	0	0	0	18	18	0	0	3	0	0	0	0	3	3			77			
13:15	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:15	4	1	42	4	0	0	0	46	46	0	0	17	0	0	0	0	17	17	0	0	1	0	0	0	0	1	1			65			
13:30	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	13:30	2	2	49	4	1	0	0	54	55	2	0	16	0	0	0	0	16	16	0	0	1	0	0	0	0	1	1			74			
13:45	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	13:45	6	1	42	2	1	0	0	45	46	7	3	30	2	1	0	1	34	36	0	0	0	0	0	0	1	1	2			89		
H/TOT	1	0	9	0	0	0	0	9	9	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	H/TOT	16	6	177	14	5	0	0	196	200	15	4	79	4	1	0	1	85	87	0	0	5	0	0	0	1	6	7			305		
14:00	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:00	4	2	55	6	0	0	0	61	61	14	0	8	2	0	0	0	10	10	2	0	0	0	0	0	0	0	0			73			
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	14:15	5	2	56	5	1	0	1	63	65	7	4	43	2	0	0	0	45	46	3	0	1	0	0	0	0	1	1			113		
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:30	5	1	46	2	1	0	1	50	52	4	0	12	1	0	0	0	13	13	0	0	1	0	0	0	0	1	1			66			
14:45	1	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	14:45	4	1	40	4	0	0	3	47	50	10	0	33	2	0	0	0	35	35	0	0	0	0	0	0	1	1	2			90		
H/TOT	1	0	1	1	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	H/TOT	18	6	197	17	2	0	5	221	228	35	4	96	7	0	0	0	103	104	5	0	2	0	0	0	1	3	4			342		
15:00	1	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	15:00	4	0	39	1	1	0	0	41	42	9	0	24	1	0	0	1	26	27	1	0	1	0	0	0	0	1	1			73		
15:15	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	15:15	2	0	55	4	1	0	0	60	61	9	0	19	1	1	0	0	21	22	0	0	1	0	0	0	0	1	1			85		
15:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:30	3	1	60	5	0	0	0	65	65	10	1	22	0	0	0	0	22	22	1	0	1	1	0	0	0	0	2	2			89		
15:45	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	15:45	6	1	53	4	0	0	0	57	57	15	0	16	1	0	0	0	17	17	0	0	0	0	0	0	0	0	0			76		
H/TOT	3	0	3	1	0	0	0	4	4	0	0	2	0	0	0	0	0	2	2	2	0	1	0	0	0	1	1	H/TOT	15	2	207	14	2	0	0	223	224	43	1	81	3	1	0	1	86	88	2	0	3	1	0	0	0	4	4			323		
16:00	0	0	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	16:00	7	0	38	7	0	0	0	45	45	19	0	18	1	2	0	0	21	22	0	0	1	0	0	0	0	1	1			70	
16:15	1	0	3	0	0	0	0	3	3	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	1	1	16:15	7	3	49	9	1	0	0	59	60	7	0	24	0	0	0	0	24	24	3	0	3	0	0	0	0	3	3			92		
16:30	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	16:30	3	2	69	5	0	0	1	75	76	3	1	18	0	0	0	0	18	18	0	0	2	0	0	0	0	2	2			100	
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	16:45	4	1	58	4	0	0	0	62	62	7	2	19	0	0	0	0	19	19	0	0	2	0	0	0	0	2	2			85		
H/TOT	1	0	6	0	0	0	0	6	6	2	0	2	0	0	0	0	0	2	2	4	0	3	0	0	0	0	3	3	H/TOT	21	6	214	25	1	0	1	241	244	36	3	79	1	2	0	0	82	84	3	0	8	0	0	0	0	8	8			346	
17:00	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	17:00	16	2	65	0	0	0	0	65	65	15	1	34	1	0	0	0	35	35	0	0	1	0	0	0	0	1	1			106		
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	17:15	4	7	60	4	0	0	0	64	65	7	3	30	2	0	0	0	32	33	2	0	1	0	0	0	0	1	1			100		
17:30	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:30	7	4	59	4	0	0	0	63	64	2	0	31	1	0	0	0	32	32	0	0	1	0	0	0	0	1	1			99		
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	17:45	6	4	57	6	1	0	0	64	65	11	1	42	2	0	0	0	44	44	0	0	2	0	0	0	0	2	2			113		
H/TOT	0	0	4	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1	0	0	3	0	0	0	0	3	3	H/TOT	33	17	241	14	1	0	0	256	260	35	5	137	6	0	0	0	143	144	2	0	5	0	0	0	0	5	5			417	
18:00	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:00	5	3	52	5	0	0	0	57	58	17	1	33	2	0	0	0	35	35	1	0	2	0	0	0	0	2	2			98			
18:15	1	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	1	1	18:15	3	4	60	3	0	0	0	63	64	7	0	25	0	0	0	0	25	25	0	0	1	0	0	0	0	1	1			93		
18:30	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	18:30	2	3	41	4	0	0	0	45	46	4	3	24	0	0	0	0	24	25	1	0	1	0	0	0	0	1	1			72		
18:45	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	18:45	15	2	41	3	1	0	0	45	46	2	2	21	0	0	0	0	21	21	2	0	4	0	0	0	0	4	4			73		
H/TOT	5	1	4	0	0	0	0	4	4	0	0	3	0	0	0	0	0	3	3	0	0	2	0	0	0	0	2	2	H/TOT	25	12	194	15	1	0	0	210	213	30	6	103	2	0	0	0	105	106	4	0	8	0	0	0	0	8	8			336	
P/TOT	21	2	56	4	0	0	1	61	62	5	1	13	0	0	0	0	0	13	13	9	0	15	1	0	0	0	16	16	P/TOT	261	93	2423	188	23	0	10	2644	2684	287	46	903	48	8	1	2	962	979	29	0	52	2	0	0	0	2	56	58			3812

Site Location



Movement Numbers & Directions



ABACUS TRANSPORTATION SURVEYS**ABACUS TRANSPORTATION SURVEYS****GREENPARK CLOSE TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION TURNING COUNT****FEBRUARY 2015 GREENPARK CLOSE TRAFFIC COUNT
ATH/15/015 MANUAL CLASSIFIED JUNCTION TURNING COUNT****FEBRUARY 2015
ATH/15/015**

SITE: 01

DATE: 3rd February 2015 SITE: 01

DATE: 3rd February 2015

LOCATION: South Circular Road/Greenpark Close

DAY: Tuesday LOCATION: South Circular Road/Greenpark Close

DAY: Tuesday

MOVEMENT 1						MOVEMENT 2						MOVEMENT 3						MOVEMENT 4						MOVEMENT 5						MOVEMENT 6															
TIME	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	TIME	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU		
07:00	1	0	0	0	0	1	1	8	0	0	0	0	8	8	0	0	0	0	0	0	0	0	07:00	1	1	0	0	0	2	2	2	1	0	0	0	3	3	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	7	2	0	0	0	9	9	0	0	0	0	0	0	0	0	07:15	8	2	0	0	0	10	10	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0
07:30	1	0	0	0	0	1	1	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	07:30	13	0	3	0	0	16	18	10	1	0	0	0	11	11	0	0	0	0	0	0	0	0
07:45	1	2	1	0	0	4	5	9	1	0	0	0	10	10	1	2	0	0	0	3	3	07:45	29	1	0	0	0	30	30	12	2	0	0	0	14	14	0	1	0	0	0	1	1		
H/TOT	3	2	1	0	0	6	7	27	3	0	0	0	30	30	1	2	0	0	0	3	3	H/TOT	51	4	3	0	0	58	60	27	4	0	0	0	31	31	0	1	0	0	0	1	1		
08:00	10	0	0	0	0	10	10	5	0	0	0	0	5	5	2	0	0	0	0	2	2	08:00	102	5	2	0	0	109	110	7	0	0	0	0	7	7	0	0	0	0	0	0	0		
08:15	18	0	0	0	0	18	18	16	1	0	0	0	17	17	3	0	0	0	0	3	3	08:15	108	4	0	0	0	112	112	15	0	0	0	0	15	15	0	0	0	0	0	0	0		
08:30	20	1	0	0	0	21	21	11	0	0	0	1	12	13	0	0	0	0	0	0	0	08:30	105	7	0	0	0	112	112	10	1	1	0	0	12	13	2	1	0	0	1	4	5		
08:45	17	0	0	0	0	17	17	6	0	0	0	0	6	6	4	0	0	0	0	4	4	08:45	84	5	1	0	1	91	93	18	2	0	0	0	20	20	0	0	0	0	0	0	0		
H/TOT	65	1	0	0	0	66	66	38	1	0	0	1	40	41	9	0	0	0	0	9	9	H/TOT	399	21	3	0	1	424	427	50	3	1	0	0	54	55	2	1	0	0	1	4	5		
09:00	4	0	0	0	0	4	4	3	0	0	0	0	3	3	2	0	0	0	0	2	2	09:00	59	2	0	0	2	63	65	22	1	0	0	0	23	23	2	0	0	0	0	2	2		
09:15	3	0	0	0	0	3	3	5	0	0	0	0	5	5	1	0	0	0	0	1	1	09:15	42	4	2	0	3	51	55	14	3	0	0	0	17	17	2	0	0	0	0	2	2		
09:30	0	0	0	0	0	0	0	4	0	1	0	0	5	6	0	0	0	0	0	0	0	09:30	38	6	2	0	0	46	47	11	0	0	0	0	11	11	2	0	0	0	0	2	2		
09:45	2	0	0	0	0	2	2	3	0	0	0	0	3	3	1	0	0	0	0	1	1	09:45	52	5	0	0	0	57	57	8	1	0	0	0	9	9	1	0	0	0	0	1	1		
H/TOT	9	0	0	0	0	9	9	15	0	1	0	0	16	17	4	0	0	0	0	4	4	H/TOT	191	17	4	0	5	217	224	55	5	0	0	0	60	60	7	0	0	0	0	7	7		
10:00	3	0	0	0	0	3	3	3	0	0	0	0	3	3	4	1	0	0	0	5	5	10:00	34	4	0	0	0	38	38	12	0	0	0	0	12	12	2	1	0	0	0	3	3		
10:15	3	0	0	0	0	3	3	5	1	0	0	0	6	6	2	0	0	0	0	2	2	10:15	22	4	1	0	0	27	28	12	0	0	0	0	12	12	1	0	0	0	0	1	1		
10:30	1	0	0	0	0	1	1	2	1	0	0	0	3	3	1	0	0	0	0	1	1	10:30	22	7	1	0	0	30	31	6	2	0	0	0	8	8	3	0	0	0	0	3	3		
10:45	3	0	0	0	0	3	3	3	0	0	0	0	3	3	0	0	0	0	0	0	0	10:45	30	6	0	0	0	36	36	7	0	0	0	0	7	7	1	0	0	0	0	1	1		
H/TOT	10	0	0	0	0	10	10	13	2	0	0	0	15	15	7	1	0	0	0	8	8	H/TOT	108	21	2	0	0	131	132	37	2	0	0	0	39	39	7	1	0	0	0	8	8		
11:00	1	0	0	0	0	1	1	2	1	0	0	0	3	3	2	0	0	0	0	2	2	11:00	36	2	0	0	0	38	38	7	1	0	0	0	8	8	0	0	0	0	0	0	0		
11:15	5	0	0	0	0	5	5	2	0	0	0	0	2	2	1	0	0	0	0	1	1	11:15	33	5	1	0	0	39	40	10	1	0	0	0	11	11	1	0	0	0	0	1	1		
11:30	4	0	0	0	0	4	4	1	0	0	0	0	1	1	2	0	0	0	0	2	2	11:30	34	6	0	0	0	40	40	10	2	0	0	0	12	12	0	2	0	0	0	2	2		
11:45	4	1	0	0	0	5	5	2	1	0	0	0	3	3	4	0	0	0	0	4	4	11:45	38	5	0	0	1	44	45	12	1	0	0	0	13	13	2	0	0	0	0	2	2		
H/TOT	14	1	0	0	0	15	15	7	2	0	0	0	9	9	9	0	0	0	0	9	9	H/TOT	141	18	1	0	1	161	163	39	5	0	0	0	44	44	3	2	0	0	0	5	5		
12:00	2	1	0	0	0	3	3	3	0	0	0	0	3	3	4	1	0	0	0	5	5	12:00	33	2	3	0	0	38	40	11	2	1	0	0	14	15	4	0	0	0	0	4	4		
12:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	0	0	0	0	2	2	12:15	33	7	0	0	0	40	40	8	0	0	0	0	8	8	2	0	0	0	0	2	2		
12:30	1	1	0	0	0	2	2	3	0	0	0	0	3	3	2	0	0	0	0	2	2	12:30	38	2	0	0	0	40	40	6	4	0	0	0	10	10	2	0	0	0	0	2	2		
12:45	5	0	0	0	0	5	5	3	0	0	0	0	3	3	1	1	0	0	0	2	2	12:45	58	2	0	0	0	60	60	15	0	0	0	0	15	15	3	0	0	0	0	3	3		
H/TOT	8	2	0	0	0	10	10	11	0	0	0	0	11	11	9	2	0	0	0	11	11	H/TOT	162	13	3	0	0	178	180	40	6	1	0	0	47	48	11	0	0	0	0	11	11		

