Golden Gateway Local Structure Plan
Movement and Access Strategy

FINAL REPORT

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PROJECT	81113-581-FLYT-REP-0005 Modelling and Amendments to Golden Gateway LSP Movement and Access Strategy			
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1	Issue	CXS	MDR	20/12/2022
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EXECUTIVE SUMMARY

This Movement and Access Strategy has been prepared by Flyt in support of a Local Structure Plan (LSP) which has been prepared for the Golden Gateway Precinct in the City of Belmont.

The Golden Gateway Precinct is bounded by Ascot Racecourse to the north/northeast, Hardey Road to the east, Great Eastern Highway to the south, Swan River to the west and Ascot Waters residential estate to the west/northwest. The Local Structure Plan boundary includes Ascot Kilns and the Belmont Trust land and a portion of the Perth Racing landholdings.

Perth Racing commissioned PJA to prepare a Traffic Impact Assessment to support the Ascot Racecourse Local Structure Plan. Output from that report (including land uses, road network and forecast traffic volumes) has been used to inform this Movement and Access Strategy.

The Golden Gateway Precinct Movement Network retains the road alignment in its existing configuration apart from Daly Street which will become a cul-de-sac. The remainder of Daly Street will be identified as Public Open Space (POS).

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Role and Performance of Key Roads

Great Eastern Highway

Great Eastern Highway will remain in its current form. No changes are proposed to the existing road connections with Great Eastern Highway nor the forms of intersections between Great Eastern Highway and connecting roads.

Stoneham Street

Stoneham Street will be the primary interface between the Golden Gateway precinct and the Swan River. Stoneham Street will continue to be a major district road corridor and provide for high capacity traffic movements. Stoneham Street will be retained as a four lane divided road (two lanes in each direction).

The intersection of Stoneham Street with Resolution Drive and Grandstand Road will remain as a two-lane roundabout. The intersection of Stoneham Street with Hargreaves Street will remain in its current configuration and there will be no intersection with Daly Street as it will become a cul-de-sac.

Resolution Drive

Resolution Drive will remain on its existing alignment. The form of Resolution Drive as a two lane divided road (one lane in each direction) will be retained, however additional lanes will develop on the approach and exit from the Great Eastern Highway intersection, as per the existing lane arrangement.

Grandstand Road (north)

Grandstand Road (north) will remain in its current alignment and configuration as a four lane divided road (with two lanes in each direction). The roundabout controlled intersection with Stoneham Street and Resolution Drive will remain.

Hargreaves Street

Hargreaves Street will continue along its existing alignment providing a connection between Great Eastern Highway (permitting left in left out movements only) and Stoneham Street. The intersection with Stoneham Street will remain.

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Hargreaves Street is proposed as a two-lane road with on-street parking where appropriate. Its current width of 12.5m should be reduced to 7m, with embayed parking.

Daly Street

Daly Street will continue along its existing alignment however it will become a cul-de-sac south of Stoneham Street, with the remainder of Daly Street to be identified as Public Open Space. The intersection with Great Eastern Highway (permitting left in left out movements only) will remain.

Daly Street is proposed as a two-lane road with on-street parking where appropriate. Daly Street's current width is 8m; this could be reduced to 7m. On-street parking would need to be embayed. Daly Street has been identified as a secondary route under the Long Term Cycle Network, which could take the form of a shared path, protected bike path or safe active street. The bike path should continue through the public open space.

Grandstand Road (south)

Grandstand Road will continue along its existing alignment providing a connection between Great Eastern Highway (permitting left in left out movements only) and Resolution Drive where it has a full movement intersection.

Grandstand Road is proposed as a two-lane road with on-street parking where appropriate. It is currently 12.5m wide and should be reduced to 7m, with embayed parking.

Memorial Drive

Memorial Drive and its intersection with Stoneham Street will remain unchanged.

Road Network Performance

SIDRA modelling of the existing road network under existing traffic volumes demonstrates that the signalised intersections along the Great Eastern Highway corridor are congested in each of the peak hours. While Great Eastern Highway currently operates at a level of service C and D, the side roads, particularly Stoneham Street, Belgravia Street, and Hardey Road currently operate at a level of service E or F in the peak periods. The Resolution Drive approach currently operates at a level of service D. The side roads experience congestion as more than half of the traffic signal green time is allocated to Great Eastern Highway. This congestion is expected to continue as traffic volumes increase.

The SIDRA Network modelling for the road network demonstrates that the level of congestion in 2021 and 2031 is generally consistent with the congestion predicted for the 2021 and 2031 existing road network scenarios. The internal roads are predicted to operate well within their capacity.

Similarly, the SIDRA Network modelling for build out of the Golden Gateway precinct demonstrates that the level of congestion along Great Eastern Highway in 2041 is consistent with the congestion predicted for the 2041 existing road network scenarios. Congestion along the Resolution Drive approach to Great Eastern Highway is predicted to increase in the AM peak period, while congestion along the Stoneham Street approach to Great Eastern Highway will increase in the PM peak period. Internal roads and intersections are predicted to operate within their capacity.

To understand how the road network performs under an Ascot event, the existing road network was evaluated using 2021 traffic volumes plus Melbourne Cup event traffic. The proposed road network was tested using 2021 traffic volumes plus Melbourne Cup event traffic, 2031 traffic volumes with development traffic plus Melbourne Cup event traffic and 2041 traffic volumes with development traffic plus Melbourne Cup event traffic.

The addition of Ascot event traffic to this busy PM peak increases the congestion in this period. Traffic exiting an event at Ascot is predicted to cause local congestion where this traffic joins the external road network, at the intersection of Raconteur Drive and Resolution Drive.

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1. INTRODUCTION

1.1 Movement and Access Strategy

This Movement and Access Strategy has been prepared by Flyt in support of a Local Structure Plan (LSP) which has been prepared for the Golden Gateway Precinct in the City of Belmont.

This Strategy has been prepared using the requirements set out within the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines (August 2016) Volume 2 – Planning Schemes, Structure Plans and Activity Centre Plans.

The Local Structure Plan boundary includes the Belmont Trust land, Ascot Kilns and a portion of the Perth Racing landholdings. Ascot Kilns and the Perth Racing landholdings are subject to separate planning processes. Future traffic associated with redevelopment of the Perth Racing landholdings (as documented by PJA in their May 2024 Traffic Impact Assessment to support the Ascot Racecourse Local Structure Plan) has been considered in this Movement and Access Strategy.

1.2 Structure Plan

The Golden Gateway Precinct is located within the City of Belmont and the Local Structure Plan area is bounded by Ascot Racecourse to the north/northeast, Hardey Road to the east, Great Eastern Highway to the south, Swan River to the west and Ascot Waters residential estate to the west/northwest. The Local Structure Plan boundary is shown in Figure 1 and includes Ascot Kilns, Belmont Trust land and a portion of the Perth Racing landholdings. The Golden Gateway Structure Plan doesn't include controls for land subject to separate planning processes. This Movement and Access Strategy has made a distinction between the structure plan area and the subject land area.

Figure 1 – Golden Gateway Structure Plan Area (source: City of Belmont)

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The draft Local Structure Plan is shown in Figure 2, with the proposed land uses outlined in Table 1.

Figure 2 – Golden Gateway Structure Plan (source: City of Belmont)

Table 1 – Proposed Structure Plan Land Uses

Land Use	Yield
Residential - Multiple dwelling	2,268 dwellings
Non Residential - Commercial	6,979 m^2 NLA
No Residential - Retail	1,200 m^2 NLA

This Structure Plan shall apply to the Golden Gateway Precinct, being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map. The provisions of this Structure Plan apply to all land within this area, except for land designated as subject to a separate planning process.

1.3 Key Issues

The issues examined within this Movement and Access Strategy are:

- The impact of the Structure Plan on the local transport network based on the requirements set out in the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines (August 2016) Volume 2 – Planning Schemes, Structure Plans and Activity Centre Plans.
- Addressing issues set out within the Structure Plan report and the form of development of the site; and
- Consideration of the impact of development based on existing and future transport networks in the Golden Gateway locality.

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1.4 Background Information

In 2008, the Golden Gateway precinct was identified as a key strategic area due to its prominent position on Great Eastern Highway at the north-western 'gateway' to the City of Belmont. It was recognised this location had significant potential for high quality mixed commercial and residential development.

The precinct is impacted by access constraints and land fragmentation, making it apparent that coordinated planning was required. The draft Golden Gateway Local Structure Plan was therefore prepared to coordinate the future subdivision, zoning, and development of the area.

The draft Golden Gateway LSP was considered by the Belmont Council at an Ordinary Council Meeting held on June 23rd, 2020. In response to submissions received, Council resolved to require several modifications to the LSP, including to the road network.

1.5 Report Structure

This Movement and Access Strategy has been structured to conform to the requirements of the WAPC Transport Impact Assessment Guidelines for the assessment of Structure Plan proposals. This introduction section forms the first of nine sections in this Movement and Access Strategy. The remaining sections cover:

- Structure Plan Outline
- Existing Transport Environment.
- Movement Network
- Analysis of Transport Network
- Conclusions

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2. STRUCTURE PLAN OUTLINE

2.1 Regional Context

The Golden Gateway Precinct is located within the City of Belmont and the Local Structure Plan area is bounded by Ascot Racecourse to the north/northeast, Hardey Road to the east, Great Eastern Highway to the south, Swan River to the west and Ascot Waters residential estate to the west/northwest. The Local Structure Plan boundary is shown in Figure 3. The LSP site includes the Belmont Trust Land, which currently consists of open parkland with a foreshore along the Swan River and includes the Ascot Kilns Local Development Plan (LDP) area.

Figure 3 – Golden Gateway LSP Area Regional Context (source: Google Maps)

The site is located approximately 8km to the east of the Perth CBD, along the southern foreshore of the Swan River. It is 4km from Perth Airport Domestic Terminal (Qantas), 9km from Perth International/Domestic Terminals and 3.5km from Belmont Forum Shopping Centre.

The movement network surrounding the site features key regional road connections, a high frequency public transport corridor and high-quality shared path pedestrian and cycling links.

The site benefits from good access to the regional road network, with Great Eastern Highway along the southern boundary of the site. To the west Great Eastern Highway provides access to the Perth CBD and onto South Perth, Melville, and Fremantle via Canning Highway. To the east Great Eastern Highway provides access to Perth Airport and onto Guildford, Midland, and the Swan Valley. The site is close to the Garratt Road bridge crossing of the Swan River (approximately 1km north of the site), which provides access to Bayswater, Maylands, Mount Lawley, and suburbs north of Perth CBD.

Ascot Racecourse is located immediately to the northeast of the site. The racecourse is regarded as Perth's premier racecourse and holds several featured Group Race meetings annually. These race meetings attract crowds of varying sizes and on key race days such as the Melbourne Cup and Perth Cup, vehicle access to and from the racecourse can cause local congestion.

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Existing shared path cycling connections run through the LSP site alongside Stoneham Street, Raconteur Drive and Grandstand Road. Both shared paths and local bicycle friendly routes run through the Ascot Waters development to the north of the LSP site. The site is located close to regional cycling connections with the Graham Farmer Freeway Principal Shared Path (PSP) easily accessed via the shared path along the southern side of the Swan River.

Existing bus routes operate close to or through the LSP site. These include the Circle Route (via Resolution Drive and Grandstand Road) providing connections north to destinations including Bayswater Station, Morley Bus Station/Shopping Centre and south to destinations including Belmont Forum Shopping Centre, Oats Street Station, and Curtin University. In addition, existing bus routes operate along Great Eastern Highway providing connections east to destinations including Redcliffe Station and High Wycombe Station and to the west to destinations including the Victoria Park Transfer Station and Elizabeth Quay Bus Station.

2.2 Proposed Land Uses

The Golden Gateway LSP is comprised of three overarching land uses, residential dwellings, commercial space, and retail space. It is proposed that the three land uses will primarily be provided in mixed-use development sites across the Golden Gateway LSP area. The split of the three land uses is shown in Table 2.

Table 2 - Proposed Structure Plan Land Uses

Land Use	Yield
Residential - Multiple dwelling	2,268 dwellings
Non Residential - Commercial	6,979 m^2 NLA
No Residential - Retail	1,200 m^2 NLA

As noted in the Structure Plan Report, the LSP has been formulated around the following vision:

> *"The development of the Golden Gateway will transform this degraded and fragmented area into a vibrant precinct of residential and mixed use development, with strengthened connections to the Swan River and Ascot Waters, with uses, density and built form that derive best value from these attributes while respecting the area's rich culture and heritage."*

The overarching objectives for the Golden Gateway Precinct as established by the project team and reinforced through stakeholder engagement include:

- Improve self-containment of facilities – reduce car dependence;
- Improve people's connection to the Swan River;
- Create accessible, quality public realm within the precinct; and
- Identify appropriate uses/densities in conjunction with infrastructure improvements.

To achieve the above objectives, the project team identified several opportunities that the Golden Gateway precinct presents, they include:

- Land use:
  - Opportunity for residential development to be accommodated in the precinct given the accessibility to high quality riverside amenity;
  - Opportunity for retail convenience and food and beverage land uses to be integrated into development outcomes;
  - Potential for higher density development given precinct location, proximity to high amenity open space destinations, Perth central business district, localised employment, and high frequency public transport;

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- An existing primary school adjacent the precinct offers opportunity for family friendly dwelling diversity; and
- Opportunities to consider mixed use land use for development in core area to broaden activity opportunities and long term transition of the precinct.

- Movement:
  - Opportunity to utilise existing local street network of Hargreaves Street, Daly Street and Grandstand Road (south) to deliver a robust structure for future development access and vehicle circulation; and
  - Generous existing road reserve dimensions provide ability for reconfigured pedestrian friendly streetscapes offering shade trees, soft landscaping, and convenient on-street parking embayments;

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3. EXISTING TRANSPORT ENVIRONMENT

3.1 Existing Land Uses

The Golden Gateway Precinct is bounded by Ascot Racecourse to the north/northeast, Hardey Road and Carbine Street to the east, Great Eastern Highway to the south, Swan River to the west and Ascot Waters residential estate to the west/northwest, as shown in Figure 4.

Figure 4 – Golden Gateway LSP Area in Context to Surrounding Development (source: Google Maps)

The developed section of the site, between Great Eastern Highway, Stoneham Street and Resolution Drive, consists of a range of light industrial and commercial units, and various fast-food outlets and service stations fronting Great Eastern Highway. Other areas of the precinct generally consist of undeveloped land.

The Ascot Kilns area between Resolution Drive and Grandstand Road is subject to a separate Local Development Plan (LDP) process, however traffic generated from the proposed Ascot Kilns LDP area has been considered within this assessment.

3.2 Pedestrian Network

The extent and quality of the existing pedestrian infrastructure within and surrounding the Golden Gateway precinct is of a standard commensurate with the extent of existing development and form of land uses across the site, i.e., there are several existing undeveloped lots and those that are developed primarily accommodate light industrial/ commercial unit style development. The existing local pedestrian infrastructure can be summarised as follows for the major road network and minor road network.

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3.2.1 Pedestrian Infrastructure along Major Corridors

Great Eastern Highway runs along the southern boundary of the LSP area and is a significant regional road connection within the Perth metropolitan road network. There are 2.5m wide footpaths on both sides of Great Eastern Highway. Within the vicinity of the LSP site, crossing of Great Eastern Highway by pedestrians is facilitated via traffic signal controlled intersections at both Stoneham Street/Belgravia Street and Resolution Drive/Hardey Road intersections with Great Eastern Highway. At both signalised intersections, the protected crossing of Great Eastern Highway is only available on the western approach. Pedestrians wishing to cross Great Eastern Highway from the eastern approaches will have to cross 3 sides of the intersection in order to do so.

Three of the four major road corridors running through the Golden Gateway precinct (Grandstand Road, Raconteur Drive, and Stoneham Street) have footpaths along one side of the street – Grandstand Road along the eastern side of the street adjacent to the Ascot Racecourse, Raconteur Drive along the northern side of the street to connect to Grandstand Road, and Stoneham Street along the western side of the street adjacent to the Belmont Trust Land.

There is a footpath along some sections of Resolution Drive. The section adjacent to the Ascot Waters development has a footpath along the southwestern side, and the section immediately north of Great Eastern Highway has a footpath on each side. Between the roundabout controlled intersection of Stoneham Street, Grandstand Road, and Resolution Drive and 100m north of the signalised intersection with Great Eastern Highway, Resolution Drive has no footpaths on either side.

3.2.2 Pedestrian Infrastructure along Minor Road Corridors

The minor roads within the LSP site (Hargreaves Street, Daly Street, and the southern section of Grandstand Road) are located between Great Eastern Highway and Resolution Drive/Stoneham Street and provide access to the light industrial/commercial units in this area of the LSP.

Most of these minor streets do not have footpaths, which reinforces the dominance of the private car. Daly Street is the exception and has a footpath on the eastern side.

3.2.3 Pedestrian Accessibility

Walk Score is a commercial product that measures the walkability of a location based on the distance to nearby amenities and pedestrian facilities. The Walk Score walkability assessment tool considers the development site to be "car dependent" where most daily errands require a car, with a walk score ranging between 43-48 out of 100, as shown in Figure 5.

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Figure 5 – Walk Score Rating for Golden Gateway LSP Site (source: walkscore.com)

3.3 Cycling Network

The extent and quality of the existing cycling infrastructure within and surrounding the Golden Gateway LSP site is of a high standard with local and regional links. The local and regional cycling network is shown in Figure 6.

Good on road cycling routes for experienced and confident cyclists are located along Great Eastern Highway adjacent to the Golden Gateway precinct. High quality shared use paths are located along one side of Stoneham Street, Raconteur Drive, and the northern section of Grandstand Road although there are gaps in the connectivity.

High quality shared use paths are also located along the Swan River Foreshore (via the Belmont Trust Land towards the Graham Farmer Freeway PSP to access Perth City), and along the shoreline within the Ascot Waters development. Some streets within the Ascot Waters development have been identified as local cycle friendly routes.