ABACUS TRANSPORTATION SURVEYS**ABACUS TRANSPORTATION SURVEYS****GREENPARK CLOSE TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION TURNING COUNT****FEBRUARY 2015 GREENPARK CLOSE TRAFFIC COUNT
ATH/15/015 MANUAL CLASSIFIED JUNCTION TURNING COUNT****FEBRUARY 2015
ATH/15/015**

SITE: 01

DATE: 3rd February 2015 SITE: 01

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LOCATION: South Circular Road/Greenpark Close

DAY: Tuesday LOCATION: South Circular Road/Greenpark Close

DAY: Tuesday

MOVEMENT 1					MOVEMENT 2					MOVEMENT 3					MOVEMENT 4					MOVEMENT 5					MOVEMENT 6																		
TIME	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	CAR	LGV	OGV	10GV2	BUS	TOT	PCU	
13:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	6	0	0	0	0	6	6	13:00	48	4	0	0	0	52	52	16	0	0	0	0	16	16	5	1	0	0	0	6	6
13:15	3	0	0	0	0	3	3	3	0	0	0	0	3	3	4	0	0	0	0	4	4	13:15	48	4	0	0	0	52	52	9	0	0	0	0	9	9	1	1	0	0	0	2	2
13:30	4	1	0	0	0	5	5	3	1	0	0	0	4	4	7	0	0	0	0	7	7	13:30	59	1	1	0	0	61	62	7	1	0	0	0	8	8	2	0	0	0	0	2	2
13:45	1	0	0	0	1	2	3	10	1	0	0	0	11	11	2	0	0	0	1	3	4	13:45	51	2	0	0	2	55	57	20	3	0	0	1	24	25	2	0	0	0	0	2	2
H/TOT	10	1	0	0	1	12	13	16	2	0	0	0	18	18	19	0	0	0	1	20	21	H/TOT	206	11	1	0	2	220	223	52	4	0	0	1	57	58	10	2	0	0	0	12	12
14:00	0	0	0	0	0	0	0	3	0	0	0	0	3	3	5	0	0	0	0	5	5	14:00	45	5	1	0	2	53	56	13	1	0	0	1	15	16	1	0	0	0	0	1	1
14:15	4	0	0	0	0	4	4	1	1	0	0	0	2	2	4	0	0	0	0	4	4	14:15	44	4	0	0	1	49	50	10	1	0	0	0	11	11	2	1	0	0	0	3	3
14:30	2	0	0	0	0	2	2	0	0	0	0	0	0	0	4	0	0	0	0	4	4	14:30	44	3	0	0	4	51	55	11	1	0	0	0	12	12	3	0	0	0	0	3	3
14:45	4	0	0	0	0	4	4	2	0	0	0	0	2	2	6	0	0	0	0	6	6	14:45	45	0	1	0	2	48	51	12	2	0	0	0	14	14	5	0	0	0	0	5	5
H/TOT	10	0	0	0	0	10	10	6	1	0	0	0	7	7	19	0	0	0	0	19	19	H/TOT	178	12	2	0	9	201	211	46	5	0	0	1	52	53	11	1	0	0	0	12	12
15:00	3	0	0	0	0	3	3	2	0	0	0	0	2	2	3	0	0	0	0	3	3	15:00	59	5	2	0	0	66	67	22	0	0	0	1	23	24	5	3	0	0	0	8	8
15:15	0	0	0	0	0	0	0	4	1	0	0	0	5	5	2	0	0	0	0	2	2	15:15	44	1	0	0	1	46	47	10	0	0	0	0	10	10	0	1	0	0	0	1	1
15:30	0	0	0	0	0	0	0	2	1	0	0	0	3	3	2	0	0	0	0	2	2	15:30	75	5	1	0	0	81	82	20	0	0	0	0	20	20	1	0	0	0	0	1	1
15:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	2	1	0	0	0	3	3	15:45	50	3	0	0	0	53	53	20	1	0	0	0	21	21	2	1	0	0	0	3	3
H/TOT	4	0	0	0	0	4	4	8	2	0	0	0	10	10	9	1	0	0	0	10	10	H/TOT	228	14	3	0	1	246	249	72	1	0	0	1	74	75	8	5	0	0	0	13	13
16:00	1	1	0	0	0	2	2	2	0	0	0	0	2	2	5	0	0	0	0	5	5	16:00	47	7	0	0	0	54	54	20	1	0	0	0	21	21	3	2	1	0	0	6	7
16:15	3	0	0	0	0	3	3	1	3	1	0	0	5	6	5	0	0	0	0	5	5	16:15	51	4	0	0	0	55	55	13	3	0	0	1	17	18	4	0	0	0	0	4	4
16:30	4	0	0	0	0	4	4	5	1	0	0	0	6	6	5	1	0	0	0	6	6	16:30	47	1	1	0	2	51	54	13	0	0	0	0	13	13	4	0	0	0	0	4	4
16:45	2	0	0	0	0	2	2	4	0	0	0	0	4	4	9	0	0	0	0	9	9	16:45	73	3	0	0	1	77	78	17	1	1	0	0	19	20	4	0	0	0	0	4	4
H/TOT	10	1	0	0	0	11	11	12	4	1	0	0	17	18	24	1	0	0	0	25	25	H/TOT	218	15	1	0	3	237	241	63	5	1	0	1	70	72	15	2	1	0	0	18	19
17:00	1	0	0	0	0	1	1	2	1	0	0	0	3	3	11	3	0	0	0	14	14	17:00	76	5	0	0	0	81	81	11	0	0	0	0	11	11	5	0	0	0	0	5	5
17:15	1	0	0	0	0	1	1	2	0	0	0	0	2	2	7	0	0	0	0	7	7	17:15	53	4	1	0	0	58	59	17	1	0	0	0	18	18	4	0	0	0	0	4	4
17:30	4	0	0	0	0	4	4	5	0	0	0	0	5	5	10	0	1	0	0	11	12	17:30	74	5	0	0	0	79	79	23	2	0	0	0	25	25	3	0	0	0	0	3	3
17:45	3	0	0	0	0	3	3	3	0	1	0	0	4	5	9	0	0	0	0	9	9	17:45	70	2	1	0	0	73	74	21	0	0	0	0	21	21	3	0	0	0	0	3	3
H/TOT	9	0	0	0	0	9	9	12	1	1	0	0	14	15	37	3	1	0	0	41	42	H/TOT	273	16	2	0	0	291	292	72	3	0	0	0	75	75	15	0	0	0	0	15	15
18:00	4	0	0	0	0	4	4	1	0	1	0	0	2	3	13	1	0	0	0	14	14	18:00	47	2	0	0	0	49	49	24	2	0	0	0	26	26	10	0	1	0	0	11	12
18:15	1	0	0	0	0	1	1	2	1	0	0	0	3	3	12	0	0	0	0	12	12	18:15	38	1	0	0	0	39	39	13	1	0	0	0	14	14	10	1	0	0	0	11	11
18:30	6	0	0	0	0	6	6	5	1	0	0	0	6	6	7	0	0	0	0	7	7	18:30	39	0	0	0	0	39	39	6	0	0	0	0	6	6	3	0	0	0	0	3	3
18:45	6	0	0	0	0	6	6	2	0	0	0	0	2	2	6	1	0	0	0	7	7	18:45	31	3	0	0	0	34	34	15	2	0	0	0	17	17	3	0	0	0	0	3	3
H/TOT	17	0	0	0	0	17	17	10	2	1	0	0	13	14	38	2	0	0	0	40	40	H/TOT	155	6	0	0	0	161	161	58	5	0	0	0	63	63	26	1	1	0	0	28	29
P/TOT	169	8	1	0	1	179	181	175	20	4	0	1	200	203	185	12	1	0	1	199	201	P/TOT	###	168	25	0	22	###	###	611	48	3	0	4	666	672	115	16	2	0	1	134	136

Appendix B TRICS Data

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30	1	10100	0.406	1	10100	0.030	1	10100	0.436
06:30 - 07:00	1	10100	0.703	1	10100	0.139	1	10100	0.842
07:00 - 07:30	54	5100	0.148	54	5100	0.014	54	5100	0.162
07:30 - 08:00	54	5100	0.399	54	5100	0.061	54	5100	0.460
08:00 - 08:30	54	5100	0.556	54	5100	0.061	54	5100	0.617
08:30 - 09:00	54	5100	0.647	54	5100	0.091	54	5100	0.738
09:00 - 09:30	54	5100	0.520	54	5100	0.094	54	5100	0.614
09:30 - 10:00	54	5100	0.297	54	5100	0.118	54	5100	0.415
10:00 - 10:30	54	5100	0.191	54	5100	0.118	54	5100	0.309
10:30 - 11:00	54	5100	0.151	54	5100	0.108	54	5100	0.259
11:00 - 11:30	54	5100	0.126	54	5100	0.118	54	5100	0.244
11:30 - 12:00	54	5100	0.124	54	5100	0.106	54	5100	0.230
12:00 - 12:30	54	5100	0.120	54	5100	0.149	54	5100	0.269
12:30 - 13:00	54	5100	0.150	54	5100	0.185	54	5100	0.335
13:00 - 13:30	54	5100	0.168	54	5100	0.168	54	5100	0.336
13:30 - 14:00	54	5100	0.168	54	5100	0.141	54	5100	0.309
14:00 - 14:30	54	5100	0.150	54	5100	0.119	54	5100	0.269
14:30 - 15:00	54	5100	0.111	54	5100	0.164	54	5100	0.275
15:00 - 15:30	54	5100	0.091	54	5100	0.178	54	5100	0.269
15:30 - 16:00	54	5100	0.082	54	5100	0.198	54	5100	0.280
16:00 - 16:30	54	5100	0.088	54	5100	0.385	54	5100	0.473
16:30 - 17:00	54	5100	0.080	54	5100	0.412	54	5100	0.492
17:00 - 17:30	54	5100	0.066	54	5100	0.628	54	5100	0.694
17:30 - 18:00	54	5100	0.051	54	5100	0.412	54	5100	0.463
18:00 - 18:30	54	5100	0.025	54	5100	0.296	54	5100	0.321
18:30 - 19:00	54	5100	0.015	54	5100	0.131	54	5100	0.146
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			5.633			4.624			10.257

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

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Parameter summary

Trip rate parameter range selected:	1500 - 12474 (units: sqm)
Survey date date range:	01/01/11 - 17/06/19
Number of weekdays (Monday-Friday):	54
Number of Saturdays:	1
Number of Sundays:	0
Surveys automatically removed from selection:	6
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 01 - RETAIL/I - SHOPPING CENTRE - LOCAL SHOPS
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	1	540	1.296	1	540	1.296	1	540	2.592
07:00 - 08:00	8	1138	2.747	8	1138	2.384	8	1138	5.131
08:00 - 09:00	8	1138	3.274	8	1138	2.944	8	1138	6.218
09:00 - 10:00	8	1138	3.966	8	1138	3.615	8	1138	7.581
10:00 - 11:00	8	1138	3.988	8	1138	3.735	8	1138	7.723
11:00 - 12:00	8	1138	4.417	8	1138	4.537	8	1138	8.954
12:00 - 13:00	8	1138	5.065	8	1138	4.834	8	1138	9.899
13:00 - 14:00	8	1138	4.131	8	1138	4.186	8	1138	8.317
14:00 - 15:00	8	1138	4.142	8	1138	4.230	8	1138	8.372
15:00 - 16:00	8	1138	3.823	8	1138	4.153	8	1138	7.976
16:00 - 17:00	8	1138	4.065	8	1138	3.637	8	1138	7.702
17:00 - 18:00	8	1138	4.252	8	1138	4.691	8	1138	8.943
18:00 - 19:00	8	1138	4.494	8	1138	4.867	8	1138	9.361
19:00 - 20:00	6	1413	4.082	6	1413	4.117	6	1413	8.199
20:00 - 21:00	6	1413	2.867	6	1413	3.114	6	1413	5.981
21:00 - 22:00	5	928	3.556	5	928	3.772	5	928	7.328
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			60.165			60.112			120.277

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	260 - 3837 (units: sqm)
Survey date range:	01/01/12 - 28/06/19
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	3	262	0.127	3	262	0.000	3	262	0.127
07:00 - 08:00	24	427	1.572	24	427	0.771	24	427	2.343
08:00 - 09:00	24	427	3.603	24	427	2.695	24	427	6.298
09:00 - 10:00	24	427	1.836	24	427	1.767	24	427	3.603
10:00 - 11:00	24	427	0.508	24	427	0.381	24	427	0.889
11:00 - 12:00	24	427	0.713	24	427	0.469	24	427	1.182
12:00 - 13:00	24	427	1.357	24	427	1.650	24	427	3.007
13:00 - 14:00	24	427	0.879	24	427	1.220	24	427	2.099
14:00 - 15:00	24	427	0.713	24	427	0.625	24	427	1.338
15:00 - 16:00	24	427	1.006	24	427	1.269	24	427	2.275
16:00 - 17:00	24	427	1.357	24	427	1.562	24	427	2.919
17:00 - 18:00	24	427	2.207	24	427	2.831	24	427	5.038
18:00 - 19:00	23	439	0.188	23	439	0.694	23	439	0.882
19:00 - 20:00	2	265	0.000	2	265	0.000	2	265	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			16.066			15.934			32.000

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

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Parameter summary

Trip rate parameter range selected: 129 - 1300 (units: sqm)
 Survey date range: 01/01/11 - 21/05/19
 Number of weekdays (Monday-Friday): 24
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 1
 Surveys manually removed from selection: 0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 05 - HEALTH/F - CARE HOME (ELDERLY RESIDENTIAL)

TOTAL VEHICLES

Calculation factor: 1 RESIDE

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate	No. Days	Ave. RESIDE	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	49	0.120	18	49	0.055	18	49	0.175
08:00 - 09:00	18	49	0.079	18	49	0.068	18	49	0.147
09:00 - 10:00	18	49	0.103	18	49	0.048	18	49	0.151
10:00 - 11:00	18	49	0.122	18	49	0.067	18	49	0.189
11:00 - 12:00	18	49	0.088	18	49	0.086	18	49	0.174
12:00 - 13:00	18	49	0.072	18	49	0.095	18	49	0.167
13:00 - 14:00	18	49	0.120	18	49	0.099	18	49	0.219
14:00 - 15:00	18	49	0.121	18	49	0.140	18	49	0.261
15:00 - 16:00	18	49	0.099	18	49	0.136	18	49	0.235
16:00 - 17:00	18	49	0.059	18	49	0.124	18	49	0.183
17:00 - 18:00	18	49	0.051	18	49	0.090	18	49	0.141
18:00 - 19:00	18	49	0.044	18	49	0.054	18	49	0.098
19:00 - 20:00	17	46	0.040	17	46	0.054	17	46	0.094
20:00 - 21:00	17	46	0.036	17	46	0.042	17	46	0.078
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.154			1.158			2.312

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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Parameter summary

Trip rate parameter range selected: 16 - 99 (units:)
 Survey date range: 01/01/13 - 05/11/19
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Appendix C Greenpark Roundabout Junction Analysis - SHD Only

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6586
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+44 (0)1344 379777 software@trl.co.uk www.helthwaite.co.uk

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Filename: 191325_Dock Road Roundabout SHD JT Sept 2119
Path: I:\DWGS\191\301-350\191325\OfficeDocs\Reports\2020 TTATraffic calcs Junctions 9 JT Mar 2021
Report generation date: 08/09/2021 11:32:07

- »2018, AM
- »2018, PM
- »2024 DN, AM
- »2024 DN, PM
- »2029 DN, AM
- »2029 DN, PM
- »2039 DN, AM
- »2039 DN, PM
- »2024 DS, AM
- »2029 DS, AM
- »2029 DS, PM
- »2039 DS, AM
- »2039 DS, PM