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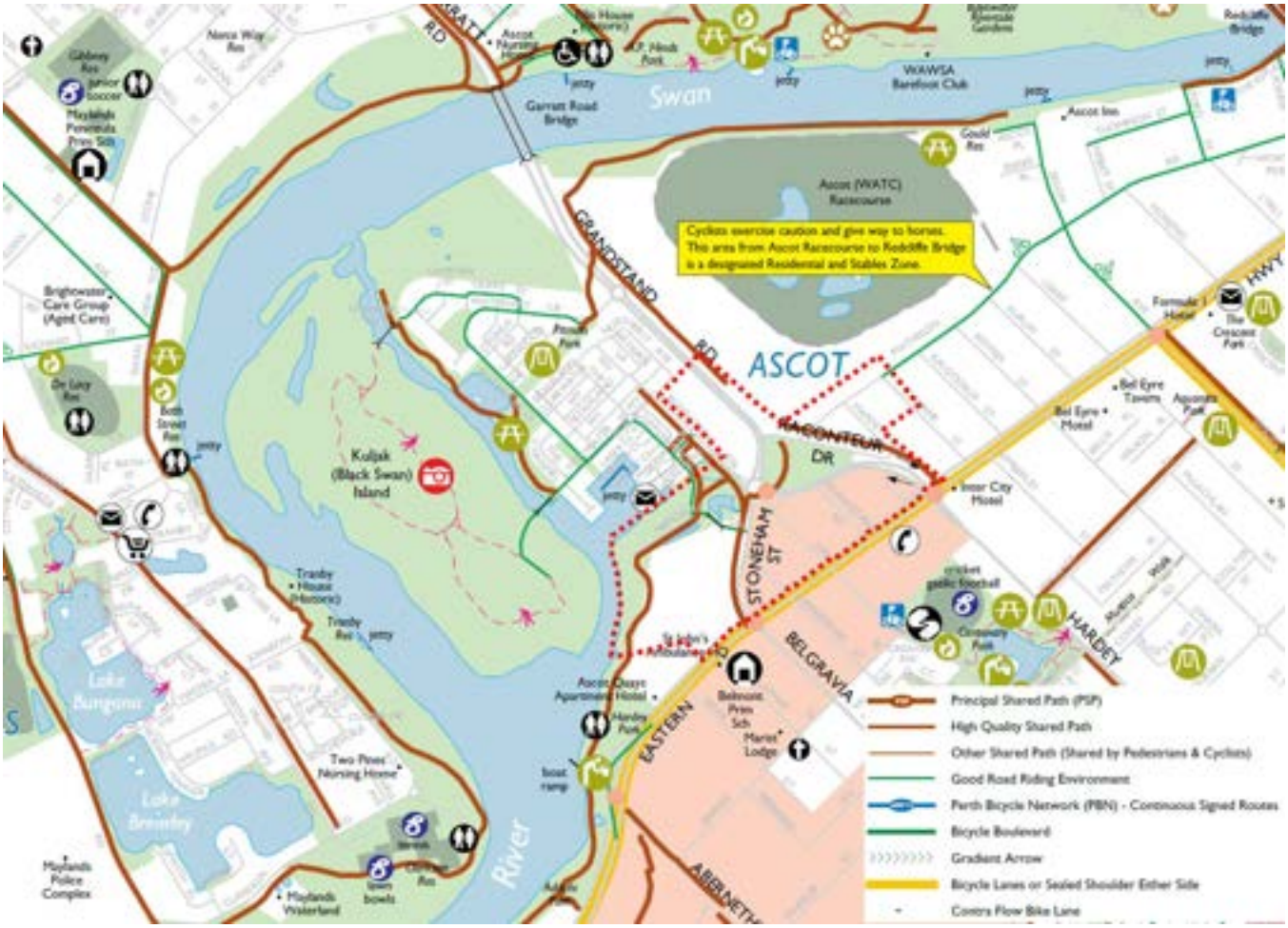
Figure 6 – Existing Cycling Network in Relation to the Golden Gateway LSP Site (source: DoT / City of Belmont)



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The Long Term Cycle Network (LTCN) in the vicinity of the Golden Gateway precinct is shown in Figure 7. The LTCN identifies the function of a route (primary, secondary, or local) instead of dictating what form (shared paths, bicycle only lanes, protected on-street bicycle lane or safe active streets) it should take. Function considers the type of activities that take place along a route, and the level of existing and potential demand. A route's built form is based on the characteristics of the environment, including space availability, topography, traffic conditions (speed, volumes), primary users, and so on.

Primary routes form the spine of the cycle network, connecting major destinations of regional importance. Secondary routes are those with a moderate level of demand, providing connections between primary routes and major activity centres. Local Routes are located in local residential areas and provide access between higher order routes and local amenities).

Within the LSP site, Great Eastern Highway is identified as a future Primary Route, Daly Street and Grandstand Road north are both future Secondary Routes while Belgravia Street, Stoneham Street and Matheson Road form a future Local Route.

Figure 7 – Long Term Cycling Network in vicinity of Golden Gateway (source: DoT)

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3.4 Public Transport

There is an average level of public transport accessibility for roads around the periphery of the Golden Gateway precinct. Great Eastern Highway and Grandstand Road/Resolution Drive are serviced by regular bus services, as shown in Figure 8. Additional bus services and stops along local roads may be implemented in the future if land uses within the Golden Gateway site intensify over time.

Figure 8 – Existing Public Transport Network in Relation to the Golden Gateway LSP Site (source: Transperth / City of Belmont)

Currently the only bus routes that pass through the site are the circle route bus services 998 and 999 which are high frequency routes that travel along Grandstand Road (northern section) and Resolution Drive, and then continue to Hardey Road. There are 128 circle route bus services per weekday which travel through the site. There are currently no bus stops for the circle route within the Golden Gateway precinct, with the closest bus stops located on Grandstand Road immediately to the north of the LSP area close to the main pedestrian access for Ascot Racecourse. Bus stops are also located on Hardey Road, 50m to the south of Great Eastern Highway.

Circle route services provide a high frequency orbital connection around Perth, linking inner suburbs, major activity centres, key land uses and public transport hubs including Belmont Forum, Oats Street Station, Curtin University, Murdoch Activity Centre, Fremantle, Cottesloe, Claremont, UWA, QEII Medical Centre, Stirling Station, and Morley.

High frequency bus route 940 operates along Great Eastern Highway which forms the southern boundary of the site, with a total of 101 daily services to Perth and 103 services to Redcliffe. This bus route operates between Elizabeth Quay Bus Station and Redcliffe Station, travelling along St Georges/Adelaide Terrace, Victoria Park Transfer Station, and Great Eastern Highway adjacent to the Golden Gateway LSP site.

Bus route 293 between Redcliffe Station and High Wycombe Station also travels along Great Eastern Highway (east of Belgravia Street) and along Belgravia Street. There are 18 services in each direction per day.

More detail of bus route services and frequencies is provided in Table 3.

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Table 3 – Bus frequency and service numbers (source: Transperth)

Weekday Summary					
Route	Direction	No. Services	AM / PM Peak Frequency	Saturday Summary	Sunday / Public Holiday Summary
998	CircleRoute - clockwise	64 services 6.06am to 10.11pm	AM peak every 12 mins PM peak every 15 mins	47 services, every 15 mins from 7.15am to 6.59pm	23 services, half hourly from 7.47am to 6.45pm
998	CircleRoute - anticlockwise	60 services 6.53am to 9.53pm	AM peak every 12 mins PM peak every 15 mins	43 services, every 15 mins from 7.40am to 5.37pm, then half hourly until 7.36pm	22 services, half hourly from 8.40am to 7.10pm
940	To Perth	101 services 4.54am to 11.37pm	AM peak every 10 mins PM peak every 10 mins	59 services, every 15 mins from 7.15am to 6.47pm, then half hourly	53 services, every 15 mins from 9.15am to 6.44pm, half hourly until 10.21
	To Redcliffe	103 services 5.25am to 11.51pm	AM peak every 10 mins PM peak every 10 mins	59 services, every 15 mins from 8.04am to 8.04pm, then half hourly	53 services, every 15 mins from 8.53am to 7.07pm, half hourly until 10.41
293	To High Wycombe	18 services 5.32am to 5.37pm	AM peak every 30 mins PM peak every 20 mins	No services	No services
	To Redcliffe	18 services 5.53am to 5.33pm	AM peak every 20 mins PM peak every 30 mins	No services	No services

3.5 Road Network

The road network in the vicinity of the Golden Gateway precinct includes the major regional through route of Great Eastern Highway and a network of district and local roads on either side of the Great Eastern Highway corridor, as shown in Figure 9.

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Figure 9 – Road Network in vicinity of Golden Gateway Precinct (source: MRWA)

The Main Roads WA (MRWA) Functional Road Hierarchy surrounding the Golden Gateway precinct is shown in Figure 10. Details of each road hierarchy type are set out in Table 4. The speed zoning in the vicinity of the Golden Gateway precinct is shown in Figure 11.

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Table 4 - MRWA Road Hierarchy Criteria (source: MRWA)

		ROAD TYPES				
	CRITERIA AND ACTIVITY	PRIMARY DISTRIBUTOR	DISTRICT DISTRIBUTOR CATEGORY "A"	DISTRICT DISTRIBUTOR CATEGORY "B"	LOCAL DISTRIBUTOR/ INDUSTRIAL ROAD	ACCESS ROAD
1	Predominant Activity	Major networks e.g. freeways	Important network	Less important network	Minor network	Limited access to traffic. Forms part of local distribution network
2	Intersections	Controlled with appropriate measures e.g. grade separation, high speed traffic management measures	Controlled with appropriate measures E.g. traffic signals	Controlled with appropriate Local Area Traffic Management	Controlled with minor Local Area Traffic Management	Self controlling with minor measures
3	Indicative Traffic Volume (except semi-rural areas)	Above 15 000 vehicles per day	Above 8000 vehicles per day	Above 6000 vehicles per day	Maximum desirable volume: 6000 vehicles per day	Maximum desirable volume: 3000 vehicles per day
4	Frontage Access Allowed	None on Controlled Access Hwys Limited on other routes	Prefer not to have residential access and limited commercial access, generally via service roads	Residential and commercial access due to its historic status Prefer to limit when and where possible	Yes, except at intersections where side entry is preferred and traffic signals are involved	Yes
5	Pedestrians Allowed	Preferably none at grade. Crossing should be controlled	With positive measures for control and safety e.g. pedestrian signals	With appropriate measures for control and safety e.g. median/islands refuges	With minor safety measures	Yes
6	Recommended Operating Speed	60 – 110 km/h (depending on design characteristics)	60 – 80 km/h	60 – 70 km/h	50 - 60 km/h	50 km/h (desired speed)
7	Buses Allowed	Yes	Yes	Yes	Yes	If required
8	Parking Allowed	No	Generally no. Clearways where necessary	Not preferred. Clearways where necessary	Yes	Yes
9	Truck Routes	Yes	Yes	Yes	Only to service properties	Only to service properties
10	Responsibility	Main Roads Western Australia	Local Government	Local Government	Local Government	Local Government

Ideally, every road should meet all the criteria of one RH type.
However, many roads meet some of the criteria appropriate to different road types and are difficult to define.
Where precise definition of the road type is difficult, comparison with roads of similar role in other local government areas may assist.

Figure 10 - Road Hierarchy in Vicinity of the Golden Gateway Precinct (source: MRWA)

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Figure 11 - Speed Limits in Vicinity of the Golden Gateway Precinct (source: MRWA)

3.5.1 Regional Roads

Great Eastern Highway

Great Eastern Highway runs along the southern boundary of the Golden Gateway precinct. It is one of the State's principal transport corridors and is designated as a Primary Distributor under the control of MRWA. The most recent traffic counts for the section of Great Eastern Highway bordering the Golden Gateway precinct, collected by MRWA in 2018, reveal a two-way traffic volume of over 54,000 vehicles per day (vpd). The posted speed limit is 60km/h.

A typical cross section of Great Eastern Highway is shown in Figure 12.

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Figure 12 – Cross section of Great Eastern Highway corridor– looking east, west of Hargreaves St (source: Google Street View)

Great Eastern Highway is constructed with an on-road cycle lane, a bus lane, and 3 general traffic lanes in each direction, separated by a median which varies in width between 2.5m and 6m (with the reduced width adjacent to right turning lanes), all within a road reserve width which varies between 40 and 45m.

The median reduces to 2.5m to accommodate right turning lanes in advance of the signalised intersections at Stoneham Street / Belgravia Street and Resolution Drive / Hardey Road. The bus lane is constant in the westbound carriageway, however within the eastbound carriageway there is a bus lane for 170m of the 500m total length between the signalised intersections with Stoneham Street / Belgravia Street and Resolution Drive / Hardey Road.

Garratt Road Bridge

The Garratt Road Bridge, located 1km to the north of the Golden Gateway precinct, is one of only 8 traffic bridges across the Swan River between Fremantle and Guildford. The section of Garratt Road along the bridge is designated as a Primary Distributor under the control of MRWA. The posted speed limit is 60km/h. In the most recent traffic counts, undertaken by MRWA in 2018, the bridge was found to carry approximately 16,700 vpd, with 8,800 vpd northbound and 7,900 vpd southbound.

3.5.2 District Roads

The Golden Gateway Precinct has three key district road connections running through the site: Grandstand Road, Stoneham Street and Resolution Drive. Belgravia Street is the continuation of Stoneham Street to the south of Great Eastern Highway and the Golden Gateway site, while Hardey Road is the continuation of Resolution Drive south of Great Eastern Highway.

Grandstand Road

Grandstand Road is a District Distributor A road, running north south within the site, connecting to the Garratt Road Swan River crossing in the north and to Great Eastern Highway (via either Stoneham Street or Resolution Drive) to the south. It is constructed as a four-lane dual carriageway, with a median of varying width between 2 and 4.5m, as shown in Figure 13. Grandstand Road is constructed within a 20m road reserve. The posted speed limit is 60km/h. The most recent two-way traffic count (collected by MRWA in 2018) at the Garratt Road Bridge was 16,700 vehicles per day (vpd).

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Figure 13 – Cross section of Grandstand Road – looking southeast, south of Waterway Cr (source: Google Street View)

Stoneham Street

Stoneham Street is a District Distributor A road, running north-south within the site, between the roundabout controlled intersection of Grandstand Road with Resolution Drive and the signalised intersection of Great Eastern Highway with Belgravia Street. It is constructed as a four-lane undivided road, within a 20m road reserve, as shown in Figure 14. The posted speed limit is 60km/h. The most recent two-way traffic count for Stoneham Street (collected by MRWA in 2018) to the north of Great Eastern Highway was 14,270 vpd.

Figure 14 – Cross section of Stoneham Street – looking northeast, south of Memorial Dr (source: Google Street View)

Resolution Drive (Great Eastern Highway to Stoneham Street)

Resolution Drive is a District Distributor A road, running east-west within the site, connecting Grandstand Road and Stoneham Street with Great Eastern Highway and Hardey Road. Between the intersection of Stoneham Street / Grandstand Road and the intersection with Raconteur Drive, Resolution Drive is constructed as a single lane in each direction separated by a 2m median, as shown in Figure 15.

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Figure 15 – Cross section of Resolution Drive– looking northeast, east of Grandstand Rd south (source: Google Street View)

Between Raconteur Drive and Great Eastern Highway, Resolution Drive is constructed with 2 lanes in each direction, separated by a 10m median. The cross section for this part of Resolution Drive is shown in Figure 16.

Figure 16 – Cross section of Resolution Drive– looking southeast, northwest of Great Eastern Highway (source: Google Street View)

The road reserve width varies between 22m and more than 60m.The posted speed limit is 60km/h. The most recent two-way traffic count for Resolution Drive to the north of Great Eastern Highway (collected by MRWA in 2022) was 7,860 vpd.

Belgravia Street

To the south of the Golden Gateway precinct, Belgravia Street is the southern approach to the signalised intersection of Great Eastern Highway with Stoneham Street. Belgravia Street is classified as a District Distributor A. The most recent two-way traffic count for Belgravia Street to the south of Great Eastern Highway (collected by MRWA in 2022) was 14,640 vpd.

Belgravia Street is constructed with 3 northbound lanes and 2 southbound lanes within a road reserve which varies between 24m (closest the signalised intersection) and 21m. Further to the south Belgravia Street has no median (or turning lanes) and the road reserve is 20m. Belgravia Street has a posted speed limit of 60km/h. The section of Belgravia Street to the south of Great Eastern Highway, adjacent to Belmont Primary School, is a school zone, where a 40kph speed limit applies between 7:30 and 9:00 AM and between 2:30 and 4:00 PM on weekdays.

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Hardey Road (south of Great Eastern Highway)

To the south of the Golden Gateway precinct, Hardey Road is the southern approach to the signalised intersection of Great Eastern Highway with Resolution Drive. Hardey Road is constructed as 3 northbound lanes and 2 southbound lanes, separated by a painted median and within a 25m road reserve. Further to the south Hardy Road reduces to a kerb side parking lane and single traffic lane in each direction, separated by a 2m median and within a 20m road reserve. Hardey Road is classified as a District Distributor B, with a posted speed limit of 60km/h. The most recent two-way traffic count for Hardey Road to the south of Great Eastern Highway (collected by MRWA in 2019) was 8,270 vpd.

3.5.3 Local Roads

The Golden Gateway Precinct has seven local road connections running through the site: Hargreaves Street, Daly Street, Grandstand Road (south), Resolution Drive (northwest), Memorial Drive, Raconteur Drive and Matheson Road. These local roads are all classified as Access Streets (except for Resolution Drive which is a local distributor), with posted speed limits of 50km/h.

Hargreaves Street

Hargreaves Street is a 12.5m wide single carriageway road, within a 20m road reserve. Parking is permitted on both sides of the road. Hargreaves Street runs northwest-southeast between Stoneham Street and Great Eastern Highway. The intersection with Stoneham Street is restricted to left and right in, and left out only movements, while the intersection with Great Eastern Highway permits only left in left out movements. A cross section of Hargreaves Street is shown in Figure 17.

Figure 17 – Cross section of Hargreaves St, north of Great Eastern Hwy, looking south (source: Google Street View)

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Daly Street

Daly Street is an 8m wide road, within a 20m road reserve. Parking is permitted on both sides of the road. Daly Street runs northwest-southeast between Stoneham Street and Great Eastern Highway. The intersection with Stoneham Street is restricted to left out only movements. The intersection with Great Eastern Highway permits only left in left out movements. A cross section of Daly Street is shown in Figure 18.

Figure 18 – Cross section of Daly St, north of Great Eastern Hwy, looking south (source: Google Street View)

Grandstand Road (south)

Grandstand Road (south) is a 12.5m wide single carriageway road, within a 20m road reserve. Parking is permitted on both sides of the road. Grandstand Road (south) runs northwest-southeast between Resolution Drive and Great Eastern Highway. All movements are permitted at the intersection with Resolution Drive, while the intersection with Great Eastern Highway permits only left in left out movements. A cross section of Grandstand Road (south) is shown in Figure 19.

Figure 19 – Cross section of Grandstand Rd (south), north of Great Eastern Hwy, looking south (source: Google Street View)

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Resolution Drive

The section of Resolution Drive to the west of the roundabout intersection with Stoneham Street and Grandstand Road is classified as a local distributor, providing the main access for the Ascot Waters residential development. It is constructed as two 4.5m wide lanes separated by a 2m median, within a 20m road reserve. On-street parking is not permitted on either side of the road. Resolution Drive has three intersections along its 300m length, all full movement roundabouts. The Ascot Kilns area is immediately to the northeast of Resolution Drive. A cross section of Resolution Drive is shown in Figure 20.

Figure 20 – Cross section of Resolution Dr (northwest) north of Stoneham St, looking south (source: Google Street View)

Memorial Drive

Memorial Drive is a 6m wide road constructed through the Belmont Trust land at the western end of the Golden Gateway precinct. Memorial Drive provides a minor connection to the southern portion of the Ascot Waters development. Low fence posts either side of Memorial Drive prevent on-street parking. A cross section of Memorial Drive is shown in Figure 21.

Figure 21 – Cross section of Memorial Dr west of Stoneham St, looking east (source: Google Street View)

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3.6 Existing Traffic Volumes

Traffic volume data was obtained from the following sources:

- SCATS traffic volumes and signal data from September 2021 for the two signal controlled intersections:
  - Great Eastern Highway/Stoneham Street/Belgravia Street Intersection
  - Great Eastern Highway/Resolution Drive/Hardey Road Intersection
- Peak hour and 12 hour intersection turning counts (derived from video surveys in February 2018) for the two signal controlled intersections:
  - Great Eastern Highway/Stoneham Street/Belgravia Street Intersection
  - Great Eastern Highway/Resolution Drive/Hardey Road Intersection
- Volume, classification, and speed data collected in September 2021 from midblock loop detectors for the following sites:
  - Daly Street near Great Eastern Highway
  - Daly Street near Stoneham Street
  - Hargreaves Street near Great Eastern Highway
  - Hargreaves Street near Stoneham Street
  - Grandstand Road near Great Eastern Highway
  - Grandstand Road near Resolution Drive
- Peak hour turning counts and queue length observations from a video survey collected in September 2021 at the roundabout intersection of Grandstand Road/Resolution Drive/Stoneham Street roundabout.
- Mid-block traffic counts for Great Eastern Highway, Stoneham Street, Resolution Drive, Belgravia Street, Hardey Road and Garratt Road Bridge collected by MRWA in 2018, 2019, 2020 and 2022 and obtained from Traffic Map.

3.6.1 SCATS Signal Data

All MRWA's traffic signals in the metropolitan area are connected to SCATS (Sydney Co-ordinated Adaptive Traffic System). This is an adaptive urban traffic management system that synchronises traffic signals to optimise traffic flow across a whole city, region, or corridor. SCATS can provide vehicle count data (through loop detectors in each lane) and traffic signal phase data (a record of green, amber, and red times for each signal phase).

SCATS signal data for the two signalised intersections was provided by Main Roads. This data included:

- SCATS monitor and timing screenshots,
- Phase and Signal Group history data, and
- Offset data between sites.

SCATS data was obtained for the 5 weekdays between Monday September 6th and Friday September 10th 2021, which coincided with the dates of the roundabout survey and the local road loop detector counts. These weekdays were outside of school holidays and no major works or disruptions to the local or regional road network were noted.

The AM and PM peak hours were found to occur between 7:45 and 8:45am, and between 16:15 and 17:15pm.

The SCATS graphics for each of the signalised intersections are shown in Figure 22 and Figure 23.

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Figure 22 – Great Eastern Highway/Stoneham Street/Belgravia Street SCATS graphic (source: Main Roads WA)

Figure 23 – Great Eastern Highway/Resolution Drive/Hardey Road SCATS graphic (source: Main Roads WA)

The relevant peak hour data was extracted and processed to calculate the average cycle time for each intersection.

The calculation set out in the Main Roads WA Guidelines *Appendix A – Signal Data Information for Modelling – Version 1.1, Section A.2.3* was used to calculate the average cycle time and phase lengths during the peak hours. The calculated green, amber and red timings for each signalised intersection are shown in Table 5.

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Table 5 – Signalised Intersection peak hour phase times

Intersection		AM Phase Times (seconds)			PM Phase Times (seconds)		
		Green	Amber	Red	Green	Amber	Red
Great Eastern Hwy / Stoneham St / Belgravia St			134s			139s	
Signal Phase A	(Great Eastern Highway)	62	4	2.5	56	4	2.5
Signal Phase D	(Belgravia Street)	17	4	3	29	4	3
Signal Phase E	(Stoneham Street)	19	4	3	14	4	3
Signal Phase F	(GEH right turns)	9	4	3	13	4	3
Great Eastern Hwy / Resolution Dr / Hardey Rd			134s			139s	
Signal Phase A	(Great Eastern Highway)	67	4	3	63	4	3
Signal Phase D	(Hardey Road)	14	4	3.5	19	4	3.5
Signal Phase E	(Resolution Drive)	10	4	3.5	8	4	3.5
Signal Phase F	(GEH right turns)	13	4	3.5	19	4	3.5

The signal phase data reveals that each of the signalised intersections has four phases per signal cycle in the peak hours. Phase A is where the green time is allocated to Great Eastern Highway through and left turning traffic. Phase D is the next phase, with green time allocated to traffic movements from the southern intersection approach (Belgravia Street and Hardey Road). Phase E allocates green time to traffic movements from the northern intersection approach (Stoneham Street and Resolution Drive). Finally, Phase F allocates green time to the right turn movements from Great Eastern Highway.

These most recent signal cycle lengths are significantly longer than the cycle lengths recorded in November 2020 as part of an earlier assessment. The AM peak period average signal cycle time increased by 14s seconds from 120 to 134 seconds while the PM peak average signal cycle time increased by 19 seconds from 120 to 139 seconds. Most of the increased green time was given to phase A which is for Great Eastern Highway through and left turning traffic. These increases were most notable at the intersection of Great Eastern Highway with Hardey Road and Resolution Drive where over 95% of the additional green time in each peak hour was allocated to Great Eastern Highway traffic and not side roads.

3.6.2 Signalised Intersection Turn Counts

SCATS signal data provides traffic volumes at 15 minute intervals for each traffic lane through an intersection. Where a lane permits shared turning movements, on site observations are required to determine an accurate split between the permitted turning movements. For the intersections of Great Eastern Highway with Stoneham Street / Belgravia Street and Resolution Drive / Hardey Road there are multiple shared lanes.

SCATS traffic volume data was obtained for the 5 weekdays between Monday September 6th and Friday September 10th 2021, which coincides with the dates of the roundabout survey and the local road loop detector counts. The AM and PM peak hours were found to occur between 7:45 and 8:45am, and between 16:15 and 17:15pm.

For the shared lanes, the proportion of vehicles making each movement was determined from the video surveys undertaken by MRWA in February 2018.

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Peak hour traffic turning volumes at the intersection of Great Eastern Highway / Stoneham Street / Belgravia Street are illustrated in Figure 24 (for the AM peak) and Figure 25 (for the PM peak).

Figure 24 – Great Eastern Highway/Stoneham Street/Belgravia Street AM Peak Hour Turn Counts (source: Main Roads WA)

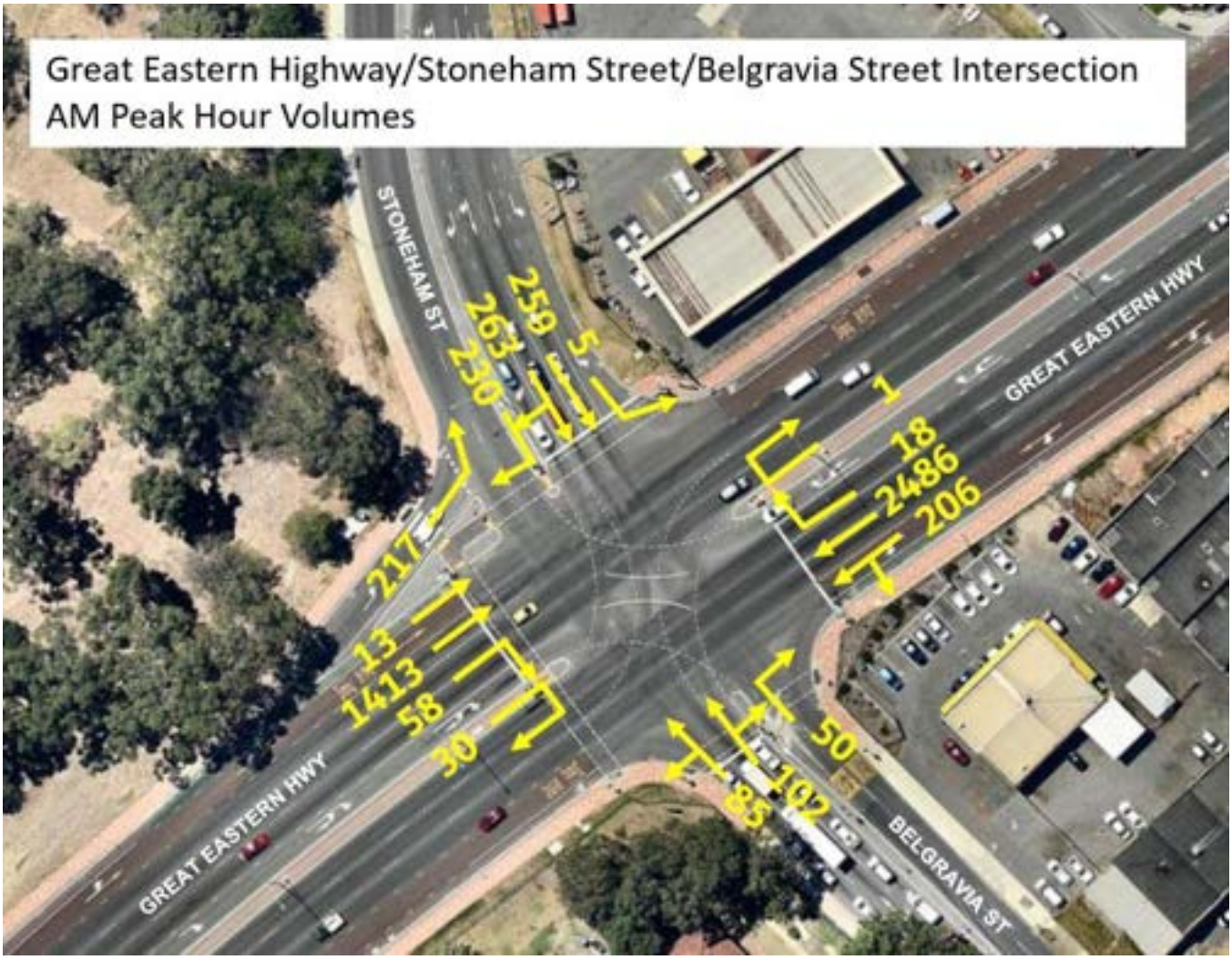

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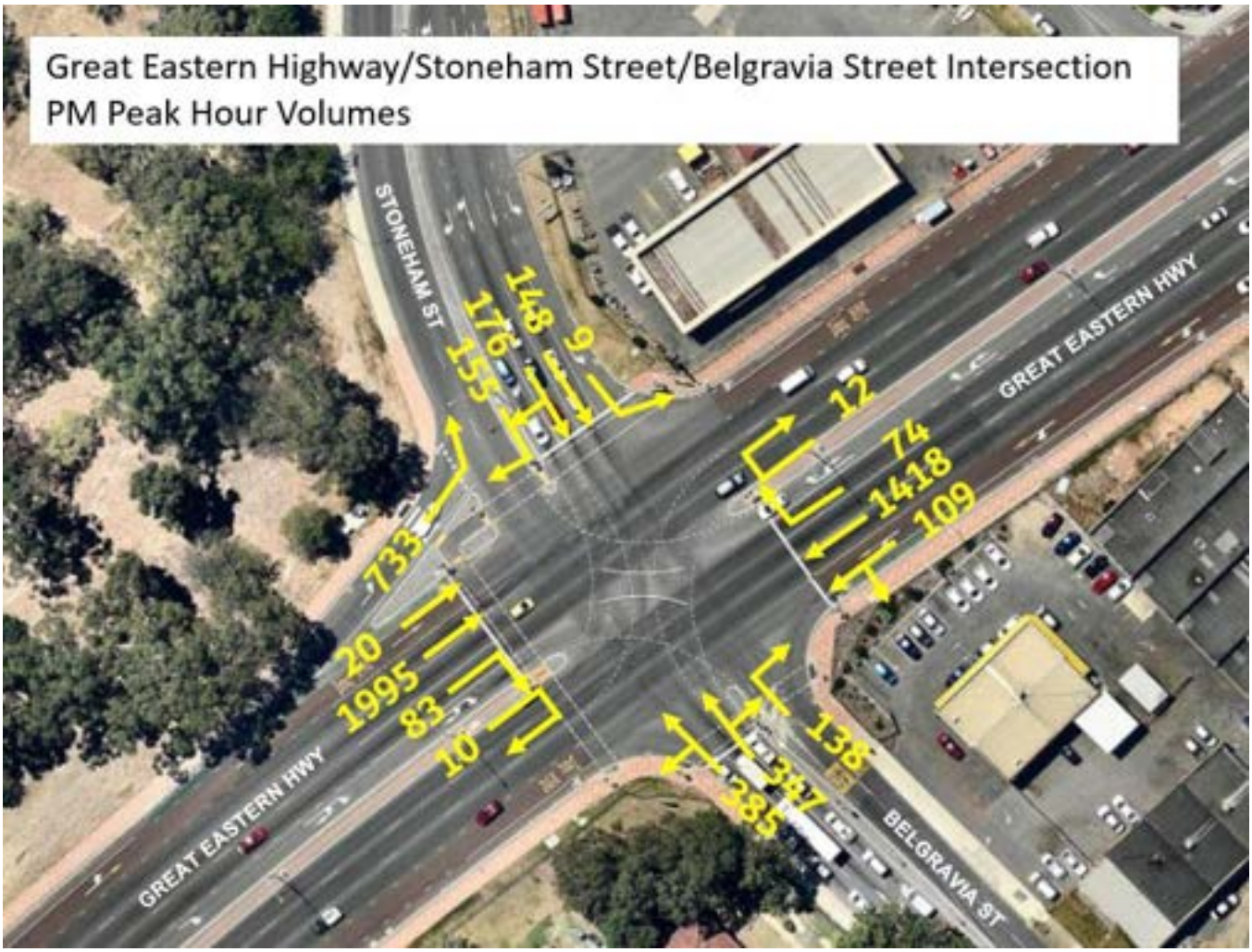
Figure 25 – Great Eastern Highway/Stoneham Street/Belgravia Street PM Peak Hour Turn Counts (source: Main Roads WA)



Peak hour traffic turning volumes at the intersection of Great Eastern Highway / Resolution Drive / Hardey Road are illustrated in Figure 26 (for the AM peak) and Figure 27 (for the PM peak).

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Figure 26 – Great Eastern Highway/Resolution Drive/Hardey Road AM Peak Hour Turn Counts (source: Main Roads WA)

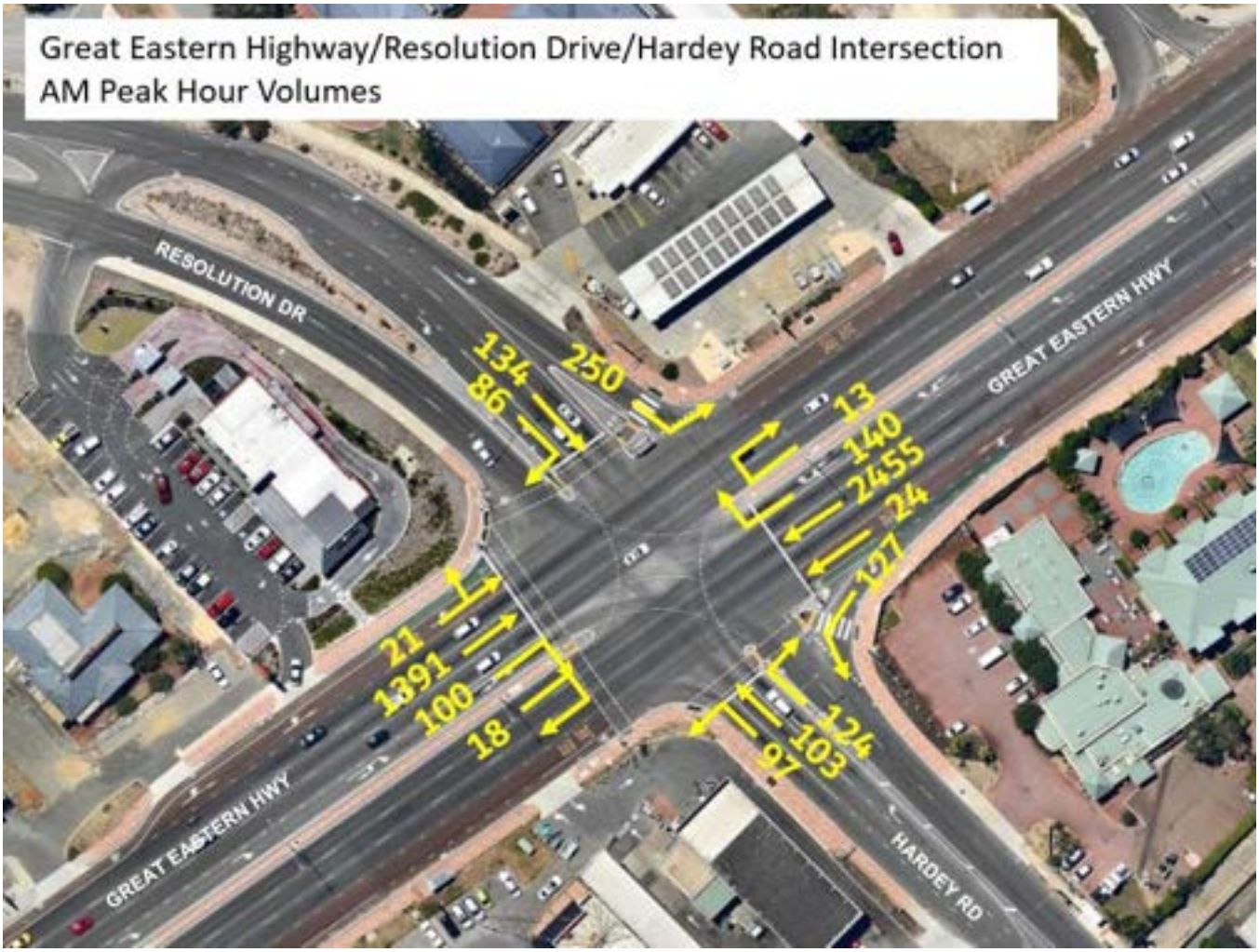

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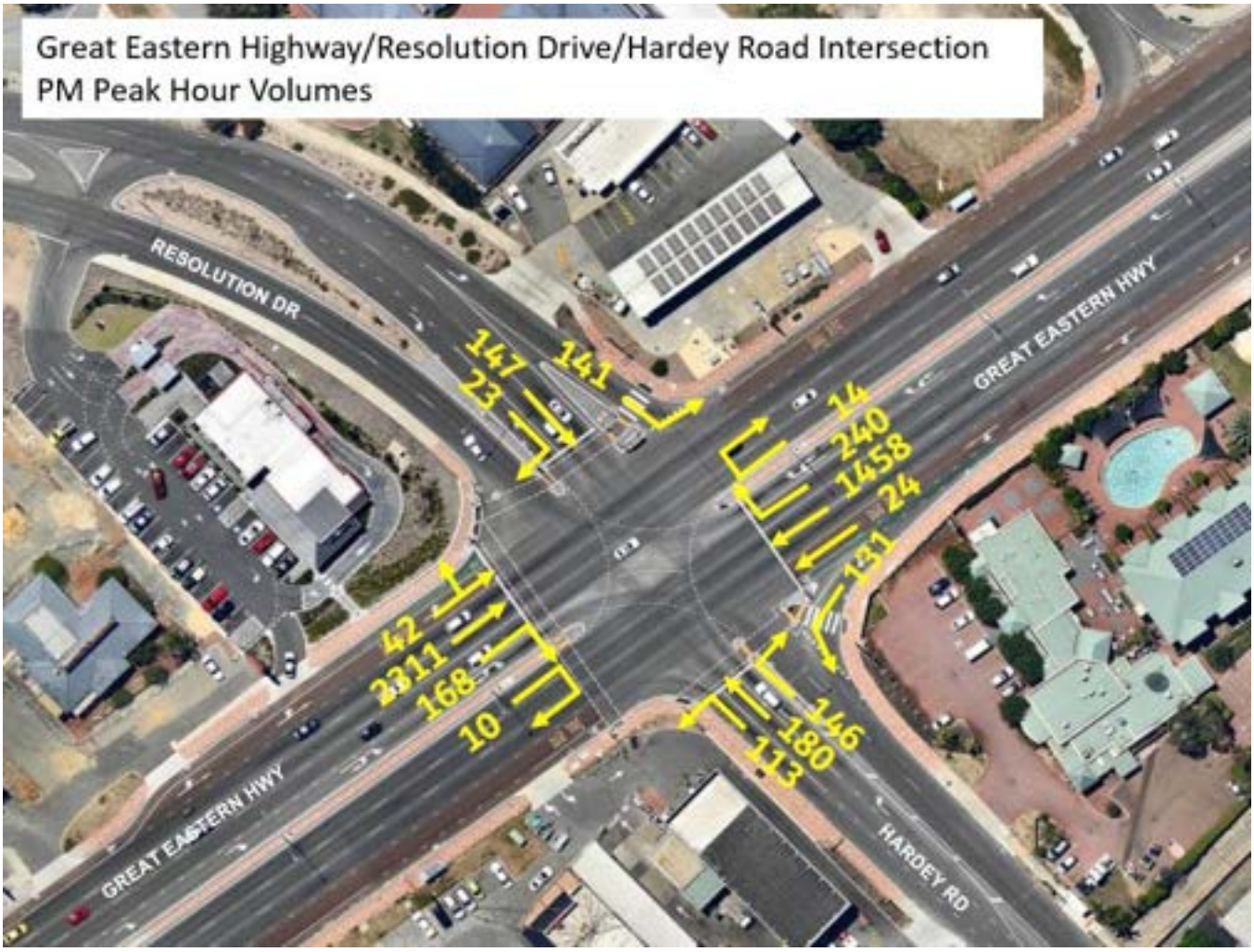
Figure 27 – Great Eastern Highway/Resolution Drive/Hardey Road PM Peak Hour Turn Counts (source: Main Roads WA)



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3.6.3 City of Belmont Local Road Traffic Count Data

To gain an understanding of the level of traffic generated by existing land uses within the precinct, the City of Belmont collected mid-block traffic data for selected local roads between Wednesday September 8th and Friday September 10th, 2021.