Summary of junction performance

AM				PM				
Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	
2018								
Arm 1	3.3	12.98	0.76	B	6.0	21.31	0.85	C
Arm 2	0.0	3.83	0.02	A	0.0	4.24	0.04	A
Arm 3	1.2	3.56	0.53	A	0.7	2.73	0.39	A
Arm 4	0.0	2.44	0.04	A	0.1	2.20	0.05	A
2024 DN								
Arm 1	4.6	16.78	0.81	C	10.2	34.48	0.92	D
Arm 2	0.0	3.98	0.02	A	0.1	4.45	0.05	A
Arm 3	1.4	3.89	0.57	A	0.8	2.87	0.42	A
Arm 4	0.1	2.55	0.05	A	0.1	2.27	0.06	A
2029 DN								
Arm 1	6.5	22.76	0.86	C	19.5	60.41	0.98	F
Arm 2	0.0	4.13	0.02	A	0.1	4.63	0.05	A
Arm 3	1.6	4.24	0.60	A	0.9	3.00	0.45	A
Arm 4	0.1	2.66	0.05	A	0.1	2.34	0.06	A
2039 DN								
Arm 1	7.6	26.34	0.88	D	26.0	76.16	1.00	F
Arm 2	0.0	4.19	0.02	A	0.1	4.69	0.05	A
Arm 3	1.7	4.40	0.62	A	0.9	3.06	0.46	A
Arm 4	0.1	2.70	0.05	A	0.1	2.37	0.07	A
2024 DS								
Arm 1	6.2	22.36	0.86	C	50.2	135.00	1.06	F
Arm 2	0.5	5.60	0.30	A	0.2	4.83	0.16	A
Arm 3	1.7	4.62	0.62	A	0.9	3.14	0.46	A
Arm 4	0.1	2.64	0.05	A	0.1	2.42	0.06	A
2029 DS								
Arm 1	9.5	33.16	0.91	D	82.7	213.25	1.12	F
Arm 2	0.5	5.80	0.32	A	0.2	4.88	0.16	A
Arm 3	2.0	5.12	0.65	A	1.0	3.30	0.49	A
Arm 4	0.1	2.98	0.06	A	0.1	2.50	0.07	A
2039 DS								
Arm 1	11.7	40.00	0.93	E	97.5	285.51	1.15	F
Arm 2	0.5	6.02	0.32	A	0.2	4.89	0.16	A
Arm 3	2.2	5.35	0.67	A	1.1	3.37	0.50	A
Arm 4	0.1	3.04	0.06	A	0.1	2.53	0.07	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

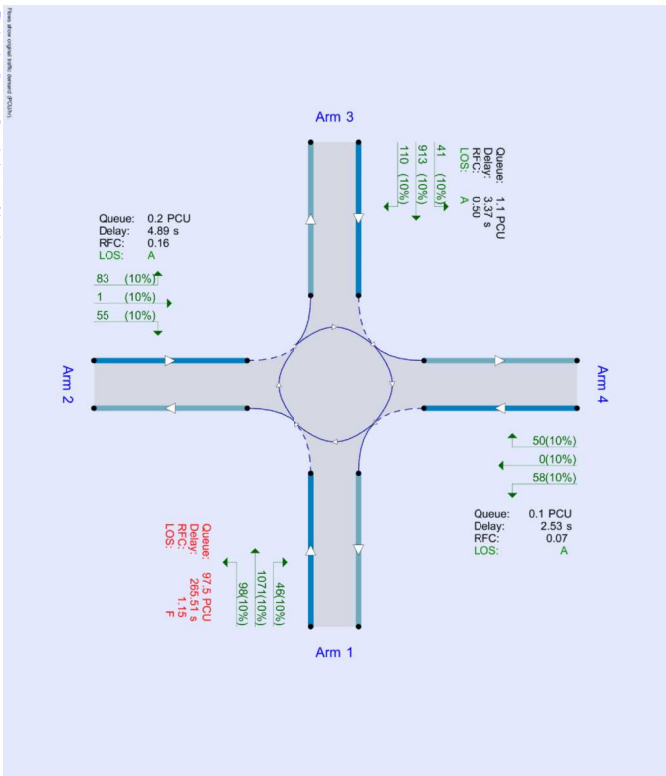
file:///I:/DWGS/191/301-350/191325/OfficeDocs/Reports/2020%20TT... 08/09/2021

File Description

Title	(unfilled)
Location	
Site number	
Date	14/02/2018
Version	
Status	(new file)
Identifier	
Client	
Job number	
Enumerator	MPNET\vinlin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	km/h	PCU	PCU	per/hour	s	min	per/min



The junction diagram reflects the best run of Junctions

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queuing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2018	AM	ONE HOUR	07:45	08:15	15	✓
D2	2018	PM	ONE HOUR	15:30	17:00	15	✓
D3	2024 DN	AM	ONE HOUR	07:45	08:15	15	✓
D4	2024 DN	PM	ONE HOUR	15:30	17:00	15	✓
D5	2029 DN	AM	ONE HOUR	07:45	08:15	15	✓
D6	2029 DN	PM	ONE HOUR	15:30	17:00	15	✓
D7	2039 DN	AM	ONE HOUR	07:45	08:15	15	✓
D8	2039 DN	PM	ONE HOUR	15:30	17:00	15	✓
D9	2024 DS	AM	ONE HOUR	07:45	08:15	15	✓
D10	2024 DS	PM	ONE HOUR	15:30	17:00	15	✓
D11	2029 DS	AM	ONE HOUR	07:45	08:15	15	✓

file:///I:/DWGS/191/301-350/191325/OfficeDocs/Reports/2020%20TT... 08/09/2021

D12	2029 DS	PM	ONE HOUR	15:30	17:00	15	✓
D13	2039 DS	AM	ONE HOUR	07:45	08:15	15	✓
D14	2039 DS	PM	ONE HOUR	15:30	17:00	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2018, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PII - Conflict (entry) angle (deg)	Exit only
1	6.90	8.70	11.0	36.7	53.2	17.7	
2	4.00	6.70	10.8	16.8	53.2	38.5	
3	6.60	8.80	15.6	33.3	53.2	38.9	
4	6.90	8.70	11.0	36.7	53.2	17.7	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Percentage intercept adjustment (%)
1	Percentage		50.00
2	None		
3	None		
4	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/m)
1	0.779	1304
2	0.563	1966
3	0.723	2423
4	0.779	2607

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile name	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2018	AM	ONE HOUR	07:45	08:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile Type	Use O-D data	Average Demand (PCU/m)	Scaling Factor (%)
1		ONE HOUR	✓	859	100.000
2		ONE HOUR	✓	18	100.000
3		ONE HOUR	✓	1127	100.000
4		ONE HOUR	✓	65	100.000

Origin-Destination Data

Demand (PCU/hr)				
	To			
From	1	2	3	4
	1	0	14	758 87
	2	1	0	17 0
	3	1031	32	0 64
4	34	0	31	0

Vehicle Mix

Heavy Vehicle Percentages									
		To							
From		1	2	3	4				
	1	10	10	10	10				
	2	10	10	10	10				
	3	10	10	10	10				
4	10	10	10	10					

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (CU)
1	0.75	12.88	3.3	B	758	1102
2	0.02	3.83	0.0	A	17	25
3	0.53	3.96	1.2	A	1034	1851
4	0.04	2.44	0.0	A	60	89

2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	unified	Standard Roundabout		1, 2, 3, 4	11.97	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2018	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use Oo data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	965	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	35	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	847	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	93	100.000

Origin-Destination Data

Demand (PCU/hr)									
		To							
From		1	2	3	4				
	1	0	4	922	40				
	2	9	0	26	1				
	3	786	26	0	35				
	4	50	0	43	0				

Vehicle Mix

Heavy Vehicle Percentages									
		To							
From		1	2	3	4				
	1	10	10	10	10				
	2	10	10	10	10				
	3	10	10	10	10				
	4	10	10	10	10				

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.65	21.31	6.0	C	886	1330
2	0.04	4.24	0.0	A	33	50
3	0.39	2.73	0.7	A	777	1166
4	0.05	2.20	0.1	A	85	128

2024 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	9.20	A

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 DN	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	820	100.000
2		ONE HOUR	✓	19	100.000
3		ONE HOUR	✓	1208	100.000
4		ONE HOUR	✓	69	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
From 1	0	15	812	93
From 2	1	0	18	0
From 3	1105	34	0	69
From 4	36	0	33	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
From 1	10	10	10	10
From 2	10	10	10	10
From 3	10	10	10	10
From 4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.61	16.78	4.6	C	844	1266
2	0.02	3.98	0.0	A	17	26
3	0.67	3.89	1.4	A	1108	1683
4	0.05	2.55	0.1	A	63	95

2024 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	18.58	C

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 DN	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1035	100.000
2		ONE HOUR	✓	39	100.000
3		ONE HOUR	✓	908	100.000
4		ONE HOUR	✓	100	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
From 1	0	4	988	43
From 2	10	0	28	1
From 3	842	28	0	38
From 4	54	0	46	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
From 1	10	10	10	10
From 2	10	10	10	10
From 3	10	10	10	10
From 4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.62	34.48	10.2	D	950	1425
2	0.05	4.45	0.1	A	36	54
3	0.42	2.87	0.8	A	853	1250
4	0.06	2.27	0.1	A	92	138

2029 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	11.88	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2029 DN	AM	ONE HOUR	07:45	09:15	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	976	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	20	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	1280	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	74	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	16	861	99
From 2	1	0	19	0
3	1171	36	0	73
4	39	0	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.66	22.76	6.5	C	886	1343
2	0.02	4.13	0.0	A	18	28
3	0.60	4.24	1.5	A	1175	1762
4	0.05	2.66	0.1	A	68	102

2029 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	31.55	D

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2029 DN	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	1097	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	41	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	962	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	106	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	5	1047	45
From 2	10	0	30	1
3	892	30	0	40
4	57	0	49	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.66	60.41	19.5	F	1007	1510
2	0.05	4.63	0.1	A	38	56
3	0.45	3.60	0.9	A	863	1324
4	0.06	2.34	0.1	A	97	146

2039 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	13.46	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2039 DN	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	998	100.000
2		ONE HOUR	✓	21	100.000
3		ONE HOUR	✓	1309	100.000
4		ONE HOUR	✓	75	100.000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	16	881	101
	2	1	0	20	0
	3	1198	37	0	74
	4	39	0	36	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
From		1	2	3	4
	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.89	26.34	7.6	D	916	1374
2	0.02	4.10	0.0	A	19	29
3	0.62	4.40	1.7	A	1201	1682
4	0.05	2.70	0.1	A	69	103

2039 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	39.44	E

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2039 DN	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1122	100.000
2		ONE HOUR	✓	41	100.000
3		ONE HOUR	✓	984	100.000
4		ONE HOUR	✓	108	100.000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	5	1071	46
	2	10	0	30	1
	3	913	30	0	41
	4	56	0	50	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.00	76.18	26.0	F	1030	1544
2	0.05	4.60	0.1	A	38	56
3	0.46	3.66	0.9	A	803	1344
4	0.07	2.37	0.1	A	99	149

2024 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	11.29	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2024 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	947	100.000
2		ONE HOUR	✓	281	100.000
3		ONE HOUR	✓	1245	100.000
4		ONE HOUR	✓	69	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	42	812	93
From 2	152	0	129	0
3	1105	71	0	69
4	36	0	33	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.96	22.36	6.2	C	869	1303
2	0.30	6.60	0.5	A	258	387
3	0.62	4.62	1.7	A	1142	1714
4	0.05	2.94	0.1	A	63	95

2024 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	66.45	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2024 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1129	100.000
2		ONE HOUR	✓	137	100.000
3		ONE HOUR	✓	988	100.000
4		ONE HOUR	✓	100	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	98	988	43
From 2	55	0	81	1
3	842	108	0	38
4	54	0	46	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.06	136.00	60.2	F	1036	1554
2	0.16	4.83	0.2	A	128	189
3	0.46	3.14	0.9	A	807	1360
4	0.06	2.42	0.1	A	92	136

2029 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	15.65	C

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2029 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1003	100.000
2		ONE HOUR	✓	283	100.000
3		ONE HOUR	✓	1317	100.000
4		ONE HOUR	✓	74	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	43	861	99
From 2	152	0	131	0
3	1171	73	0	73
4	39	0	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.91	33.16	9.5	D	920	1381
2	0.32	5.90	0.5	A	260	390
3	0.65	5.12	2.0	A	1209	1613
4	0.06	2.98	0.1	A	68	102

2029 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	104.30	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2029 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1190	100.000
2		ONE HOUR	✓	138	100.000
3		ONE HOUR	✓	1041	100.000
4		ONE HOUR	✓	106	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	98	1047	45
From 2	55	0	82	1
3	892	109	0	40
4	57	0	49	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.12	213.25	82.7	F	1092	1638
2	0.16	4.88	0.2	A	127	190
3	0.49	3.50	1.0	A	965	1433
4	0.07	2.50	0.1	A	97	146

2039 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	18.37	C

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2039 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1025	100.000
2		ONE HOUR	✓	283	100.000
3		ONE HOUR	✓	1346	100.000
4		ONE HOUR	✓	75	100.000

Origin-Destination Data

Demand (PCU/h)

	To		
	1	2	3
1	0	43	881
From	2	152	0
3	1198	74	0
4	39	0	36

Vehicle Mix

Heavy Vehicle Percentages

	To		
	1	2	3
1	10	10	10
From	2	10	10
3	10	10	10
4	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.93	40.00	11.7	E	941	1411
2	0.32	6.02	0.5	A	280	390
3	0.67	5.35	2.2	A	1235	1653
4	0.06	3.04	0.1	A	69	103

2039 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	129.51	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2039 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1215	100.000
2		ONE HOUR	✓	139	100.000
3		ONE HOUR	✓	1064	100.000
4		ONE HOUR	✓	108	100.000

Origin-Destination Data

Demand (PCU/h)

	To		
	1	2	3
1	0	98	1071
From	2	55	0
3	913	110	0
4	56	0	50

Vehicle Mix

Heavy Vehicle Percentages

	To		
	1	2	3
1	10	10	10
From	2	10	10
3	10	10	10
4	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.15	266.51	97.5	F	1115	1672
2	0.16	4.80	0.2	A	128	191
3	0.50	3.37	1.1	A	976	1465
4	0.07	2.53	0.1	A	99	149

Appendix D Greenpark Roundabout Junction Analysis - Masterplan

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6586
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Filename: 191325_Dock Road Roundabout Masterplan 50% traffic_JT Sept 21 19
Path: \\W2684k-dc1\users\JT\rieman\AppData\Local\Temp\191325_Dock%\20Road...
Report generation date: 09/09/2021 16:54:05

- »2018, AM
- »2018, PM
- »2024 DN, AM
- »2024 DN, PM
- »2029 DN, AM
- »2029 DN, PM
- »2039 DN, AM
- »2039 DN, PM
- »2024 DS, AM
- »2024 DS, PM
- »2029 DS, AM
- »2029 DS, PM
- »2039 DS, AM
- »2039 DS, PM

Summary of junction performance

AM				PM				
Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS	
2018								
Arm 1	3.3	12.98	0.76	B	6.0	21.31	0.85	C
Arm 2	0.0	3.83	0.02	A	0.0	4.24	0.04	A
Arm 3	1.2	3.56	0.53	A	0.7	2.73	0.39	A
Arm 4	0.0	2.44	0.04	A	0.1	2.20	0.05	A
2024 DN								
Arm 1	4.6	16.78	0.81	C	10.2	34.48	0.92	D
Arm 2	0.0	3.98	0.02	A	0.1	4.45	0.05	A
Arm 3	1.4	3.89	0.57	A	0.8	2.87	0.42	A
Arm 4	0.1	2.55	0.05	A	0.1	2.27	0.06	A
2029 DN								
Arm 1	6.5	22.76	0.86	C	19.5	60.41	0.98	F
Arm 2	0.0	4.13	0.02	A	0.1	4.63	0.05	A
Arm 3	1.6	4.24	0.60	A	0.9	3.00	0.45	A
Arm 4	0.1	2.66	0.05	A	0.1	2.34	0.06	A
2039 DN								
Arm 1	7.6	26.34	0.89	D	26.0	76.18	1.00	F
Arm 2	0.0	4.19	0.02	A	0.1	4.89	0.05	A
Arm 3	1.7	4.40	0.62	A	0.9	3.06	0.46	A
Arm 4	0.1	2.70	0.05	A	0.1	2.37	0.07	A
2024 DS								
Arm 1	31.0	89.78	1.02	F	118.7	344.21	1.18	F
Arm 2	0.7	7.05	0.41	A	0.3	5.01	0.20	A
Arm 3	2.1	5.26	0.66	A	1.2	3.60	0.53	A
Arm 4	0.1	3.05	0.06	A	0.1	2.63	0.07	A
2029 DS								
Arm 1	192.3	607.06	1.30	F	281.3	623.53	1.38	F
Arm 2	0.7	6.36	0.40	A	0.8	7.02	0.23	A
Arm 3	5.2	10.52	0.83	B	1.5	4.20	0.58	A
Arm 4	0.1	4.00	0.08	A	0.1	2.93	0.08	A
2039 DS								
Arm 1	215.1	671.00	1.33	F	307.0	697.44	1.40	F
Arm 2	0.7	6.37	0.40	A	0.8	7.07	0.23	A
Arm 3	5.7	11.48	0.84	B	1.6	4.32	0.59	A
Arm 4	0.1	4.10	0.08	A	0.1	2.88	0.08	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

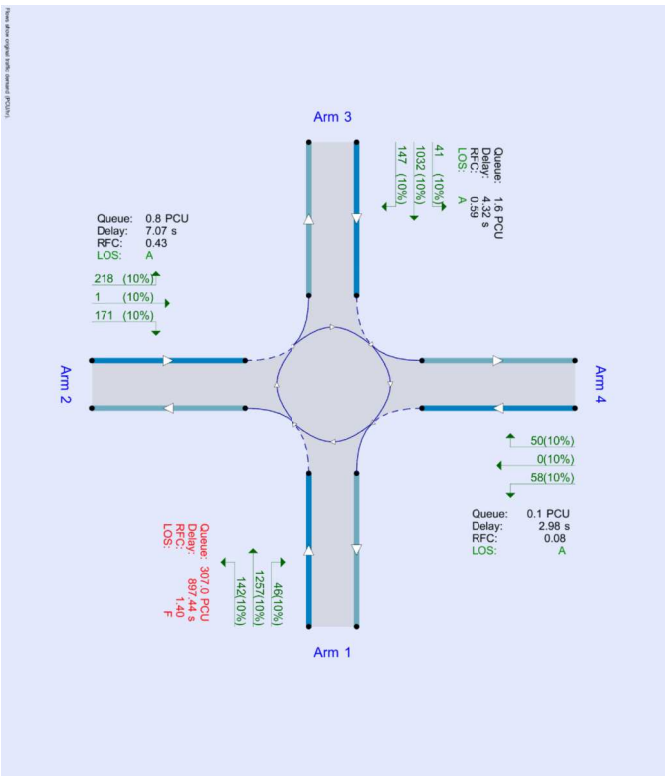
file:///C:/Users/JT\rieman/AppData/Local/Temp/191325_Dock%\20Road... 09/09/2021

File Description

Title	(unfilled)
Location	
Site number	
Date	14/02/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MPNET\winlin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	km/h	PCU	PCU	per/hour	s	min	per/min