The location of the traffic counters is shown in Figure 28. Weekday and peak hour traffic volumes by direction for each count site are summarised in Table 6.

Figure 28 - Local Road Network Traffic Count Locations

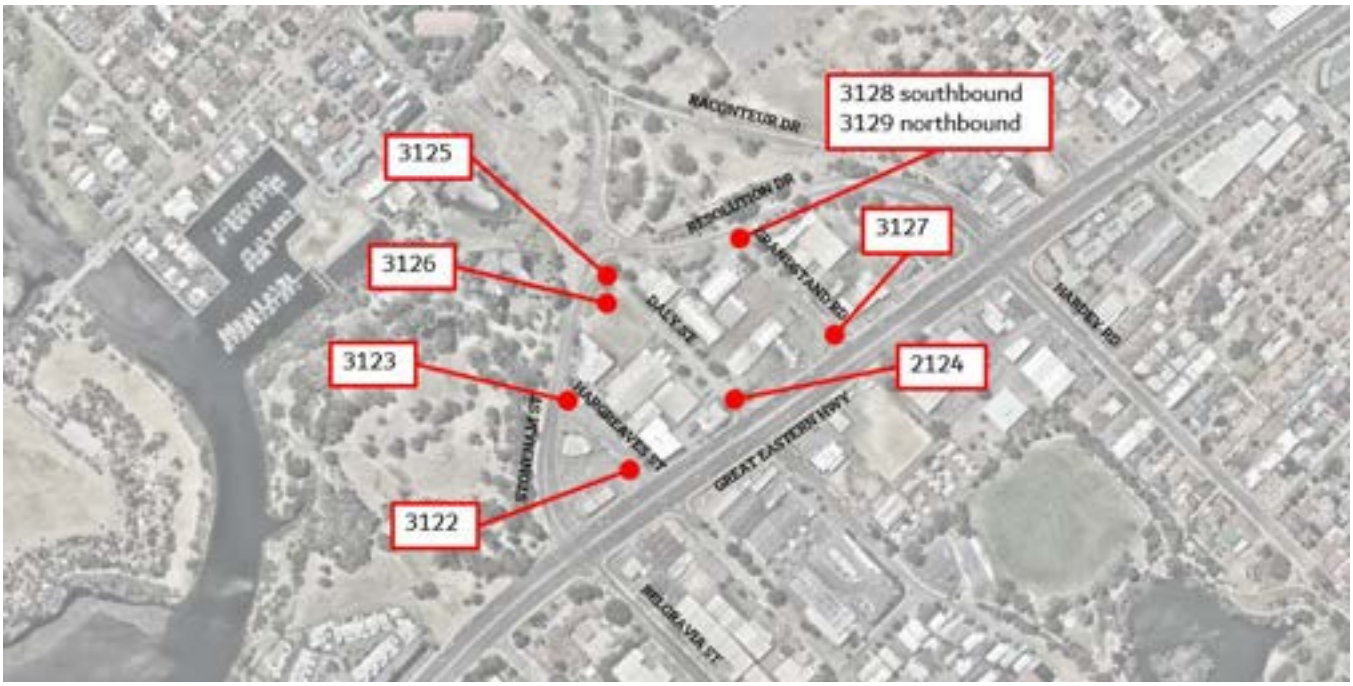

Table 6 – Local Road Network September 2021 Average Weekday Traffic Volumes (source: City of Belmont)

Road Name	Location	Average Weekday Volumes				
		Daily (vpd)	By Direction	Daily (vpd)	AM Peak (vph)	PM Peak (vph)
Hargreaves St	3122 North of GEH	278	Northbound	74	15	3
			Southbound	204	11	24
	3123 South of Stoneham St	330	Northbound	90	3	12
			Southbound	240	19	24
Daly St	3124 North of GEH	595	Northbound	375	18	17
			Southbound	220	5	18
	3125 South of Stoneham St	215	Northbound	188	4	25
Daly St link to Stoneham St	3126 East of Stoneham St		Eastbound	9	1	1
			Westbound	18	3	2
Grandstand Rd	3127 North of GEH	1,043	Northbound	323	20	20
			Southbound	720	30	50
	3128 South of Resolution Dr	1,482	Southbound	657	69	39
	3129 South of Resolution Dr		Northbound	825	40	90

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The collected traffic data shows that Hargreaves Street carries higher traffic volumes at the northern end rather than the end closer to Great Eastern Highway, however the difference is within 20%. For Daly Street, the highest traffic volumes were observed at the Great Eastern Highway end, with volumes more than 2.5 times those recorded south of Stoneham Street. Grandstand Road was observed to carry higher traffic volumes south of Resolution Drive than to the north of Great Eastern Highway.

All existing traffic volumes are well within the capacity of local access roads, which is in the order of 3,000 vpd.

Grandstand Road carries the highest volumes of the local road network. The higher traffic volumes along Grandstand Road are primarily a result of the land uses at the southern end of Grandstand Road (fronting Great Eastern Highway), which are predominantly fast food outlets which generate a high volume of vehicle movements, particularly around lunch time and afternoon peak periods.

Not all the existing precinct traffic uses the local roads to access properties; there are 2 existing crossovers onto Stoneham Street (serving two properties, both of which also have access to Hargreaves Street) and 5 crossovers onto Resolution Drive (serving 4 properties where 2 also have access to Daly Street and one property which also has access to Great Eastern Highway). There are a further three properties with direct access to Great Eastern Highway (2 properties which also have access to Grandstand Road). There are only three properties which do not have any access to the local roads. Therefore, while the local road counts will not include all development traffic, it will provide a reasonable lower estimate of precinct traffic volumes.

A sum of precinct entry and exit traffic movements on local roads is presented in Table 7.

Table 7 – Existing Precinct Traffic Entry and Exit Movements to Local Roads September 2021 (source: City of Belmont)

Precinct Movements	Road	Average Weekday Volumes		
		Daily (vpd)	AM Peak (vph)	PM Peak (vph)
IN	From Great Eastern Hwy	772	53	40
	From Stoneham St	249	20	25
	From Resolution Dr	657	69	39
	Total	1,678	142	104
OUT	To Great Eastern Hwy	1,144	46	92
	To Stoneham St	296	10	39
	To Resolution Dr	825	40	90
	Total	2,265	96	221

The local road count data shows that the existing land uses within the precinct are generating at least 4,000 vpd, probably closer to 4,500 vpd, with 1,678 local road entry movements and 2,265 local road exit movements. The imbalance between entry and exit movements can be explained by there being several crossovers on Great Eastern Highway, Resolution Drive and Stoneham Street which allow direct entry and exit movements to the precinct which were not counted.

3.6.4 City of Belmont Peak Hour Turning Movement Data

Peak hour turning counts at the roundabout controlled intersection of Grandstand Road / Resolution Drive / Stoneham Street were obtained from a video survey undertaken Wednesday September 8th, 2021. Queue lengths were also observed.

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The survey was completed using a video camera erected on a mast located between the southwest of the intersection.

The peak period turning movement survey collected full turning movement data at the roundabout (including u-turns), with the data collected for light and heavy vehicles in 15-minute time periods. To determine the actual peak hour, volumes were collected for a ninety minute period between:

- AM – 7:45am and 9:15am.
- PM – 3:45pm and 5:15pm.

Figure 29 shows the turning movement data for the AM peak hour of 7:45 am to 8:45am, and Figure 30 shows the turning movement data for the PM peak hour of 4pm to 5pm.

Figure 29 - September 2021 AM Peak Hour Turning Volumes at Grandstand Road/Resolution Drive/Stoneham Street Intersection

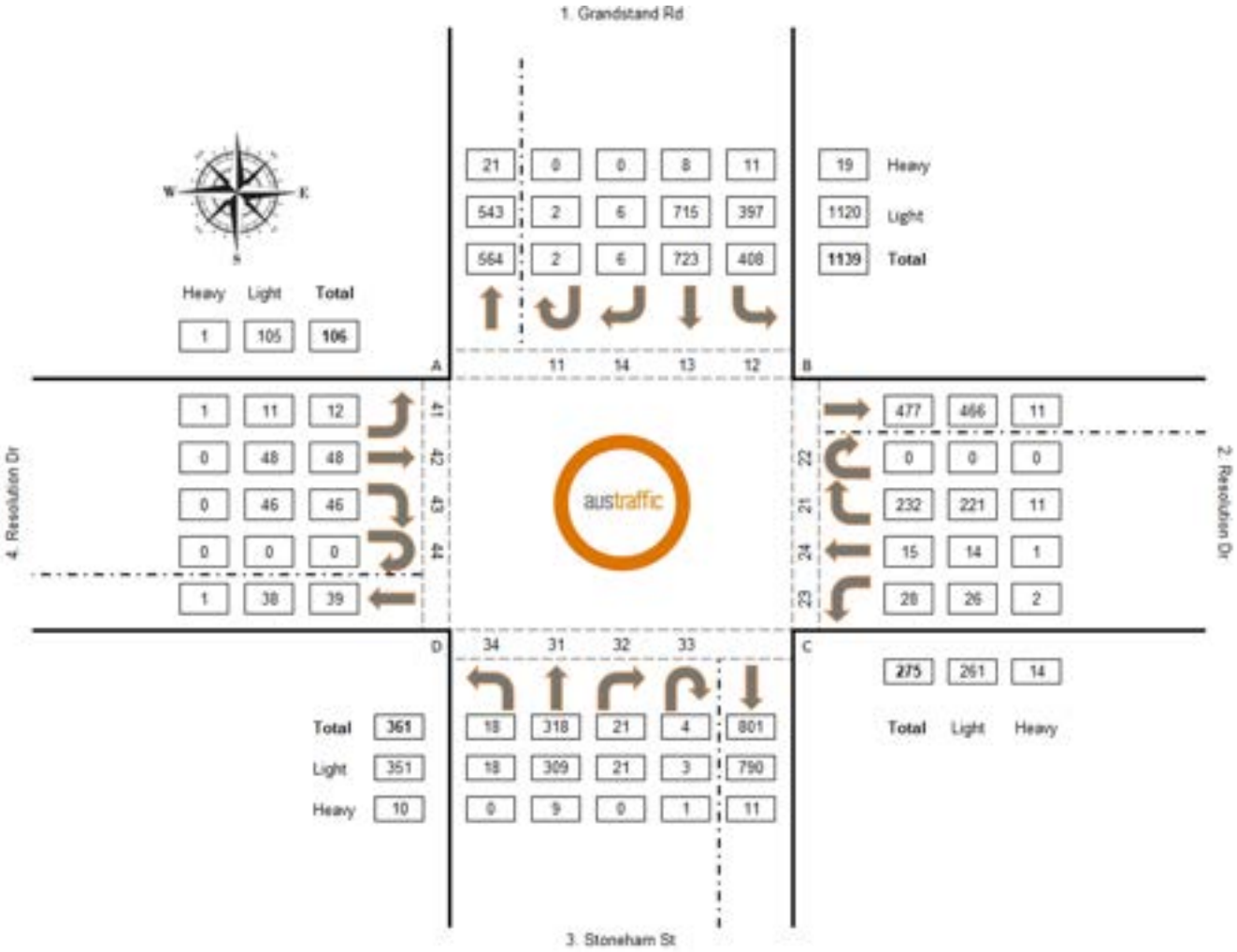

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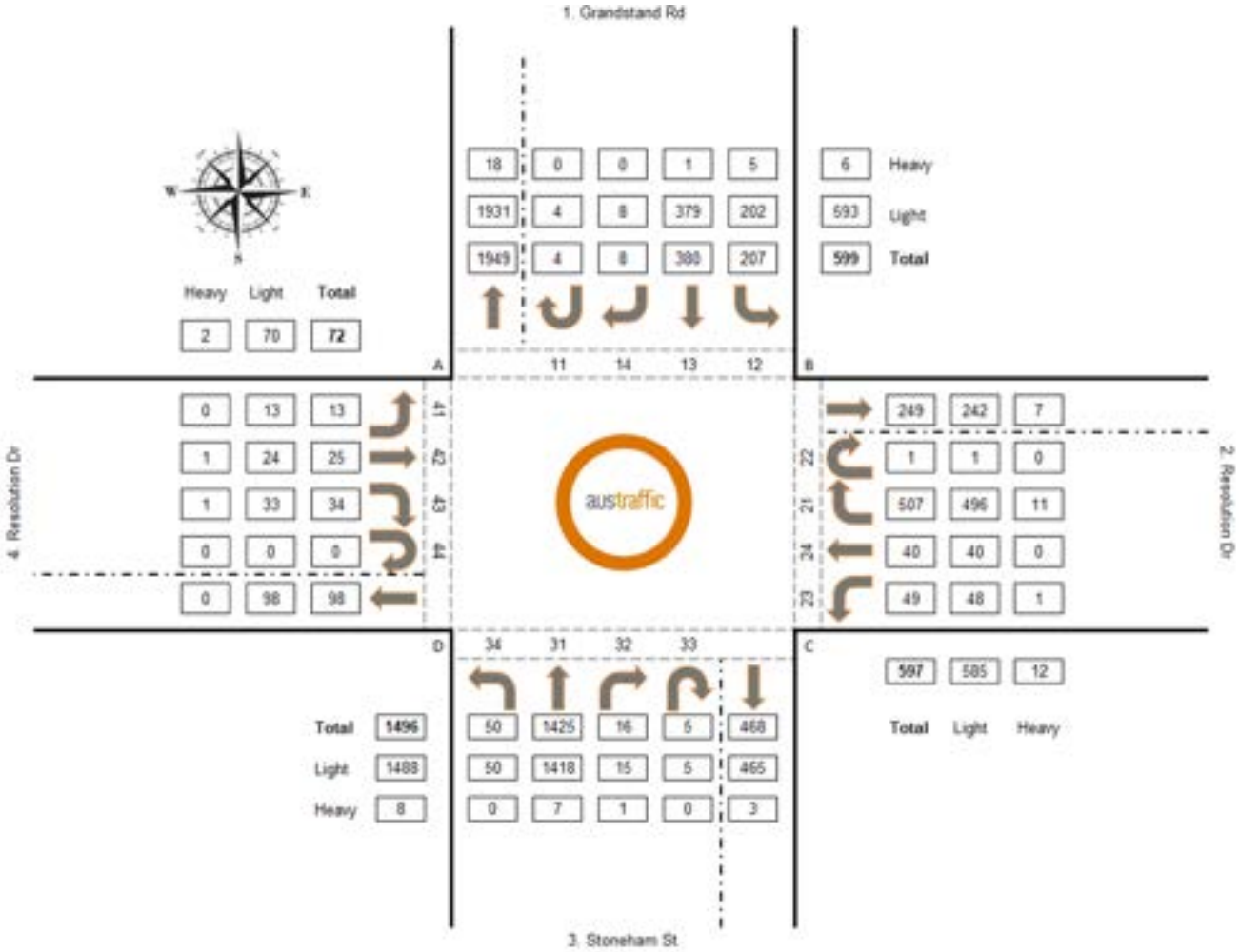
Figure 30 – September 2021 PM Peak Hour Turning Volumes at Grandstand Road / Resolution Drive / Stoneham Street Intersection



Observed queue lengths for the AM peak are presented in Figure 31. In the AM peak the longest queues were observed on the single lane Resolution Drive eastern approach to the roundabout, and on Grandstand Road. The video images also reveal the queue back along Stoneham Street from the signalised intersection of Great Eastern Highway/Stoneham Street/Belgravia Street sometimes reaches back to the roundabout. Still images from the AM peak video survey are shown in Figure 32, showing typical queuing and an instance of the queue back from the Great Eastern Highway/Stoneham Street/Belgravia intersection reaching back to the roundabout.

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Figure 31 - September 2021 AM Peak Hour Observed Queues at Grandstand Road/Resolution Drive/Stoneham Street Intersection

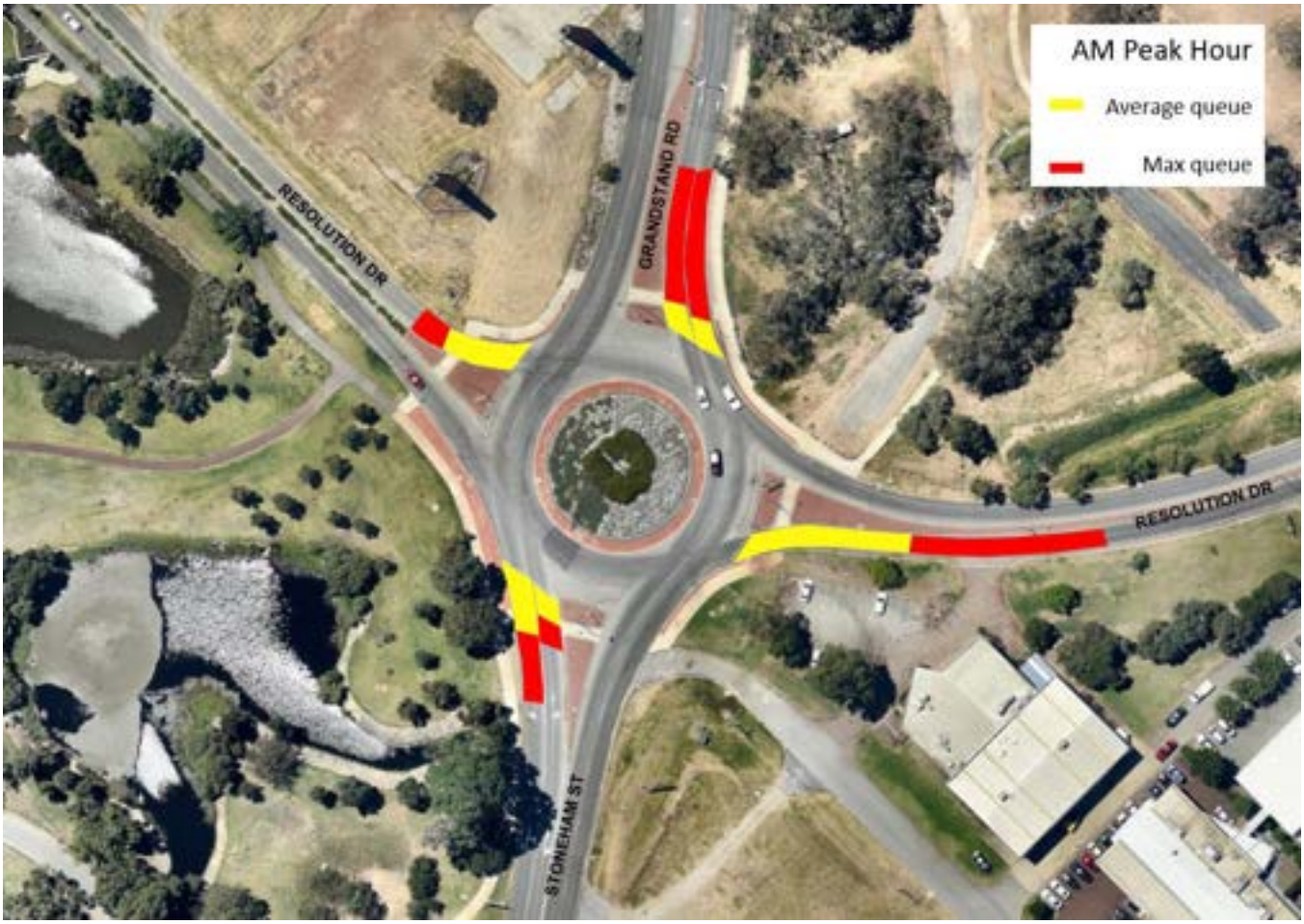

Figure 32 - September 2021 AM Peak Hour Still Images from Video Survey

Observed queue lengths for the PM peak are presented in Figure 33. In the PM peak the longest queues were observed on the single lane Resolution Drive eastern approach to the roundabout, and the two Stoneham Street approach lanes (from the south).

It should be noted that due to the viewing angle of the survey video camera, it is not possible to see the full extent of queuing on the Stoneham Street approach to the roundabout in the PM peak. The viewing angle only allowed the first 7 vehicles in the queue to be observed. The queue does not exceed this length in the AM peak hour, only in the PM peak.

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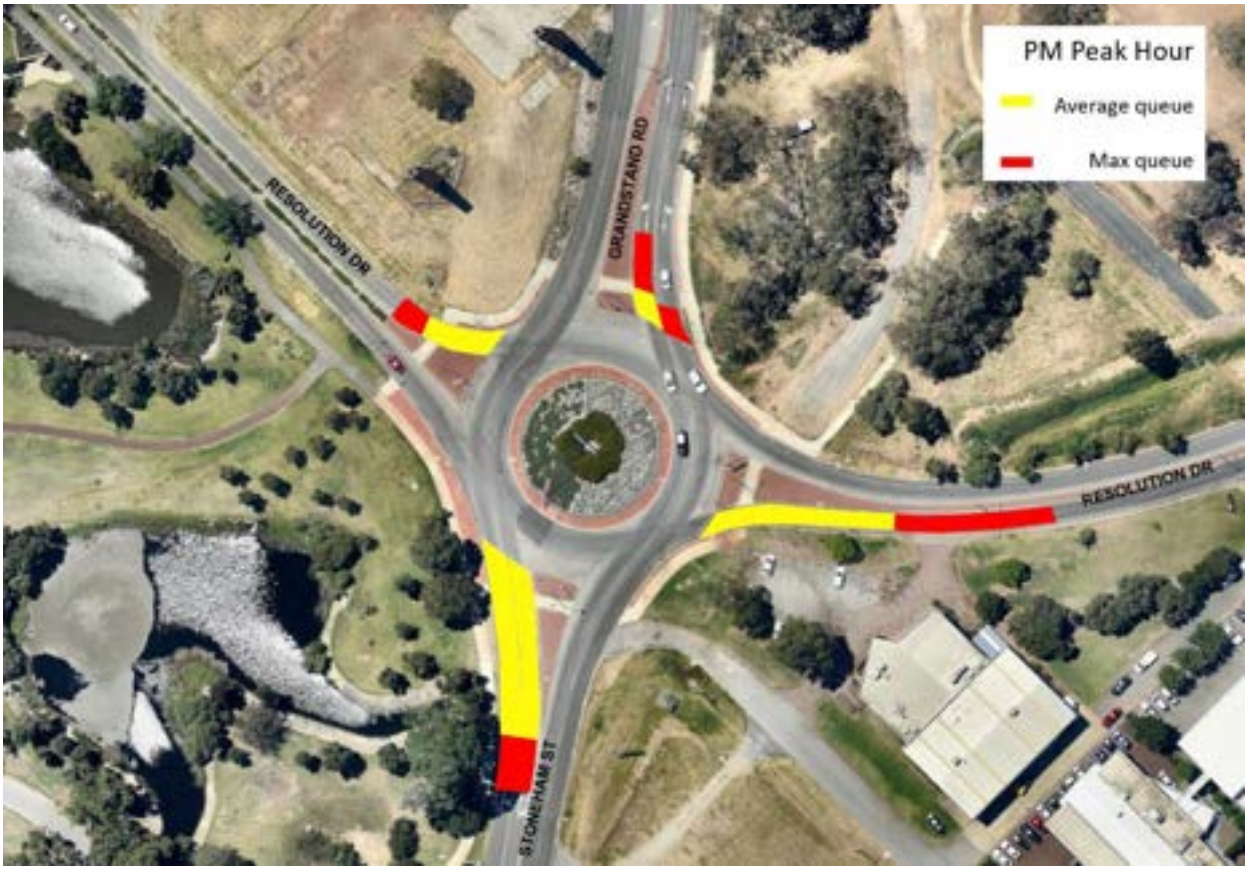
Figure 33 - September 2021 PM Peak Hour Observed Queues at Grandstand Road/Resolution Drive/Stoneham Street Intersection



Still images from the PM peak video survey are shown in Figure 34, showing typical queuing.

Figure 34 - September 2021 PM Peak Hour Still Images from Video Survey

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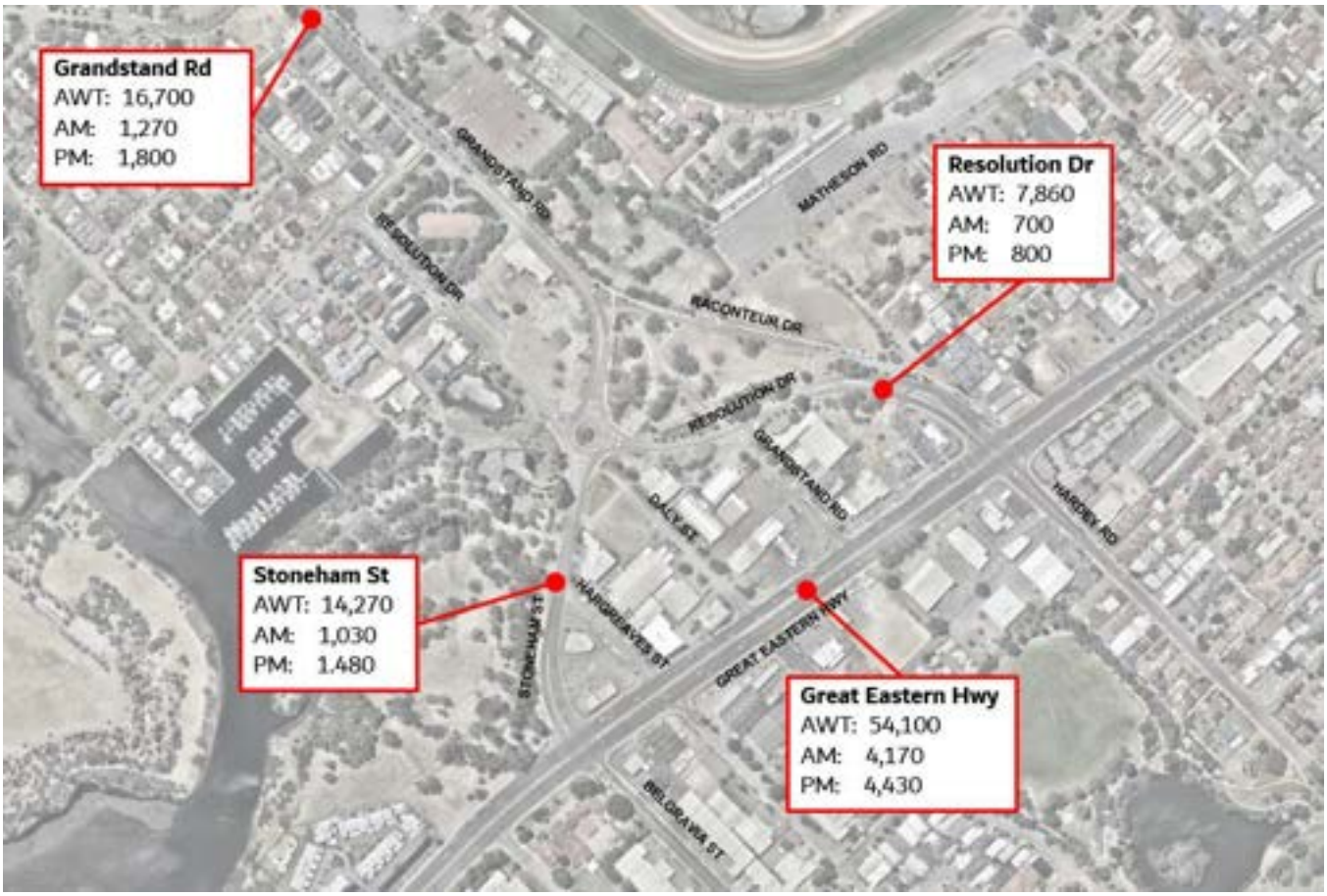
3.6.5 Mid-block Traffic Volumes

Mid-block traffic counts for the regional and district level roads including Great Eastern Highway, Stoneham Street, Resolution Drive and Garratt Road Bridge (Grandstand Road) were sourced from Traffic Map. These counts are all from the 2018/2019 period, with the exception of Resolution Drive where the counts are from 2021/2022 and are presented in Figure 35.

Figure 35 – Two-way Mid-block Volumes (source: Main Roads WA)



3.6.6 Mid-block Great Eastern Highway Traffic Volumes

Traffic volumes at two sites along Great Eastern Highway (site 3404 north of Abernethy Road and site 7938 west of Aurum Street) were extracted from Traffic Map to determine historic growth trends. Between 2018 and 2020, traffic volumes along Great Eastern Highway reduced, as illustrated in Figure 36. The extent of the reduction is demonstrated in Table 8.

The 2020 counts are the most recent counts, and were undertaken in February 2020, before there was a temporary Covid-19 related reduction in traffic volumes.

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Figure 36 – Great Eastern Highway Growth Trends (source: Main Roads WA)

Table 8 – Great Eastern Highway Traffic Volume Trends (source: Main Roads WA)

Site	Year	Northbound/Eastbound	Southbound/Westbound	Both Directions
3404	2018	29,295	29,400	58,695
	2020	28,132	27,897	56,029
	Change	-8.71%	-9.80%	-9.25%
7938.	2018	29,559	29,746	59,305
	2020	26,548	27,065	53,613
	Change	-10.19%	-9.01%	-9.6%

3.6.7 Key Considerations - Existing Traffic Volumes

Great Eastern Highway is a regional road carrying a high volume of traffic over the day and in each of the peak hours. The two signalised intersections within the precinct, of Great Eastern Highway with Stoneham Street / Belgravia Street and Great Eastern Highway with Resolution Drive / Hardey Road are congested, with peak hour signal cycle times of up to 139 seconds (this is the time taken for all required traffic signal phases to run once). This signal cycle time (of 2 minutes and 19 seconds) causes long queues to form.

For the district level roads, Stoneham Street carries twice the amount of traffic as Resolution Drive, over the course of an entire day and in each peak period. This is partly due to signage to the north of the roundabout intersection of Grandstand Road / Resolution Drive / Stoneham Street which advises traffic destined for Midland and the Airport to use Resolution Drive to access Great Eastern Highway while traffic for Belmont is advised to use Stoneham Street.

Local roads within the precinct all carry low traffic volumes, well within their capacity. Of the local roads Grandstand Road carries the highest volumes.

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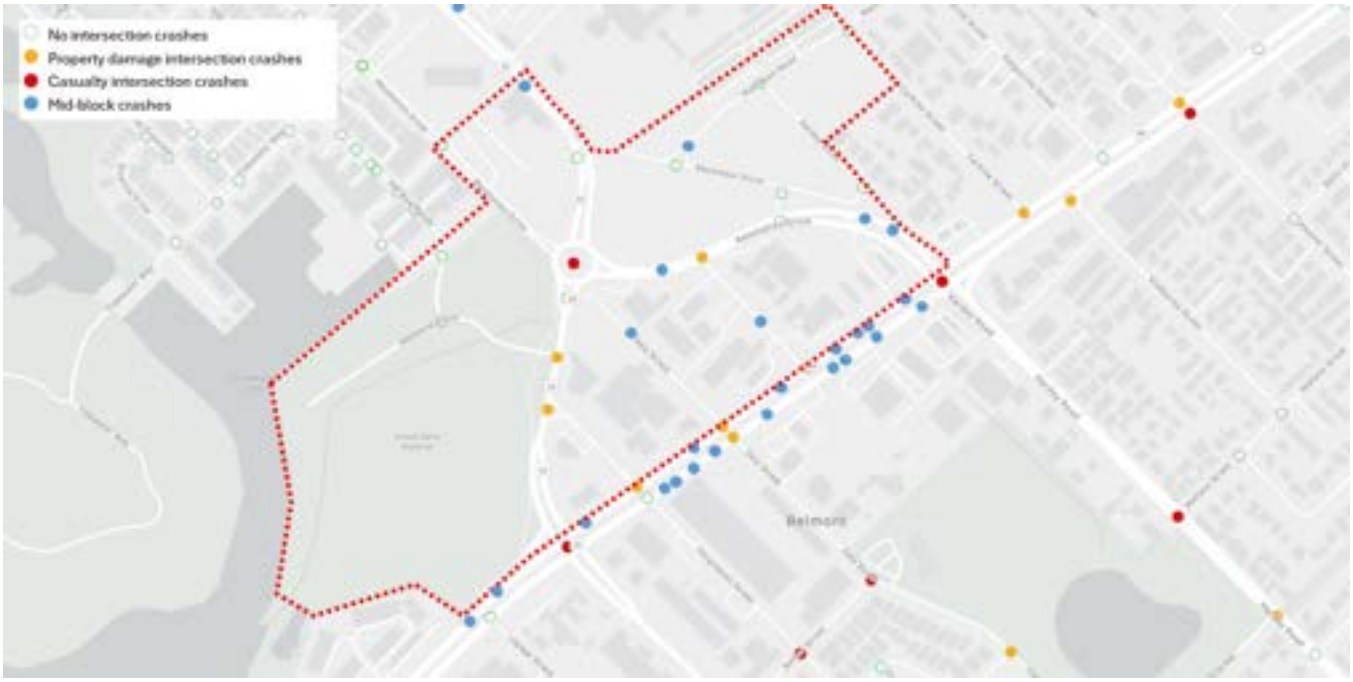
3.7 Existing Crash Data

Intersection and mid-block crash history for the roads bordering and within the Golden Gateway precinct were obtained from Main Roads WA. The location of road crashes in the vicinity of the precinct is shown in Figure 37. This data is for the five-year period ending Friday June 28th, 2024.

Figure 37 - Location of road crashes (Source: Main Roads WA)



3.7.1 Intersection Crashes

In the five-year period there were 135 reported crashes at intersections within or adjacent to the Golden Gateway precinct, as summarised in Table 9. Crash types include:

- Rear end — where a vehicle collides with the rear of another vehicle.
- Right angle — where colliding vehicles approach from adjacent approaches of the intersection.
- Right turn through — where a vehicle turns right in front of an oncoming vehicle.
- Sideswipe — where a vehicle collides with the side of another vehicle.
- Hit object — where a single vehicle hits an object which is not a vehicle

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Table 9 – Intersection crash summary for 5 years to June 2024 (source: Main Roads WA)

Intersection	Crash Type	Severity
Great Eastern Hwy / Stoneham St / Belgravia St – traffic signals	**49 reported crashes** 41 Rear end 5 Sideswipe 2 Right angle 1 Hit object	43% Property damage major 43% Property damage minor 12% Medical 2% Hospital
Great Eastern Hwy / Resolution Dr / Hardey Rd – traffic signals	**64 reported crashes** 50 Rear End 6 Right angle 4 Other 2 Sideswipe 2 Right turn through	47% Property damage major 38% Property damage minor 13% Medical 3% Hospital
Great Eastern Hwy / Hargreaves St – left in left out priority controlled intersection	1 Hit object	100% Property damage minor
Great Eastern Hwy / Daly St – left in left out priority controlled intersection	1 Rear End	100% Property damage major
Great Eastern Hwy / Grandstand Rd – left in left out priority controlled intersection	**4 reported crashes** 3 Right Angle 1 Rear End	75% Property damage major 25% Property damage minor
Stoneham St / Resolution Dr / Grandstand Rd – roundabout	**11 reported crashes** 4 Right angle 3 Rear end 2 Sideswipe 2 Other	55% Property damage minor 36% Property damage major 9% Medical
Stoneham St / Memorial Dr – Priority controlled T intersection	1 Sideswipe	100% Property damage minor
Stoneham St / Hargreaves St – Priority controlled T intersection	1 Rear End 1 Right turn through	100% Property damage major
Resolution Dr / Grandstand Rd – Priority controlled T intersection	1 Hit object 1 Rear End	50% Property damage minor 50% Property damage major

3.7.2 Midblock Crashes

In the same five-year period, there were 23 reported midblock crashes along the roads bordering and within the Golden Gateway precinct, as summarised in Table 10.

Table 10 – Mid-block crash summary for 5 years to June 2024 (source: Main Roads WA)

Road	Section	Crash Summary	Severity and Analysis
Great Eastern Highway	Stoneham St to Hargreaves St – eastbound carriageway	1 Sideswipe same direction	Low severity - property damage only
	Hargreaves St to Daly St – eastbound carriageway	1 Rear End	Crash required medical treatment
	Daly St to Grandstand Rd – eastbound carriageway	1 Rear End	Low severity - property damage only

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Road	Section	Crash Summary	Severity and Analysis
Great Eastern Highway	Grandstand Rd to Resolution Dr – eastbound carriageway	2 Rear End 1 Right Angle 1 Sideswipe same direction	Low severity - property damage only
	Hardey Rd to Daly St – westbound carriageway	3 Rear End 2 Sideswipe same direction	80% property damage only 20% required medical treatment
	Daly St to Hargreaves St – westbound carriageway	4 Rear End	75% property damage only 25% required medical treatment
Grandstand Rd (north)	Resolution Dr to northern boundary of Golden Gateway precinct – northbound carriageway	1 Sideswipe same direction	Low severity - property damage only
	Resolution Dr to northern boundary of Golden Gateway precinct – southbound carriageway	1 Sideswipe same direction	Low severity - property damage only
Daly Street	Great Eastern Hwy to Stoneham St	1 Sideswipe same direction	Low severity - property damage only Crash involved parking
Grandstand Rd (south)	Great Eastern Hwy to Resolution Dr	1 Hit object	Low severity - property damage only Crash involved parking

3.7.3 Crash Summary

For the roads bordering and within the Golden Gateway precinct, the biggest road safety issue is rear end crashes at the two signalised intersections with Great Eastern Highway, where the crash rate is higher than expected for intersections of their nature. This is due in part to the high volume of traffic carried by Great Eastern Highway in comparison to the other streets, and because rear end crashes are often the most common crash type at signalised intersections.

Crashes at the intersections of Great Eastern Hwy / Stoneham St / Belgravia St and Great Eastern Hwy / Resolution Dr / Hardey Rd account for 71.5% of all crashes for the roads bordering and within the Golden Gateway precinct

This indicates that the precinct is bordered by a busy regional route. There is no safety issue within the precinct, with all mid-block and intersection crash rates well within the expected ranges.

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4. MOVEMENT NETWORK

4.1 Original Movement Network

The original Movement Network for the Golden Gateway precinct LSP, as documented in Flyt's *Local Structure Plan Movement and Access Strategy Report* (dated June 2018), is reproduced as Figure 38. This included a portion of the Perth Racing landholding.

Figure 38 – Original Golden Gateway Precinct Movement Network (Source: City of Belmont)

Elements of original Movement Network included:

- The realignment of Resolution Drive along the historical Raconteur Drive alignment;
- Relocation of the existing Stoneham St/ Resolution Drive/ Grandstand Road roundabout to 125m northeast of its current location;
- Maintain Grandstand Road standard as four lane divided (two lanes in each direction) and realigned Resolution Drive as two lane divided (one lane in each direction);

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- One intersection along Resolution Drive (between Great Eastern Highway and Grandstand Road) for access to northern area of precinct;
- Introduction of four-way traffic signal control at intersection of Stoneham Street with Resolution Drive and Daly Street, with controlled pedestrian / cycle crossings across all four intersection approaches;
- Maintain alignment of Hargreaves Street and Daly Street, realign Grandstand Road (south) at midway point to connect to Daly Street (no connection to Resolution Drive);
- Introduction of indirect connection of Matheson Road to realigned Resolution Drive;
- Stoneham Street to remain four lane divided road (with two lanes in each direction);
- Shared paths were proposed along Stoneham Street, Resolution Drive, Grandstand Road, Hargreaves Street, Daly Street and Matheson Road; and
- No changes proposed to Great Eastern Highway.