The junction diagram reflects the best run of Junctions

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queuing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time period name	Traffic profile type	Start time (hh:mm)	Finish time (hh:mm)	Time segment length (min)	Run automatically
D1	2018	AM	ONE HOUR	07:45	09:15	15	✓
D2	2018	PM	ONE HOUR	15:30	17:00	15	✓
D3	2024 DN	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 DN	PM	ONE HOUR	15:30	17:00	15	✓
D5	2029 DN	AM	ONE HOUR	07:45	09:15	15	✓
D6	2029 DN	PM	ONE HOUR	15:30	17:00	15	✓
D7	2039 DN	AM	ONE HOUR	07:45	09:15	15	✓
D8	2039 DN	PM	ONE HOUR	15:30	17:00	15	✓
D9	2024 DS	AM	ONE HOUR	07:45	09:15	15	✓
D10	2024 DS	PM	ONE HOUR	15:30	17:00	15	✓
D11	2029 DS	AM	ONE HOUR	07:45	09:15	15	✓

file:///C:/Users/JT\rieman/AppData/Local/Temp/191325_Dock%\20Road... 09/09/2021

D12	2029 DS	PM	ONE HOUR	15:30	17:00	15	✓
D13	2039 DS	AM	ONE HOUR	07:45	08:15	15	✓
D14	2039 DS	PM	ONE HOUR	15:30	17:00	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100,000	100,000

2018, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PII - Conflict (entry) angle (deg)	Exit only
1	6.90	8.70	11.0	36.7	53.2	17.7	
2	4.00	6.70	10.8	16.8	53.2	38.5	
3	6.60	8.80	15.6	33.3	53.2	38.9	
4	6.90	8.70	11.0	36.7	53.2	17.7	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Percentage intercept adjustment (%)
1	Percentage		50.00
2	None		
3	None		
4	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/m)
1	0.779	1304
2	0.563	1966
3	0.723	2423
4	0.779	2607

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2018	AM	ONE HOUR	07:45	08:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile Type	Use O-D data	Average Demand (PCU/m)	Scaling Factor (%)
1		ONE HOUR	✓	859	100,000
2		ONE HOUR	✓	18	100,000
3		ONE HOUR	✓	1127	100,000
4		ONE HOUR	✓	65	100,000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	14	758	87
	2	1	0	17	0
	3	1031	32	0	64
	4	34	0	31	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (CU)
1	0.75	12.88	3.3	B	758	1102
2	0.02	3.83	0.0	A	17	25
3	0.53	3.96	1.2	A	1034	1851
4	0.04	2.44	0.0	A	60	89

2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	unified	Standard Roundabout		1, 2, 3, 4	11.97	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2018	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use Oo data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	965	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	35	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	847	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	93	100.000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	4	922	40
	2	9	0	26	1
	3	756	26	0	35
	4	50	0	43	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.65	21.31	6.0	C	886	1330
2	0.04	4.24	0.0	A	33	50
3	0.39	2.73	0.7	A	777	1166
4	0.05	2.20	0.1	A	85	128

2024 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	9.20	A

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 DN	AM	ONE HOUR	07:45	09:15	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	820	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	19	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	1208	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	69	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	15	812	93
From 2	1	0	18	0
3	1105	34	0	69
4	36	0	33	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.81	16.78	4.6	C	844	1266
2	0.02	3.98	0.0	A	17	26
3	0.67	3.89	1.4	A	1108	1683
4	0.05	2.95	0.1	A	63	95

2024 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	18.58	C

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 DN	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	1035	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	39	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	908	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	100	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	4	988	43
From 2	10	0	28	1
3	842	28	0	38
4	54	0	46	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.82	34.48	10.2	D	950	1425
2	0.05	4.45	0.1	A	36	54
3	0.42	2.87	0.8	A	853	1250
4	0.06	2.27	0.1	A	92	138

2029 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	11.88	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2029 DN	AM	ONE HOUR	07:45	09:15	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	976	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	20	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	1280	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	74	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	16	861	99
From 2	1	0	19	0
3	1171	36	0	73
4	39	0	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.66	22.76	6.5	C	886	1343
2	0.02	4.13	0.0	A	18	28
3	0.60	4.24	1.5	A	1175	1762
4	0.05	2.66	0.1	A	68	102

2029 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	31.55	D

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2029 DN	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	1097	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	41	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	962	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	106	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	5	1047	45
From 2	10	0	30	1
3	892	30	0	40
4	57	0	49	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.66	60.41	19.5	F	1007	1510
2	0.05	4.63	0.1	A	38	56
3	0.45	3.60	0.9	A	863	1324
4	0.06	2.34	0.1	A	97	146

2039 DN, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	13.46	B

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2039 DN	AM	ONE HOUR	07:45	09:15	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	998	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	21	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	1309	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	75	100.000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	16	881	101
	2	1	0	20	0
	3	1198	37	0	74
	4	39	0	36	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	0.89	26.34	7.6	D	916	1374
2	0.02	4.10	0.0	A	19	29
3	0.62	4.40	1.7	A	1201	1682
4	0.05	2.70	0.1	A	69	103

2039 DN, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	39.44	E

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2039 DN	PM	ONE HOUR	15:30	17:00	15	<input checked="" type="checkbox"/>

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	<input checked="" type="checkbox"/>	1122	100.000
2		ONE HOUR	<input checked="" type="checkbox"/>	41	100.000
3		ONE HOUR	<input checked="" type="checkbox"/>	984	100.000
4		ONE HOUR	<input checked="" type="checkbox"/>	108	100.000

Origin-Destination Data

Demand (PCU/h)

		To			
		1	2	3	4
From	1	0	5	1071	46
	2	10	0	30	1
	3	913	30	0	41
	4	56	0	50	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
From	1	10	10	10
	2	10	10	10
	3	10	10	10
	4	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.00	76.18	26.0	F	1030	1544
2	0.05	4.60	0.1	A	38	56
3	0.46	3.66	0.9	A	803	1344
4	0.07	2.37	0.1	A	99	149

2024 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	38.38	E

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2024 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1107	100.000
2		ONE HOUR	✓	349	100.000
3		ONE HOUR	✓	1314	100.000
4		ONE HOUR	✓	69	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	55	959	93
From 2	191	0	158	0
3	1157	88	0	69
4	36	0	33	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.02	88.78	31.0	F	1016	1524
2	0.41	7.05	0.7	A	320	480
3	0.65	5.26	2.1	A	1206	1699
4	0.05	3.05	0.1	A	63	95

2024 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lines	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	163.19	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2024 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1236	100.000
2		ONE HOUR	✓	181	100.000
3		ONE HOUR	✓	1122	100.000
4		ONE HOUR	✓	100	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	129	1064	43
From 2	75	0	105	1
3	950	134	0	38
4	54	0	46	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.18	344.21	118.7	F	1134	1701
2	0.20	5.01	0.3	A	166	249
3	0.53	3.60	1.2	A	1030	1544
4	0.07	2.63	0.1	A	92	138

2029 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	unfilled	Standard Roundabout		1, 2, 3, 4	234.71	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2029 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1276	100.000
2		ONE HOUR	✓	381	100.000
3		ONE HOUR	✓	1655	100.000
4		ONE HOUR	✓	74	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	156	1021	99
From 2	209	0	172	0
3	1355	227	0	73
4	39	0	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.30	607.06	193.3	F	1171	1756
2	0.40	6.36	0.7	A	350	524
3	0.63	10.52	5.2	B	1519	2278
4	0.06	4.00	0.1	A	68	102

2029 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	unfilled	Standard Roundabout		1, 2, 3, 4	378.37	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2029 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1420	100.000
2		ONE HOUR	✓	388	100.000
3		ONE HOUR	✓	1198	100.000
4		ONE HOUR	✓	106	100.000

Origin-Destination Data

Demand (PCU/h)

	To			
	1	2	3	4
1	0	142	1238	45
From 2	170	0	217	1
3	1011	147	0	40
4	57	0	49	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	1	2	3	4
1	10	10	10	10
From 2	10	10	10	10
3	10	10	10	10
4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.36	823.53	281.3	F	1303	1855
2	0.43	7.02	0.8	A	356	534
3	0.63	4.20	1.5	A	1099	1649
4	0.06	2.93	0.1	A	97	146

2039 DS, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	259.97	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2039 DS	AM	ONE HOUR	07:45	09:15	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1289	100.000
2		ONE HOUR	✓	381	100.000
3		ONE HOUR	✓	1684	100.000
4		ONE HOUR	✓	75	100.000

Origin-Destination Data

Demand (PCU/h)

To				
	1	2	3	4
From	1	0	157	1041
	2	209	0	172
	3	1382	228	0
	4	39	0	36

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.33	671.00	215.1	F	1192	1788
2	0.40	6.37	0.7	A	350	524
3	0.64	11.48	5.7	B	1545	2319
4	0.06	4.10	0.1	A	69	103

2039 DS, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	412.63	F

Junction Network Options

Driving side	Lighting
Left	Normal(unknown)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2039 DS	PM	ONE HOUR	15:30	17:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/h)	Scaling Factor (%)
1		ONE HOUR	✓	1445	100.000
2		ONE HOUR	✓	360	100.000
3		ONE HOUR	✓	1220	100.000
4		ONE HOUR	✓	108	100.000

Origin-Destination Data

Demand (PCU/h)

To					
	1	2	3	4	
From	1	0	142	1257	46
	2	171	0	218	1
	3	1032	147	0	41
	4	58	0	50	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	10	10	10	10
	2	10	10	10	10
	3	10	10	10	10
	4	10	10	10	10

Results

Results Summary for whole modelled period

Arm	Max R/C	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/h)	Total Junction Arrivals (PCU)
1	1.40	867.44	307.0	F	1326	1889
2	0.43	7.07	0.8	A	368	537
3	0.69	4.32	1.3	A	1119	1679
4	0.06	2.96	0.1	A	99	149