The draft Golden Gateway LSP was considered by the Belmont Council at an Ordinary Council Meeting held on June 23rd, 2020. In response to submissions received, Council resolved to require several modifications to the LSP, including to the road network to address the following issues raised in submissions:

- Matheson Road becoming a through road to provide access for Perth Racing.
- Access and egress associated with Ascot Waters.
- The extension of Grandstand Road through private property.

4.2 Revised Road Network

Many iterations of the road network have been produced and tested; however, the final option has been developed on the basis of the following directives from the City of Bemont:

- Road network to exclude Perth Racing land holdings.
- Resolution Drive link to be maintained (to service existing businesses and future development sites) within the existing road reserve and not Water Corporation land.
- Stoneham Street is to remain as the primary route through the precinct, rather than Raconteur Drive.
- Daly Street to terminate prior to the intersection with Stoneham Street, with creation of cul-de-sac. The remainder of Daly Street will be identified as Public Open Space (POS).

The proposed road network is displayed as Figure 39.

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Figure 39 – Proposed Road Network

4.3 Proposed Pedestrian and Cycle Facilities

Reducing traffic speeds improves road safety for all and removes a major barrier to walking and cycling. A precinct wide 30km/h speed zone should be implemented (excluding Grandstand Road and Stoneham Street as the main through route for traffic) to improve the environment for walking and cycling.

All existing shared paths surrounding and through the Golden Gateway precinct should be maintained and additional shared paths should be provided along Hargreaves Street, Grandstand Road (south), and along the sections of Resolution Drive that currently don't have any paths. These will provide connectivity between the Great Eastern Highway on-road bike lanes and the shared path network along Stoneham Street.

Tree canopy coverage should be increased along all roads within the precinct to create a pleasant environment for walking and cycling.

Other options to further encourage the use of active transport modes include the introduction of a bike or electric scooter share scheme.

Main Roads WA are responsible for the layout and signal phasing at traffic signal controlled intersections. At the signalised intersections of Great Eastern Highway with Resolution Drive/ Hardey Road and Stoneham Street/ Belgravia Street, protected pedestrian crossing of Great Eastern Highway is only available on the western intersection approach. The City should investigate the provision of protected pedestrian crossing of Great Eastern Highway on both sides of these intersections.

Roundabouts are generally good for cars, reducing crash severity and minimising delays, however they can present barriers for accessibility by pedestrians and cyclists. Crossing during peak periods can be a real issue as there is no interruption in the traffic stream as would occur at a signalised intersection. Mid-block crossing facilities should be

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provided along Stoneham Street, Resolution Drive, Raconteur Drive and Grandstand Road (north), as shown in Figure 40.

Figure 40 – Recommended Pedestrian and Cyclists Facilities

Possible types of pedestrian crossing treatments are shown in Figure 41. These include:

- Raised zebra crossings, with the crossing at footpath level creating a raised plateau speed hump for vehicles;
- Kerb ramps and median refuges or cut throughs; and
- Shared paths having continuity and priority at side street intersections.

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Figure 41 – Possible Pedestrian Crossing Treatments

The planned pedestrian and cyclist network should be consistent with the long term cycle network (LTCN), as reproduced in Figure 42. The streets within the precinct which have been identified as LTCN routes, and the appropriate form of infrastructure are outlined in Table 11.

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Table 11 – Form of LTCN within Precinct

Hierarchy	Road	Appropriate Form
Primary	Great Eastern Highway	• shared paths • separated bike and pedestrian paths • protected bicycle lanes (uni or bi-directional) • safe active streets
Secondary	Daly Street, Grandstand Road (north), path through Belmont Trust land	
Local	Stoneham Street, Matheson Road, section of Raconteur Drive, future route through triangle of land between Resolution Drive, Grandstand Road, and Raconteur Drive	

Figure 42 – Long Term Cycle Network Near Precinct (source: Department of Transport)

4.4 Proposed Public Transport

To facilitate higher density development in the Golden Gateway precinct, a step change in public transport provision and public transport use will be required to ensure residents, employees and visitors have the potential to travel to/from Golden Gateway by a sustainable form of transport.

The Public Transport Authority has indicated that, if sufficient public transport demand was generated by large scale development of the Golden Gateway precinct, they would consider the option of operating a bus service between the Golden Gateway precinct and central Perth – utilising the internal road network within the Golden Gateway precinct. The bus service would originate/terminate within the Golden Gateway precinct.

This would be contingent upon the Golden Gateway precinct generating the requisite public transport demand to warrant the investment in such a service.

It is recommended that the City lobby the PTA to improve bus services to the precinct and explore the potential of other transit options such as a superbus or trackless tram.

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4.5 Role and Function of Key Roads

4.5.1 Forecast Traffic Volumes

The forecast traffic volumes for 2041 are shown in Figure 43. These forecasts include through traffic (traffic that does not originate or terminate in the Golden Gateway precinct), as well as traffic generated by the development of the Ascot Kilns site and the Ascot Racecourse LSP area.

Figure 43 – Golden Gateway Precinct LSP Forecast Traffic Volumes (includes Ascot Kilns and Ascot Racecourse LSP)

4.5.2 Road Hierarchy

The proposed road hierarchy is shown in Figure 44. This includes:

- Primary Distributor
  - Great Eastern Highway
- Distributor A
  - Stoneham Street
  - Grandstand Road (north)
  - Section of Resolution Drive immediately north of Great Eastern Highway
- Local Distributor
  - Northern section of Resolution Drive
- Access Roads
  - Hargreaves Street
  - Daly Street
  - Grandstand Road (south)
  - Matheson Road
  - Hardey Road (between Great Eastern Highway and Matheson Road)

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Figure 44 – Golden Gateway Precinct LSP Road Hierarchy

4.5.3 Great Eastern Highway

The Great Eastern Highway corridor will present itself as a strong, unified commercial and mixed-use edge to the Golden Gateway precinct.

Great Eastern Highway will remain in its current form. No changes are proposed to the existing road connections with Great Eastern Highway nor the forms of intersections between Great Eastern Highway and connecting roads.

4.5.4 Stoneham Street

Stoneham Street will be the primary interface between the Golden Gateway precinct and the Swan River. It is proposed that future planning for the Belmont Trust Land, located to the west of Stoneham Street, should ensure strong physical links are maintained between the Swan River and future Golden Gateway population and workforce.

Stoneham Street will continue to be a major district road corridor and provide for high capacity traffic movements. Forecast traffic volumes for 2041 range between 25,000 vpd and 26,000 vpd, with the higher traffic volumes carried close to the intersection with Resolution Drive. The form of Stoneham Street will be retained as a four lane divided road (two lanes in each direction) with a median on approaches to main intersections and a painted dividing line mid-block.

The road reserve width is only 20m, which allows for four lanes at 3.3m wide, and 3.4m verges either side, or only 2.4m verges if a 2m median island is included. If Stoneham Street were being built as part of a new development, the minimum required road reserve would be at least 33m.

The intersection of Stoneham Street with Resolution Drive and Grandstand Road will remain as a two-lane roundabout. The intersection of Stoneham Street with Hargreaves Street will remain in its current configuration and there will be no intersection with Daly Street as it will become a cul-de-sac.

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4.5.5 Resolution Drive

Resolution Drive will remain on its existing alignment. The form of Resolution Drive as a two lane divided road (one lane in each direction) will be retained, however additional lanes will develop on the approach and exit from the Great Eastern Highway intersection, as per the existing lane arrangement.

Forecast traffic volumes for 2041 range between 10,500 vpd (east of the roundabout controlled intersection with Grandstand Road) and 14,000 vpd (north of Great Eastern Highway).

4.5.6 Grandstand Road (north)

Grandstand Road (north) will remain in its current alignment and configuration as a four lane divided road (with two lanes in each direction). Grandstand Road is forecast to carry 30,000 vpd by 2041.

The roundabout controlled intersection with Stoneham Street and Resolution Drive will remain.

4.5.7 Hargreaves Street

Hargreaves Street will continue along its existing alignment providing a connection between Great Eastern Highway (permitting left in left out movements only) and Stoneham Street. The intersection with Stoneham Street will remain.

Hargreaves Street is forecast to carry 1,500 vpd by 2041. It is proposed as a two-lane road with on-street parking where appropriate. Its current width of 12.5m should be reduced to 7m, with embayed parking.

4.5.8 Daly Street

Daly Street will continue along its existing alignment however it will become a cul-de-sac south of Stoneham Street, with the remainder of Daly Street to be identified as Public Open Space. The intersection with Great Eastern Highway (permitting left in left out movements only) will remain.

Daly Street is forecast to carry 1,500 vpd by 2041. Daly Street is proposed as a two-lane road with on-street parking where appropriate. Daly Street's current width is 8m; this could be reduced to 7m. On-street parking would need to be embayed.

Daly Street has been identified as a secondary route under the Long Term Cycle Network, which could take the form of a shared path, protected bike path or safe active street. The treatment should continue through the public open space.

4.5.9 Grandstand Road (south)

Grandstand Road will continue along its existing alignment providing a connection between Great Eastern Highway (permitting left in left out movements only) and Resolution Drive where it has a full movement intersection.

Grandstand Road (south) is forecast to carry 2,500 vpd by 2041. Grandstand Road is proposed as a two-lane road with on-street parking where appropriate. It is currently 12.5m wide and should be reduced to 7m, with embayed parking.

4.5.10 Memorial Drive

Memorial Drive and its intersection with Stoneham Street will remain unchanged.

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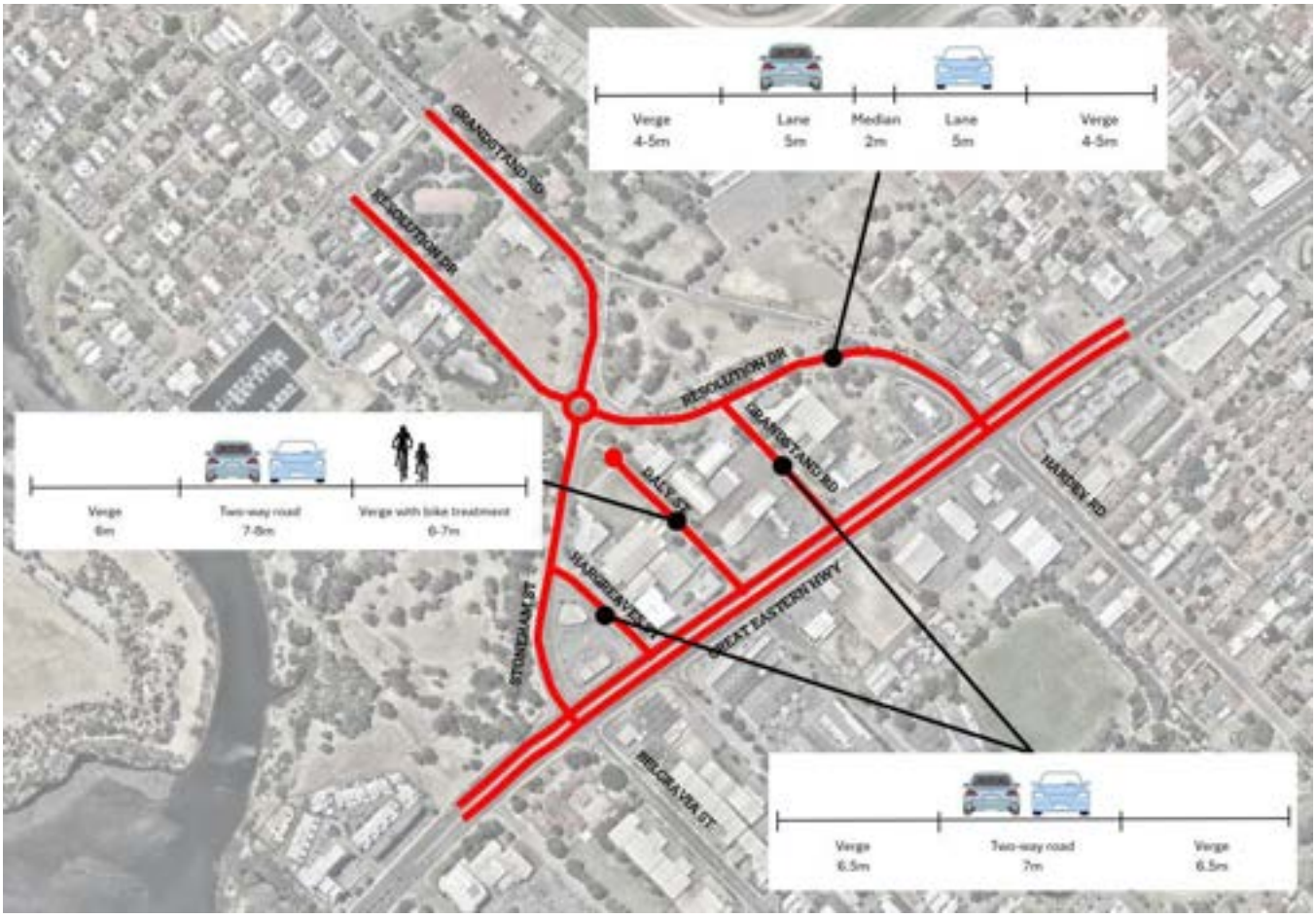
4.6 Road Cross Sections

The proposed road cross sections are shown in Figure 45.

Figure 45 – Proposed Road Cross Sections Golden Gateway Development



4.7 Intersection Controls

The proposed intersection controls are shown in Figure 46.

In the AM peak hour, the intersection of Stoneham Street with Hargreaves Street will be impacted by queuing along Stoneham Street, back from the intersection with Great Eastern Highway It is recommended "KEEP CLEAR" pavement markings be applied to this intersection to ensure vehicles are able enter the Stoneham Street northbound and southbound traffic streams.

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Figure 46 – Proposed Intersection Controls for Golden Gateway Development

4.8 Parking and Planning Controls

To reduce the car dependence of the Golden Gateway Precinct and to maximise the use of active transport modes, it is recommended the City consider the imposition of a parking cap.

The required residential parking outlined in the existing Structure Plan follows the recommendations of the Residential Design Codes Volume 2 – Apartments and provides minimum and maximum parking rates. Any parking proposed in excess of the minimum provision must be capable of potential future conversion into habitable floor space.

It is recommended that commercial parking also be subject to a maximum rate.

Other innovative approaches include the encouragement of reciprocal parking, possible car share schemes, bike and electric scooter hire schemes, and the mandatory provision of safe and secure parking for bikes, electric scooters, and other micro mobility devices (including charging stations).

The City is also able to impose an ambitious mode share target for this development. From 2021 Census data, the existing car driver and car passenger mode share for the journey to work from the Ascot area is estimated at 56%, with 11.8% using public transport and 1% using active modes. Approximately 13.3% worked from home and 9.6% did not work at all. The trip generation rates used in this assessment assumed a 20% reduction in car use. A more ambitious car driver and passenger mode share target would need to be supported by a comprehensive range of strategies to increase public transport ridership, and use of active modes and micro mobility devices.

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5. ANALYSIS OF TRANSPORT NETWORK

The weekday peak hour performance of the existing and proposed movement networks has been assessed for the years 2021, 2031 (interim) and 2041 (ultimate).

Potential traffic associated with the Ascot Racecourse LSP and Ascot Kilns Local Development Plan has also been included. Land use and trip generation data for the Ascot Racecourse LSP area have been extracted from the Traffic Impact Assessment prepared by PJA in May 2024.

Traffic performance at an Ascot Racecourse weekday event day has also been investigated.

5.1 Form of Assessment

The traffic assessment has been undertaken using the SIDRA Network platform, which is able to model the operation of the entire Golden Gateway movement network and can consider the impact of congestion and queuing at adjacent intersections.

5.2 Assessment Scenarios

A SIDRA Network assessment has been undertaken for the AM and PM period in each of the following scenarios:

- Base year (2021) with existing road network;
- Base year (2021) with proposed road network;
- Interim forecast year (2031) with existing road network;
- Interim forecast year (2031) with proposed road network and 25% of Ascot Kilns and Golden Gateway development, 50% of Ascot Racecourse development complete;
- Ultimate forecast year (2041) with existing road network;
- Ultimate forecast year (2041) with proposed road network and 100% of development complete.

Seven scenarios for an Ascot Racecourse event day have been assessed for a single PM peak period:

- 2021 event day with existing road network;
- 2021 event day with proposed road network;
- 2031 event day with proposed road network and 25% of Ascot Kilns and Golden Gateway development, 50% of Ascot Racecourse development complete;
- 2041 event day with proposed road network and 100% of development complete.

5.3 Assessment Time Period

The assessment has been undertaken for an average weekday AM peak hour, found to occur from 7:30am to 8:30am, and the PM peak hour, between 4:30pm and 5:30pm.

For an event at Accost Racecourse, the 2021 calendar of events was reviewed. During 2021, 49 events were scheduled; 20 events on weekdays (mainly Wednesdays, with a single event on a Tuesday and another on a Friday), 28 events on Saturdays and a single event was scheduled on a Sunday. Events are held 9 months of the year, with no racing over the winter months of June, July, and August. The three busiest event days are the Melbourne Cup (held on a Tuesday), Railway Stakes and Perth Cup (both held on Saturdays).

Weekday and weekend traffic volumes were compared for Great Eastern Highway, Stoneham Street, Resolution Drive and Garratt Road. For all sites, weekend peak hour volumes are less than weekday volumes. For this reason, it was decided to assess a Melbourne Cup event at Ascot Racecourse during the regular PM peak hour (between 4:30pm and 5:30pm).

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5.4 Background Traffic Growth

Background or through traffic is traffic that does not originate or terminate in the Golden Gateway precinct, but instead travels through the precinct, or adjacent to the precinct, on regional and district roads such as Great Eastern Highway, Stoneham Street, Resolution Drive and Grandstand Road (north).

To estimate the future growth of background traffic, historic traffic growth has been investigated. Traffic volumes along the section of Great Eastern Highway between Stoneham Street and Resolution Drive (site 1012) have reduced from 64,800 vpd in 2014 to 54,100 vpd in 2018, a reduction of 16.5% over the 4 year period. Similarly at sites 3404 and 7938 (along Great Eastern Highway to the west and east of the Golden Gateway precinct respectively), daily traffic volumes on Great Eastern Highway reduced by more than 9% over the two year period between 2018 and 2020. Despite these reductions, background traffic volumes are expected to increase over time.

Along road corridors where intersections currently operate close to capacity during peak hours, any traffic growth will see an increase in the duration of the peak period (as there is no capacity for this growth to occur during the existing peak hours). This phenomenon is called peak spreading. As daily traffic volumes continue to increase, the proportion of the total daily traffic occurring during the morning and afternoon peak hours reduces. This also results in the growth in peak hour traffic being less than the growth in daily traffic volumes.

Despite the recent reduction in traffic volumes along Great Eastern Highway, an annual peak hour growth rate of 0.5% has been assumed. This represents an increase of 5.1% between 2021 and 2031 and an increase of 10.5% between 2021 and 2041. The peak hour growth rate has been applied to all through traffic (excluding buses) travelling on regional and district roads such as Great Eastern Highway, Stoneham Street, Resolution Drive and Grandstand Road (north).

5.5 Trip Generation Assumptions

The proposed land uses within the Golden Gateway Local Structure Plan area are reproduced in Table 12. This table also includes land uses for the Ascot Kilns development site, and the Ascot Racecourse Local Structure Plan area.