Appendix E Cahirduff/Dock Road Signalised Junction Analysis - Masterplan

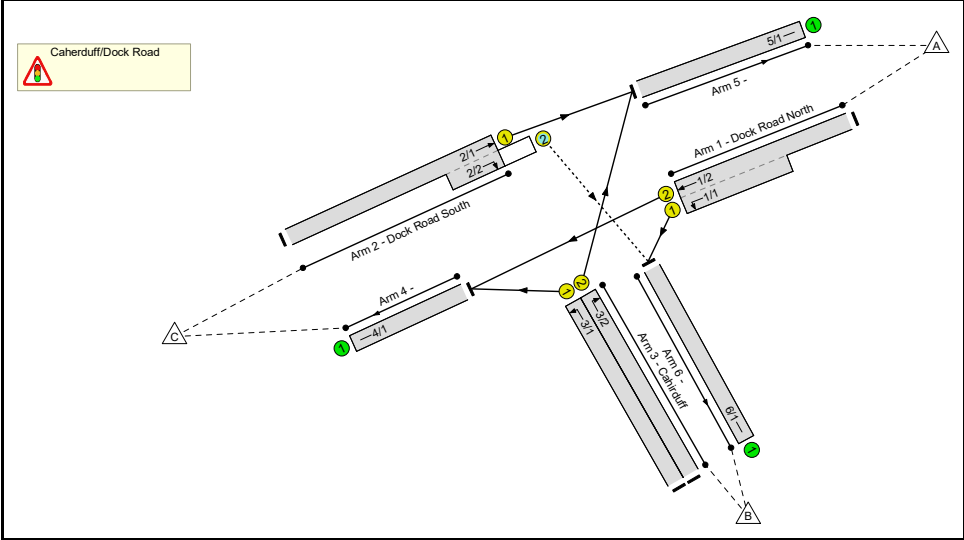
Full Input Data And Results

Full Input Data And Results

User and Project Details

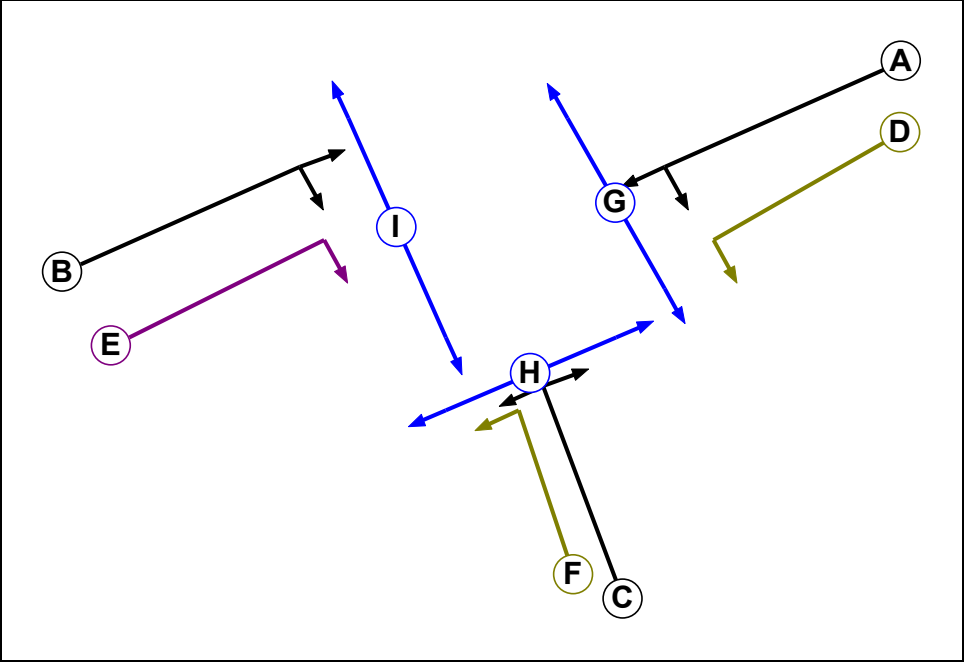
Project:	Greenpark Masterplan
Title:	Greenpark SHD
Location:	
Date Started:	Sept 2021
Model Purpose:	Planning
Model Assumptions:	Traffic from 2018 Dock Road Survey 50% Masterplan traffic use
Checked By:	J Tiernan
Checked By Date:	SEpt 2021
Additional detail:	
File name:	191325 Linsig Cahirduff-Dock Road Sept 2021.lsg3x
Author:	J Tiernan
Company:	PUNCH Consulting Engineers
Address:	97 Henry St Limerick

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Filter	A	4	4
E	Ind. Arrow	B	4	4
F	Filter	C	4	0
G	Pedestrian		7	7
H	Pedestrian		7	7
I	Pedestrian		7	7

Full Input Data And Results

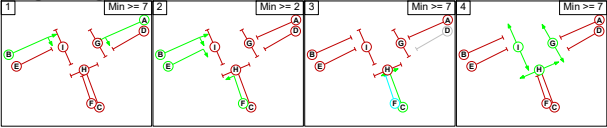
Phase Intergreens Matrix

		Starting Phase									
Terminating Phase		A	B	C	D	E	F	G	H	I	
	A			-	7	-	5	7	6	7	10
	B	-			6	6	-	-	9	9	5
	C	5	5			-	5	-	9	5	8
	D	-	-	5	-		5	-	6	7	-
	E	6	6	-	6	6		-	-	9	5
	F	5	5	-	-	-	-		-	5	8
	G	16	16	16	16	16	-	-		-	-
	H	21	21	21	21	21	21	21	-		-
	I	12	12	12	12	-	12	12	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	B E F
3	C
4	G H I

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage			
From Stage		1	2	3	4
	1		7	7	10
	2	X		6	X
	3	5	5		9
	4	21	21	21	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Caherduff/Dock Road

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/2 (Dock Road South)	6/1 (Right)	1439	0	1/2 1/1	1.09 1.09	All All	3.00	-	0.50	3	2.00

Full Input Data And Results

Lane Input Data

Junction: Caherduff/Dock Road												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Dock Road North)	U	A D	2	3	10.0	Geom	-	3.00	0.00	Y	Arm 6 Left	Inf
1/2 (Dock Road North)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Ahead	Inf
2/1 (Dock Road South)	U	B	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 5 Ahead	Inf
2/2 (Dock Road South)	O	B E	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 6 Right	Inf
3/1 (Cahirduff)	U	C F	2	3	10.0	Geom	-	3.50	0.00	Y	Arm 4 Left	Inf
3/2 (Cahirduff)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Right	Inf
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2024 Opening Year AM'	08:00	09:00	01:00	
2: '2024 Opening Year PM'	16:00	17:00	01:00	
3: '2029 Opening Year AM'	08:00	09:00	01:00	
4: '2029 Opening Year PM'	16:00	17:00	01:00	
5: '2039 Opening Year AM'	08:00	09:00	01:00	
6: '2039 Opening Year PM'	16:00	17:00	01:00	

Traffic Flows, Desired

Scenario 1: '2024 Opening Year AM with development' (FG1: '2024 Opening Year AM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	42	961	1003
	B	183	0	147	330
	C	1332	52	0	1384
	Tot.	1515	94	1108	2717

Full Input Data And Results

Scenario 2: '2024 Opening Year PM with development' (FG2: '2024 Opening Year PM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	123	1160	1283
	B	66	0	76	142
	C	971	108	0	1079
	Tot.	1037	231	1236	2504

Scenario 3: '2029 Opening Year AM with development' (FG3: '2029 Opening Year AM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	42	1116	1158
	B	183	0	147	330
	C	1417	184	0	1601
	Tot.	1600	226	1263	3089

Scenario 4: '2029 Opening Year PM with development' (FG4: '2029 Opening Year PM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	123	1234	1357
	B	66	0	76	142
	C	1119	119	0	1238
	Tot.	1185	242	1310	2737

Scenario 5: '2039 Opening Year AM with development' (FG5: '2039 Opening Year AM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	42	1139	1181
	B	183	0	147	330
	C	1446	184	0	1630
	Tot.	1629	226	1286	3141

Scenario 6: '2039 Opening Year PM with development' (FG6: '2039 Opening Year PM', Plan 1: 'Network Control Plan 1')

Desired Flow :

Origin	Destination				
		A	B	C	Tot.
	A	0	123	1259	1382
	B	66	0	76	142
	C	1142	119	0	1261
	Tot.	1208	242	1335	2785

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Greenpark SHD	-	-	N/A	-	-		-	-	-	-	-	-	101.1%
Caherduff/Dock Road	-	-	N/A	-	-		-	-	-	-	-	-	101.1%
1/2+1/1	Dock Road North Ahead Left	U	N/A	N/A	A	D	2	147	0	1003	1965:1915	1185+52	81.1 : 81.1%
2/1+2/2	Dock Road South Ahead Right	U+O	N/A	N/A	B	E	2	165	8	1384	1955:1915	1317+51	101.1 : 101.1%
3/1	Cahirduff Left	U	N/A	N/A	C	F	2	37	16	147	1965	319	46.0%
3/2	Cahirduff Right	U	N/A	N/A	C		2	21	-	183	1965	188	97.2%
4/1		U	N/A	N/A	-		-	-	-	1108	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	1515	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	94	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Greenpark SHD	-	-	45	4	2	20.6	30.9	0.2	51.8	-	-	-	-
Caherduff/Dock Road	-	-	45	4	2	20.6	30.9	0.2	51.8	-	-	-	-
1/2+1/1	1003	1003	-	-	-	5.1	2.1	-	7.2	25.8	31.9	2.1	34.0
2/1+2/2	1384	1369	45	4	2	10.3	22.8	0.2	33.3	86.7	63.4	22.8	86.2
3/1	147	147	-	-	-	2.1	0.4	-	2.6	62.9	6.2	0.4	6.6
3/2	183	183	-	-	-	3.1	5.6	-	8.7	171.3	8.3	5.6	13.9
4/1	1108	1108	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1500	1500	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	93	93	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1		PRC for Signalled Lanes (%): PRC Over All Lanes (%):			-12.4 -12.4	Total Delay for Signalled Lanes (pcuHr): Total Delay Over All Lanes(pcuHr):			51.80 51.80	Cycle Time (s): 240			

Scenario 2: '2024 Opening Year PM with development' (FG2: '2024 Opening Year PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Greenpark SHD	-	-	N/A	-	-		-	-	-	-	-	-	97.8%
Caherduff/Dock Road	-	-	N/A	-	-		-	-	-	-	-	-	97.8%
1/2+1/1	Dock Road North Ahead Left	U	N/A	N/A	A	D	2	154	0	1283	1965:1915	1186+126	97.8 : 97.8%
2/1+2/2	Dock Road South Ahead Right	U+O	N/A	N/A	B	E	2	172	8	1079	1955:1915	1291+144	75.2 : 75.2%
3/1	Cahirduff Left	U	N/A	N/A	C	F	2	30	16	76	1965	262	29.0%
3/2	Cahirduff Right	U	N/A	N/A	C		2	14	-	66	1965	131	50.4%
4/1		U	N/A	N/A	-		-	-	-	1236	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	1037	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	231	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Greenpark SHD	-	-	2	86	21	14.0	14.3	1.3	29.5	-	-	-	-
Caherduff/Dock Road	-	-	2	86	21	14.0	14.3	1.3	29.5	-	-	-	-
1/2+1/1	1283	1283	-	-	-	7.9	12.1	-	20.0	56.2	56.3	12.1	68.4
2/1+2/2	1079	1079	2	86	21	3.8	1.5	1.3	6.5	21.8	31.2	1.5	32.7
3/1	76	76	-	-	-	1.1	0.2	-	1.3	63.8	3.2	0.2	3.4
3/2	66	66	-	-	-	1.1	0.5	-	1.6	88.6	2.9	0.5	3.4
4/1	1236	1236	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1037	1037	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	231	231	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1 PRC for Signalled Lanes (%): -8.7 PRC Over All Lanes (%): -8.7 Total Delay for Signalled Lanes (pcuHr): 29.55 Total Delay Over All Lanes(pcuHr): 29.55 Cycle Time (s): 240													

Full Input Data And Results

Scenario 3: '2029 Opening Year AM with development' (FG3: '2029 Opening Year AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Greenpark SHD	-	-	N/A	-	-		-	-	-	-	-	-	114.0%
Caherduff/Dock Road	-	-	N/A	-	-		-	-	-	-	-	-	114.0%
1/2+1/1	Dock Road North Ahead Left	U	N/A	N/A	A	D	2	150	0	1158	1965:1915	1214+46	91.9 : 91.9%
2/1+2/2	Dock Road South Ahead Right	U+O	N/A	N/A	B	E	2	168	8	1601	1955:1915	1243+161	114.0 : 114.0%
3/1	Cahirduff Left	U	N/A	N/A	C	F	2	34	16	147	1965	295	49.9%
3/2	Cahirduff Right	U	N/A	N/A	C		2	18	-	183	1965	164	111.8%
4/1		U	N/A	N/A	-		-	-	-	1263	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	1600	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Greenpark SHD	-	-	22	107	33	51.8	120.8	1.4	174.1	-	-	-	-
Caherduff/Dock Road	-	-	22	107	33	51.8	120.8	1.4	174.1	-	-	-	-
1/2+1/1	1158	1158	-	-	-	6.7	5.1	-	11.9	36.9	44.0	5.1	49.2
2/1+2/2	1601	1405	22	107	33	37.3	102.1	1.4	140.8	316.6	90.0	102.1	192.1
3/1	147	147	-	-	-	2.0	0.5	-	2.5	61.3	5.5	0.5	6.0
3/2	183	164	-	-	-	5.8	13.1	-	18.9	371.7	10.2	13.1	23.4
4/1	1263	1263	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1407	1407	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	203	203	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1		PRC for Signalled Lanes (%):			-26.6	Total Delay for Signalled Lanes (pcuHr):			174.06	Cycle Time (s): 240			
		PRC Over All Lanes (%):			-26.6	Total Delay Over All Lanes (pcuHr):			174.06				

Full Input Data And Results

Scenario 4: '2029 Opening Year PM with development' (FG4: '2029 Opening Year PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Greenpark SHD	-	-	N/A	-	-		-	-	-	-	-	-	103.6%
Caherduff/Dock Road	-	-	N/A	-	-		-	-	-	-	-	-	103.6%
1/2+1/1	Dock Road North Ahead Left	U	N/A	N/A	A	D	2	154	0	1357	1965:1915	1191+119	103.6 : 103.6%
2/1+2/2	Dock Road South Ahead Right	U+O	N/A	N/A	B	E	2	172	8	1238	1955:1915	1296+138	86.3 : 86.3%
3/1	Cahirduff Left	U	N/A	N/A	C	F	2	30	16	76	1965	262	29.0%
3/2	Cahirduff Right	U	N/A	N/A	C		2	14	-	66	1965	131	50.4%
4/1		U	N/A	N/A	-		-	-	-	1310	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	1185	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	242	Inf	Inf	0.0%
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Greenpark SHD	-	-	0	94	25	23.3	37.3	1.4	62.1	-	-	-	-
Caherduff/Dock Road	-	-	0	94	25	23.3	37.3	1.4	62.1	-	-	-	-
1/2+1/1	1357	1310	-	-	-	15.3	33.6	-	48.9	129.7	74.2	33.6	107.8
2/1+2/2	1238	1238	0	94	25	5.5	3.1	1.4	10.0	29.0	44.2	3.1	47.2
3/1	76	76	-	-	-	1.3	0.2	-	1.5	69.7	3.5	0.2	3.7
3/2	66	66	-	-	-	1.2	0.5	-	1.7	94.4	3.2	0.5	3.7
4/1	1267	1267	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1185	1185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	238	238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1		PRC for Signalled Lanes (%): PRC Over All Lanes (%):			-15.1 -15.1	Total Delay for Signalled Lanes (pcuHr): Total Delay Over All Lanes(pcuHr):			62.06 62.06	Cycle Time (s): 240			

Scenario 5: '2039 Opening Year AM with development' (FG5: '2039 Opening Year AM', Plan 1: 'Network Control Plan 1')

Scenario 6: '2039 Opening Year PM with development' (FG6: '2039 Opening Year PM', Plan 1: 'Network Control Plan 1')

Scenario C: 2005 Opening Year FM with development (C1) - 2005 Opening Year FM, Plan 1: Network Control Plan 1														
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	
Network: Greenpark SHD	-	-	N/A	-	-		-	-	-	-	-	-	105.5%	
Caherduff/Dock Road	-	-	N/A	-	-		-	-	-	-	-	-	105.5%	
1/2+1/1	Dock Road North Ahead Left	U	N/A	N/A	A	D	2	154	0	1382	1965:1915	1193+117	105.5 : 105.5%	
2/1+2/2	Dock Road South Ahead Right	U+O	N/A	N/A	B	E	2	172	8	1261	1955:1915	1299+135	87.9 : 87.9%	
3/1	Cahirduff Left	U	N/A	N/A	C	F	2	30	16	76	1965	262	29.0%	
3/2	Cahirduff Right	U	N/A	N/A	C		2	14	-	66	1965	131	50.4%	
4/1		U	N/A	N/A	-		-	-	-	1335	Inf	Inf	0.0%	
5/1		U	N/A	N/A	-		-	-	-	1208	Inf	Inf	0.0%	
6/1		U	N/A	N/A	-		-	-	-	242	Inf	Inf	0.0%	
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network: Greenpark SHD	-	-	0	94	25	27.6	48.3	1.3	77.1	-	-	-	-	
Caherduff/Dock Road	-	-	0	94	25	27.6	48.3	1.3	77.1	-	-	-	-	
1/2+1/1	1382	1310	-	-	-	19.9	44.1	-	64.0	166.7	71.6	44.1	115.7	
2/1+2/2	1261	1261	0	94	25	5.5	3.5	1.3	10.3	29.3	46.8	3.5	50.3	
3/1	76	76	-	-	-	1.1	0.2	-	1.3	62.2	3.1	0.2	3.3	
3/2	66	66	-	-	-	1.1	0.5	-	1.6	87.0	2.8	0.5	3.3	
4/1	1269	1269	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
5/1	1208	1208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	236	236	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
C1			PRC for Signalled Lanes (%):		-17.3	Total Delay for Signalled Lanes (pcuHr):		77.15	Cycle Time (s): 240					
			PRC Over All Lanes (%):		-17.3	Total Delay Over All Lanes (pcuHr):		77.15						

Appendix F GoCar Letter



Voyage Property Ltd
Ashbourne Hall
Ashbourne Business Park,
Dock Road,
Limerick

27/09/2021

To Whom It May Concern,

This is a letter to confirm that GoCar intends to provide a service of up to 8 (Eight) shared car club vehicles in the proposed GreenPark Lands development in Limerick. GoCar representatives have discussed the project with representatives of Punch Consulting, who are the Transport Planners for the development, and are excited to provide a car sharing service at this location.

It is understood that the vehicles at this development will be positioned in a number of small 'hubs' to allow for ease of access for all residents. While it is the intention for most of these vehicles to be used exclusively by the residents of the development, GoCar may agree with the eventual managers of the site to allow some vehicles to be open for access to other GoCar members nearby. This will depend on usership levels, and will be reviewed at various periods to ensure adequate supply for the residents of the development.

GoCar is Ireland's leading car sharing service with over 60,000 members and over 800 cars and vans on fleet. Each GoCar which is placed in a community has the potential to replace the journeys of up to 15 private cars. The Department of Housing's Design Standards for New Apartments - Guidelines for Planning Authorities 2018 outline: "For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles."

Carsharing is a sustainable service. By allowing multiple people to use the same vehicle at different times, car sharing reduces car ownership, car dependency, congestion, noise and air pollution. It frees up land which would otherwise be used for additional parking spaces. Most GoCar users only use a car when necessary, and walk and use public transport more often than car owners.

By having GoCar car sharing vehicles in a development such as this, the staff therein will have access to pay-as-you-go driving, in close proximity to their offices, which will increase usership of the service.

I trust that this information is satisfactory. For any queries, please do not hesitate to contact me.

A handwritten signature in blue ink, appearing to read 'Rob Kearns'.

Rob Kearns
Head of Growth
GoCar Carsharing Ltd
M: 083 822 3924
E: rob.kearns@gocar.ie