Table 12 – Proposed Structure Plan Land Uses

Development Area	Yield
Golden Gateway	2,268 dwellings, 6,979 m^2 NLA commercial, 1,200 m^2 NLA retail
Ascot Kilns	250 dwellings, 512m^2 GFA commercial
Ascot Racecourse Area A	390 unit retirement village
Ascot Racecourse Area D	41 dwellings, 2,100m^2 childcare centre for up to 90 children
Ascot Racecourse Area E	3,400m^2 retail, 9,600m^2 commercial plus jockey heath Equine Centre

The traffic assessment has considered two different time periods for development of the Golden Gateway precinct: 2031 and 2041. By 2031 it is assumed that 25% of the total yield will be redeveloped, with 75% of the existing commercial development retained.

For the Ascot Racecourse Local Structure Plan area, the Transport Impact Assessment prepared by PJA stated that the redevelopment would be completed by 2036, therefore it is assumed that 50% would be completed by 2031.

By 2041 it is assumed that all redevelopment will be complete.

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5.5.1 Residential

The WAPC's Transport Impact Assessment Guidelines Volume 5 – Technical Guidance suggest peak hour trip rates for residential land uses. The residential trip rates are based on the Perth and Regions Travel Surveys (PARTS) data averaged over the range of dwelling types. The recommended rate for residential land use is 0.8 vehicle trips per dwelling for the AM and PM peak hours.

These rates are considered high, given they represent an average of the entire Metropolitan area and include a high proportion of detached dwellings rather than dwellings in mixed use developments. Surveys of apartment developments undertaken by Flyt for the Department of Lands Planning and Heritage (DLPH) within inner and middle suburbs revealed peak hour vehicle trip rates of between 0.13 and 0.33 per dwelling, as shown in Table 13.

Table 13 also lists the Walk Score and Transit Score for each development surveyed so that the walkability and public transport accessibility of each site can be compared to that of the proposed development. The average peak hour trip rate for the 3 'middle suburb' apartment developments was found to be 0.27 trips per apartment, with the range between 0.23 and 0.33. The 3 surveyed middle suburb sites have a Walk Score range of 47 - 65 (compared to 43 - 48 for the Golden Gateway precinct) and a Transit Score range of 41 - 53 (compared to 47 for the Golden Gateway precinct). This would indicate residential development within the precinct would most likely generate a similar level of trips to the 3 surveyed middle suburb sites.

Table 13 – Apartment peak hour trip rates from DLPH surveys

Development	Address	Inner/ Middle	Walk Score	Transit Score	No. Apartments	No. Car Bays	Peak Hr Trip Rate (per unit)
Eastgate	76 Newcastle Street, Perth	Inner	96	99	53	65	0.23
x 2	143 Adelaide Terrace, Perth	Inner	86	81	200	328	0.13
Depot	65 Brewer Street, Highgate	Inner	91	93	35	39	0.31
Lakeside	134 Mounts Bay Road, Perth	Inner	57	92	30	31	0.13
Abode	6 Campbell Street, West Perth	Inner	94	86	86	76	0.13
Rivershores	2 Doepel Street, North Fremantle	Middle	65	53	58	122	0.33
Ceresa	12 Tanunda Drive, Rivervale	Middle	49	41	113	228	0.23
Westend	33 Blythe Avenue, Yokine	Middle	47	48	36	50	0.25
Average of all (inner/ middle) developments							**0.19**
Average of middle suburb developments							**0.27**

The nature of the development and the site's walkability and public transport accessibility has led to the adoption of a peak hour trip rate of 0.3 trips per multiple dwelling. The resulting peak hour trip rates are shown in Table 14.

Table 14 – Residential Peak hour trip rates

Land Use	AM Peak IN	AM Peak OUT	PM Peak IN	PM Peak OUT
Multiple dwelling	0.075	0.225	0.1875	0.1125

As discussed in Section 4.8, car parking controls can be used to reduce car dependency, in conjunction with safe and continuous routes for bikes, electric scooters and other micro mobility devices, and an increased provision of public transport services. A variety of local amenities within a short and pleasant walking or biking distance will also encourage trips by active transport modes and micro mobility devices.

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A 20% reduction in residential vehicle trips to/from the site has been assumed given the proposed parking controls, improvements to the pedestrian and cyclist network and the enhanced public transport provision.

5.5.2 Non Residential

Trip rates for the non-residential (commercial and retail) land uses have been sourced from the WAPC Guidelines. The resulting peak hour trip rates for the retail and commercial land uses are shown in Table 15.

Table 15 – Commercial and Retail Peak hour trip rates (per 100m² NLA)

Land Use	AM Peak IN	AM Peak OUT	PM Peak IN	PM Peak OUT
Commercial	1.6	0.4	0.4	1.6
Retail	1.0	0.25	2.0	2.0

In addition to the above it was assumed that 10% of retail and commercial employees would live within the Golden Gateway precinct and as such total commercial and retail vehicle trips were reduced by 10% (approximately 20 employees) to reflect an internal walk trip rather than an external vehicle trip.

5.5.3 Ascot Special Event

As discussed in Section 5.3, the PM peak hour (between 4:30pm and 5:30pm) on Melbourne Cup Day was selected as the Ascot Racecourse special event to be modelled. This is because traffic leaving the event coincides with the regular PM peak hour.

On Melbourne Cup Days, Transperth operate bus services to and from Ascot, as shown in Table 16. This demonstrates that 9am to 2pm are the main times for travel to Ascot, while 3:15pm to 7pm are the main times for travel from Ascot.

Table 16 – Melbourne Cup Event Bus Services

Service	To Ascot	From Ascot
To / from Burswood Station	Every 10 minutes from 9am to 1:50pm	Every 10 minutes from 3:30pm to 7:45pm
To / from Fremantle Station	Every 30 minutes from 9:30am to 1pm	Every 30 minutes from 3:30pm to 6:30pm
To / from Meltham Station	Every 10 minutes from 9:30am to 1:50pm	Every 10 minutes from 3:15pm to 7pm

There are two main parking areas for event patrons, the northern car parks accessed from the north and the Matheson Road car parks (plus overflow parking areas) which are accessed from the south. It is estimated that the Matheson Road car parks and overflow parking areas have capacity for 880 vehicles. Assuming the vehicles leave in a constant stream between 3:30pm and 6:30pm, there would be 293 vehicle exiting movements per hour.

5.5.4 Existing Trip Generation

Based on the City of Belmont counts of existing vehicle activity along local streets (as documented in Section 3.6.3), the estimated vehicle trips generated by the existing land uses on a non-event day at Ascot are shown in Table 17.

Table 17 – Existing Precinct Estimated Traffic Generation

Time Period	Inbound	Outbound	Total
Daily traffic	1,700	2,300	4,000
AM Peak hour	142	104	246
PM Peak hour	96	221	317

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For the 2031 forecast years, 25% of the existing precinct traffic volumes will be removed from the road network before the Golden Gateway Precinct volumes are added. For the 2041 forecast years, all of the existing precinct traffic volumes will be removed from the road network.

5.5.5 Ultimate Trip Generation

For the ultimate build out of the Golden Gateway precinct (including the Ascot Kilns development) assumed to occur by 2041, a total of 753 trips are forecast to be generated in the AM peak hour (270 trips to the site and 483 trips from the site) and 782 trips are forecast to be generated in the PM peak hour (426 trips to the site and 356 trips from the site), as summarised in Table 18.

The traffic generation for the Ascot Racecourse LSP area has been extracted from the Traffic Impact Assessment prepared by PJA in May 2024. A total of 300 AM peak hour trips and 623 PM peak hour trips are forecast for the ultimate development. The forecast Ascot Racecourse LSP traffic represents 28.5% of total forecast AM peak hour traffic volumes, and 44.3% of total forecast PM peak hour volumes.

Table 18 – Ultimate development land uses

Land Use	AM Peak IN	AM Peak OUT	PM Peak IN	PM Peak OUT
Golden Gateway	247	436	387	326
Ascot Kilns	22	47	39	30
Sub Total	270	483	426	356
Ascot Racecourse Area A	29	88	78	39
Ascot Racecourse Area D	28	44	33	23
Ascot Racecourse Area E	89	22	217	233
Ascot Sub Total	146	154	328	295
Total	**416**	**637**	**754**	**651**

5.5.6 10 Year Trip Generation

By 2031 it is assumed that 25% of Ascot Kilns and Golden Gateway development will be redeveloped, with 75% of the existing commercial uses retained. Based on the Ascot Racecourse LSP Traffic Impact Assessment, the Perth Racing Landholdings is expected to be fully developed by 2036, therefore it is assumed that by 2031 50% of the Ascot Racecourse LSP will be complete.

The 2031 forecast is for 185 trips to be generated in the AM peak hour (65 trips to the site and 120 trips from the site) with 185 trips forecast to be generated in the PM peak hour (101 trips to the site and 84 trips from the site), as summarised in Table 19.

Table 19 – 10-year development land uses

Land Use	AM Peak IN	AM Peak OUT	PM Peak IN	PM Peak OUT
Golden Gateway	62	109	97	82
Ascot Kilns	6	12	10	7
Ascot Racecourse	73	77	164	148
Total	**140**	**198**	**271**	**237**
Existing land uses (75% retained)	**106**	**78**	**72**	**166**

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5.6 Trip Distribution

Trips to and from the Golden Gateway precinct were distributed according to the relative proportion of existing vehicle volumes travelling to and from the precinct along each route in each of the peak hours, with a slight reassignment of trips to/from Hardey Road south to Belgravia Street.

Regional through traffic is assigned to the existing major routes.

The AM peak distribution of trips to and from the precinct is shown in Figure 47, while the PM peak is shown in Figure 48.

Figure 47 – Distribution of AM Peak Trips to and from the Precinct Ultimate Development

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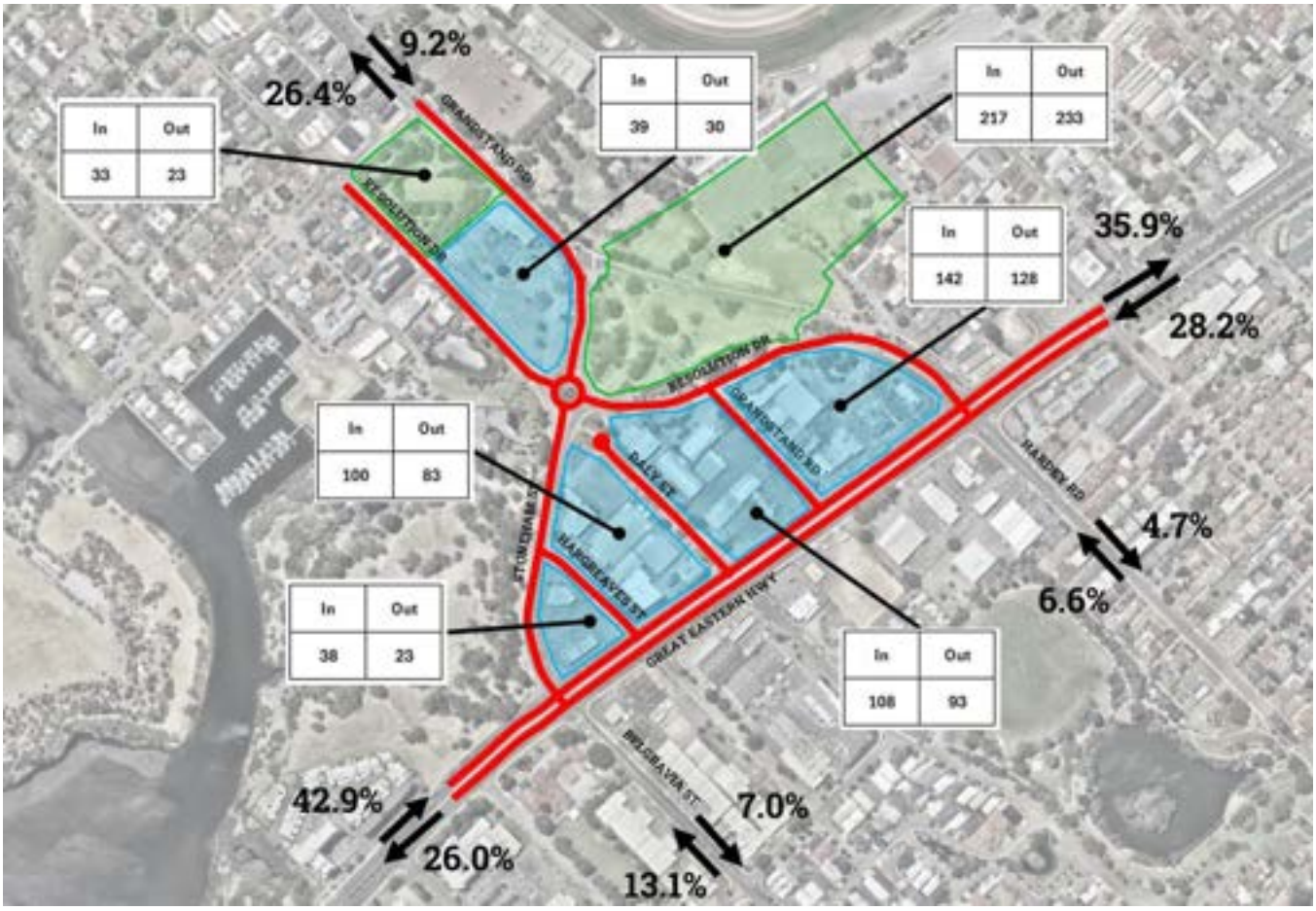
Figure 48 – Distribution of PM Peak Trips to and from the Precinct Ultimate Development



The existing peak hour traffic to and from Hargreaves Street, Daly Street and Grandstand Road will also be reduced by 25%, to reflect the traffic to and from the 75% of existing precinct land uses which are expected to be retained.

Forecast turning traffic volumes for the intersections within the precinct which have been derived from the traffic generation and distribution processes are outlined in Appendix 8.

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5.7 SIDRA Network Modelling

SIDRA is a modelling tool that can be used to assess the performance of an individual intersection, or a network of intersections. The SIDRA models have been developed in accordance with Main Roads' Operational Modelling Guidelines.

The performance of the overall network and individual intersections is expressed as a level of service. Level of service ranges from A to F, where A is the highest level of performance (unimpeded traffic flow, minimal delay) and F is the lowest (high levels of congestion, extreme delays, demand exceeds capacity). The level of service designation is based on delay. The Highway Capacity Manual sets out the ranges of delay for each level of service, which differs slightly between signalised and non-signalised intersections, and is reproduced in Table 20.

Table 20 – Level of Service Ranges for Signalised, Roundabout and Priority Controlled Intersections

Ranges of Delay for each Level of Service and Intersection Type (seconds)			
LoS	Signalised	Roundabout	Give Way / Stop Sign
A	0 - 10	0 – 10	0 - 10
B	10 - 20	10 – 20	10 - 15
C	20 - 35	20 – 35	15 - 25
D	35 - 55	35 – 50	25 - 35
E	55 - 80	50 – 70	35 - 50
F	80+	70+	50+

5.7.1 Base Network Modelling

To gain an understanding of the existing performance of the road network, and the impact of continued traffic growth on this performance, the following three scenarios have been assessed for the AM and PM peak periods:

- Existing road network, with 2021 volumes (no Golden Gateway development);
- Existing road network, with 2031 volumes (no Golden Gateway development); and
- Existing road network, with 2041 volumes (no Golden Gateway development).

The SIDRA predicted AM peak hour performance of the existing network with 2021, 2031 and 2041 forecast volumes (without any Golden Gateway redevelopment traffic) is shown in Figure 49.

The SIDRA predicted PM peak hour performance of the existing network with 2021, 2031 and 2041 forecast volumes (without any Golden Gateway redevelopment traffic) is shown in Figure 50.

The SIDRA predicted queue storage ratios (showing the 95th percentile queues) of the existing network with 2021, 2031 and 2041 volumes is shown in Figure 51 for the AM peak hour and Figure 52 for the PM peak hour.

The SIDRA predicted level of service for the signalised intersections of Great Eastern Highway/Stoneham Street/ Belgravia Street, Great Eastern Highway/Resolution Drive/Hardey Road, and the roundabout controlled intersection of Stoneham Street/Grandstand Road/Resolution Drive for 2021, 2031 and 2041 volumes are summarised in Table 21.

Detailed SIDRA Network output for these intersections is displayed in Appendix 1 (for 2021), Appendix 2 (for 2031) and Appendix 3 (for 2041).

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Table 21 – SIDRA Predicted Intersection Approach Level of Service – Base Network

Approach	AM Peak			PM Peak		
	2021	2031	2041	2021	2031	2041
Great Eastern Hwy / Stoneham St / Belgravia St						
Belgravia St	E	E	E	E	E	E
Great Eastern Hwy east	D	F	F	D	D	D
Stoneham St	F	F	F	E	E	E
Great Eastern Hwy west	C	C	C	C	C	D
Great Eastern Hwy / Resolution Dr / Hardey Rd						
Hardey Rd	E	E	E	E	E	E
Great Eastern Hwy east	C	D	F	D	D	D
Resolution Dr	D	D	E	D	E	E
Great Eastern Hwy west	C	C	C	D	D	E
Stoneham St / Grandstand Rd / Resolution Dr						
Resolution Dr east	B	B	B	B	B	B
Grandstand Rd north	A	A	A	A	A	A
Resolution Dr west	A	A	A	B	B	B
Stoneham St south	A	A	A	A	B	B

The SIDRA Network base modelling demonstrates that the signalised intersections along the Great Eastern Highway corridor are congested in each of the peak hours. While the Great Eastern Highway approaches currently operate at a level of service C and D, the side roads, particularly Stoneham Street, Belgravia Street, and Hardey Street currently operate at a level of service E of F in the peak periods. The side roads experience congestion as more than half of the traffic signal green time is allocated to Great Eastern Highway. This congestion is expected to continue as volumes increase, with regional background traffic growth predicted to cause the Great Eastern Highway eastern approaches to operate at LOS F in the 2041 AM peak.

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Figure 49 – SIDRA Output Network Level of Service AM Peak – Base Network

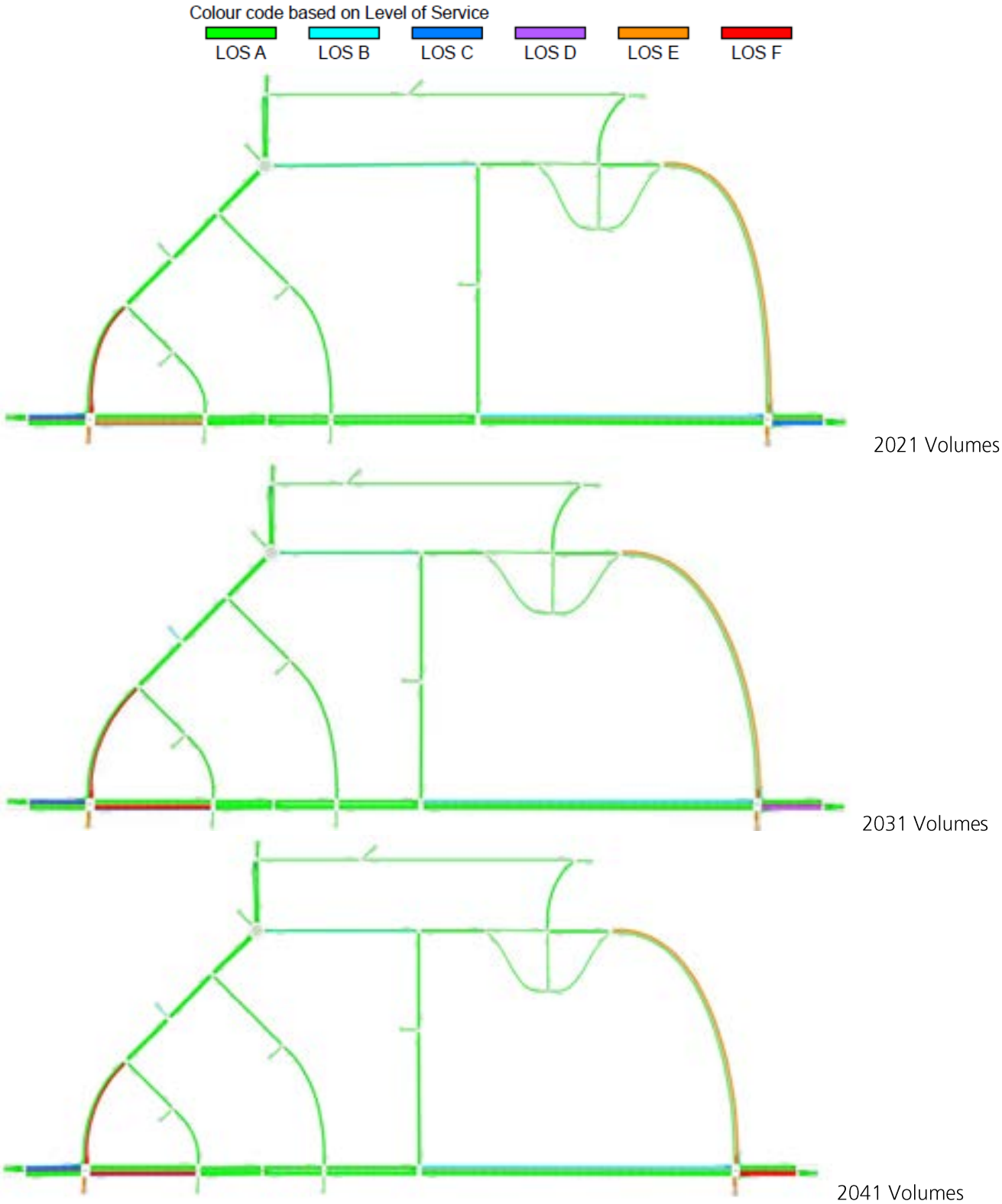

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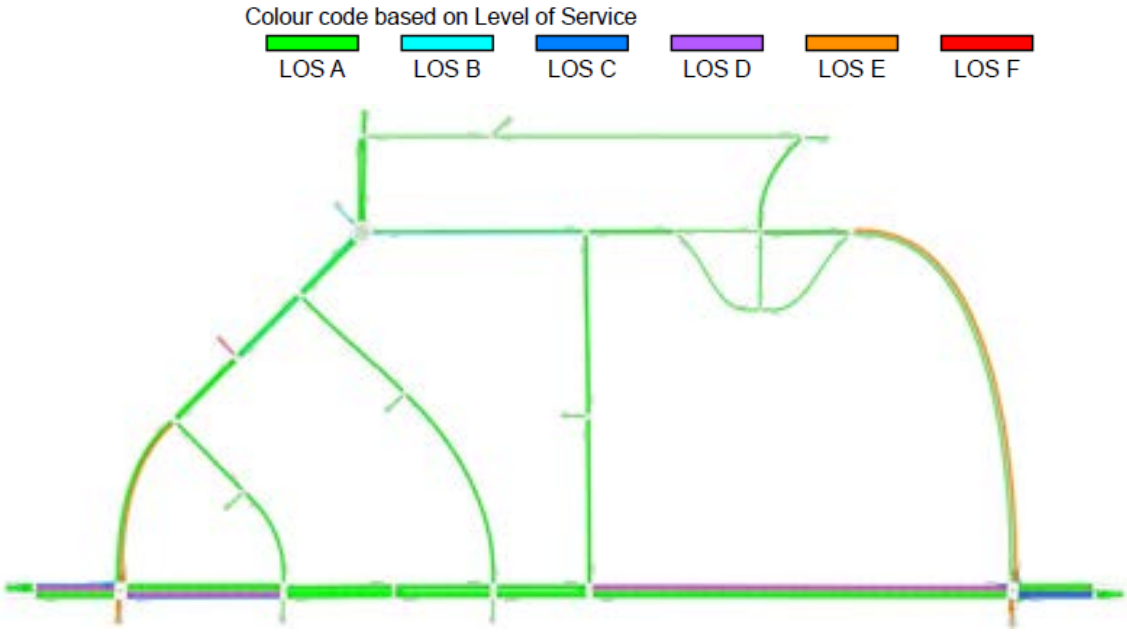
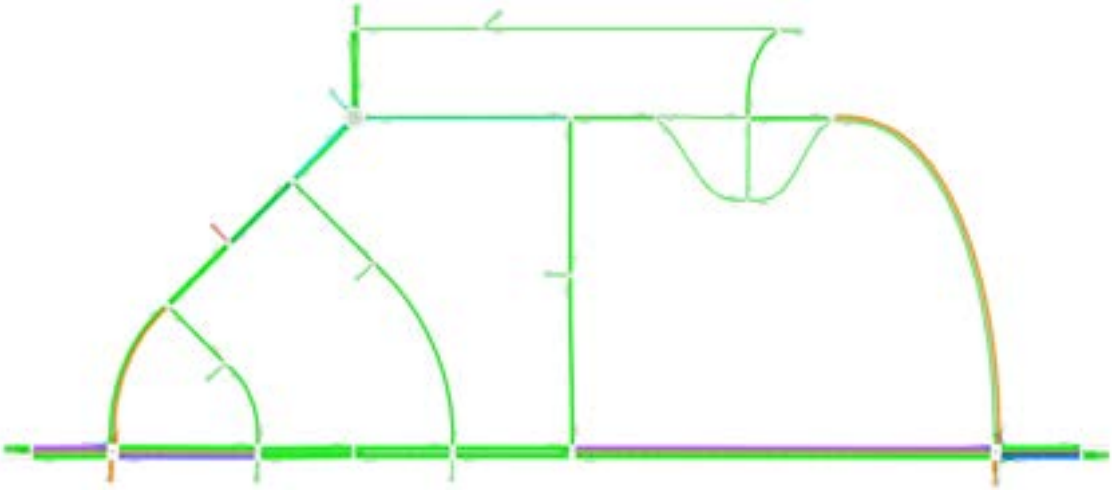
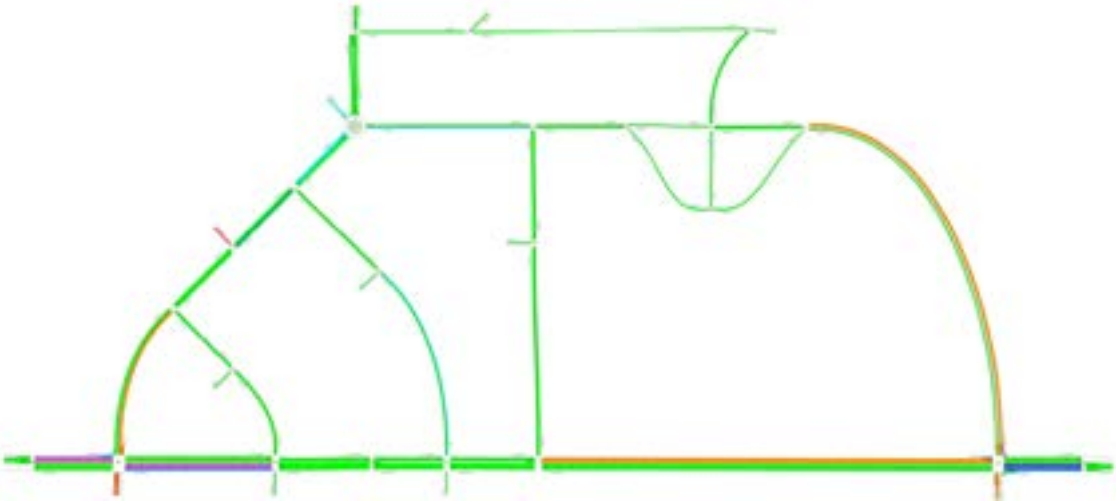
Figure 50 – SIDRA Output Network Level of Service PM Peak – Base Network



2021 Volumes



2031 Volumes



2041 Volumes

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Figure 51 – SIDRA Output Network Queue Storage Ratio AM Peak – Base Network

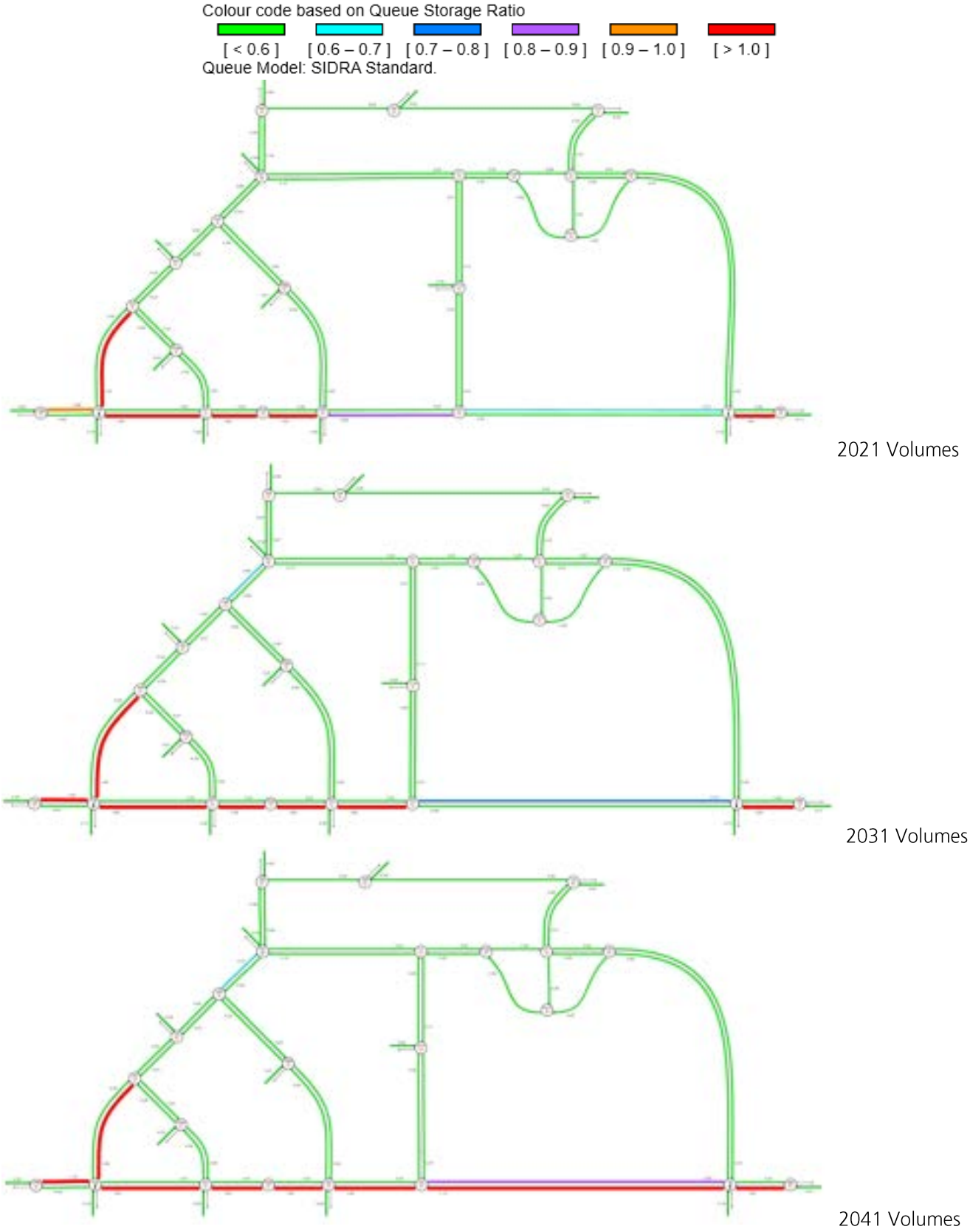

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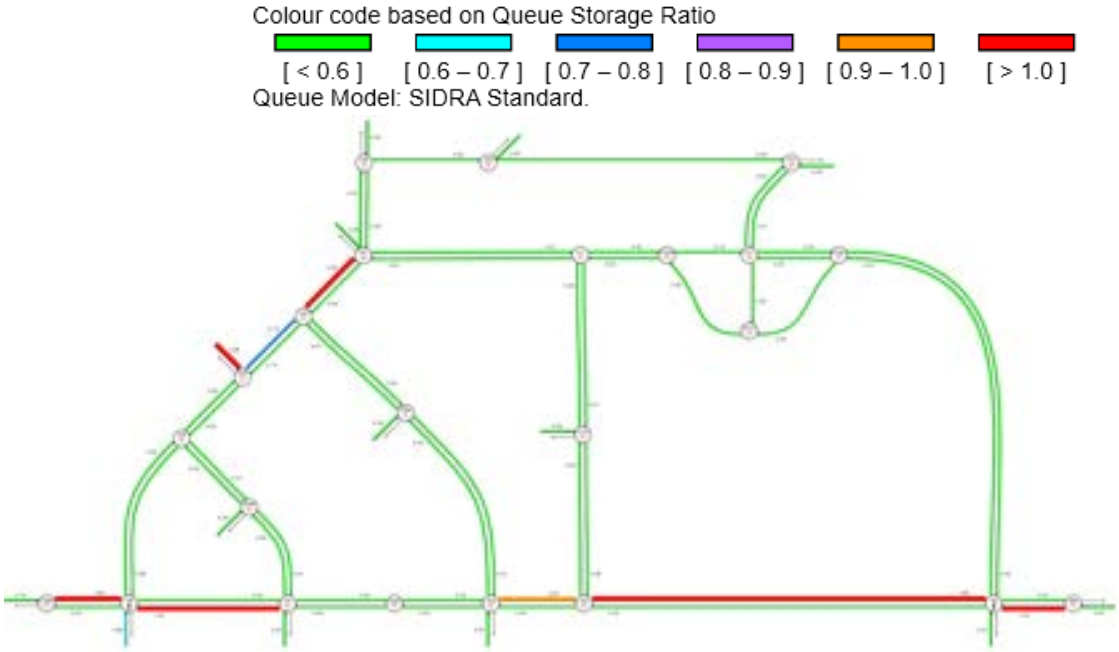
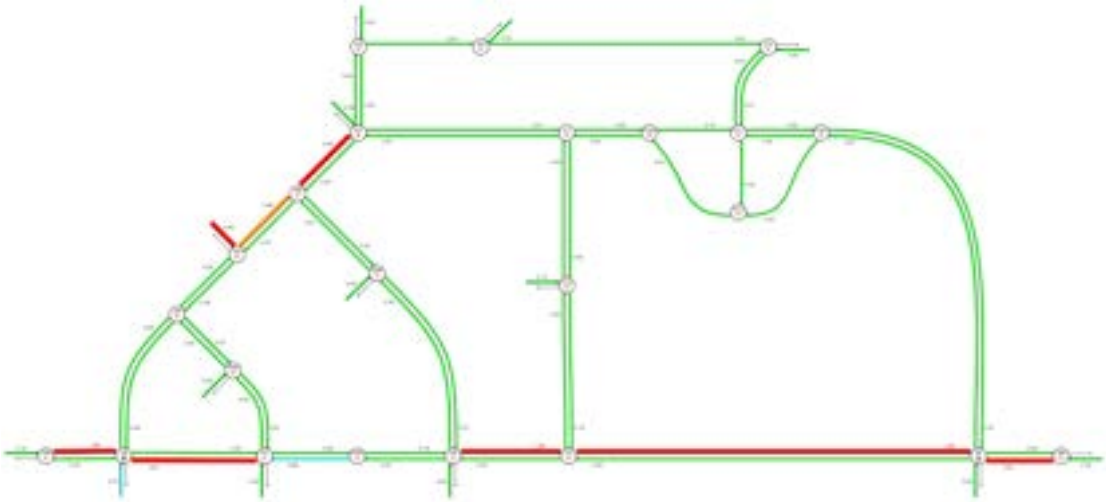
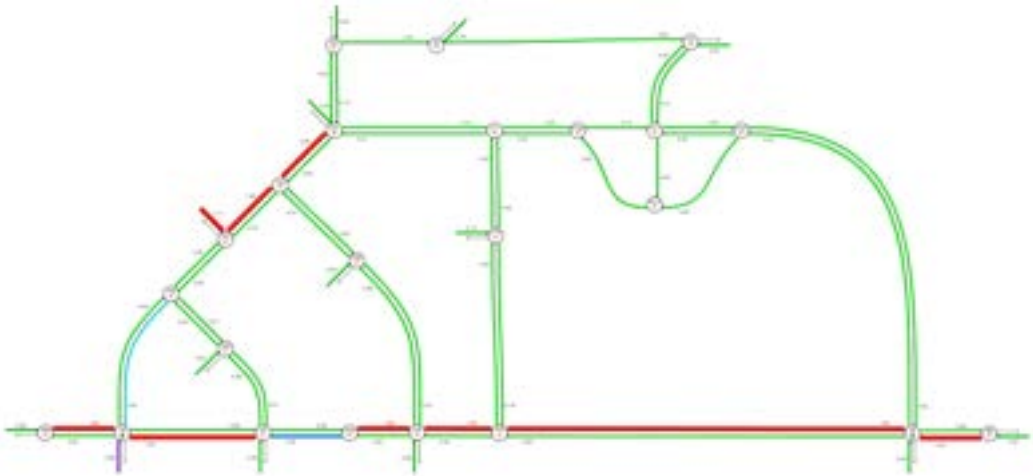
Figure 52 – SIDRA Output Network Queue Storage Ratio PM Peak – Base Network



2021 Volumes



2031 Volumes



2041 Volumes

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5.7.2 Forecast Year - Proposed Road Network and Development

The proposed road network has been tested for three scenarios, as follows:

- Base year (2021) with proposed road network and no intensification of land use (existing traffic volumes);
- Forecast year (2031) with proposed road network and 25% of Ascot Kilns and Golden Gateway development, 50% of Ascot Racecourse development complete (and 75% of the existing commercial development retained);
- Forecast year (2041) with proposed road network and 100% of development complete.

The SIDRA predicted AM peak hour performance for the 2021, 2031 and 2041 land uses are shown in Figure 53, while the predicted PM peak hour performance for the 2021, 2031 and 2041 land uses are shown in Figure 54.

The SIDRA predicted queue storage ratios are shown in Figure 55 for the AM peak hour and Figure 56 for the PM peak hour.

The SIDRA predicted level of service for the signalised and roundabout controlled intersections in the proposed road network are summarised in Table 22.

Detailed SIDRA Network output for these intersections is displayed in Appendix 4 (2021 Proposed Road Network), Appendix 5 (2031 land uses with proposed road network) and Appendix 6 (2041 land uses with proposed road network).

Table 22 – SIDRA Predicted Intersection Approach Level of Service

Approach	2021		2031		2041	
	AM	PM	AM	PM	AM	PM
Great Eastern Hwy / Stoneham St / Belgravia St						
Belgravia St	E	E	E	E	E	F
Great Eastern Hwy east	D	D	F	D	F	D
Stoneham St	F	E	F	F	F	F
Great Eastern Hwy west	C	C	C	C	C	D
Great Eastern Hwy / Resolution Dr / Hardey Rd						
Hardey Rd	E	E	E	E	E	E
Great Eastern Hwy east	C	D	E	F	F	F
Resolution Dr	D	D	D	D	E	E
Great Eastern Hwy west	C	D	C	D	C	E
Stoneham St / Grandstand Rd / Resolution Dr						
Resolution Dr east	B	B	B	B	F	B
Grandstand Rd north	A	A	A	A	B	A
Resolution Dr west	A	B	A	B	A	B
Stoneham St south	A	B	A	B	A	B

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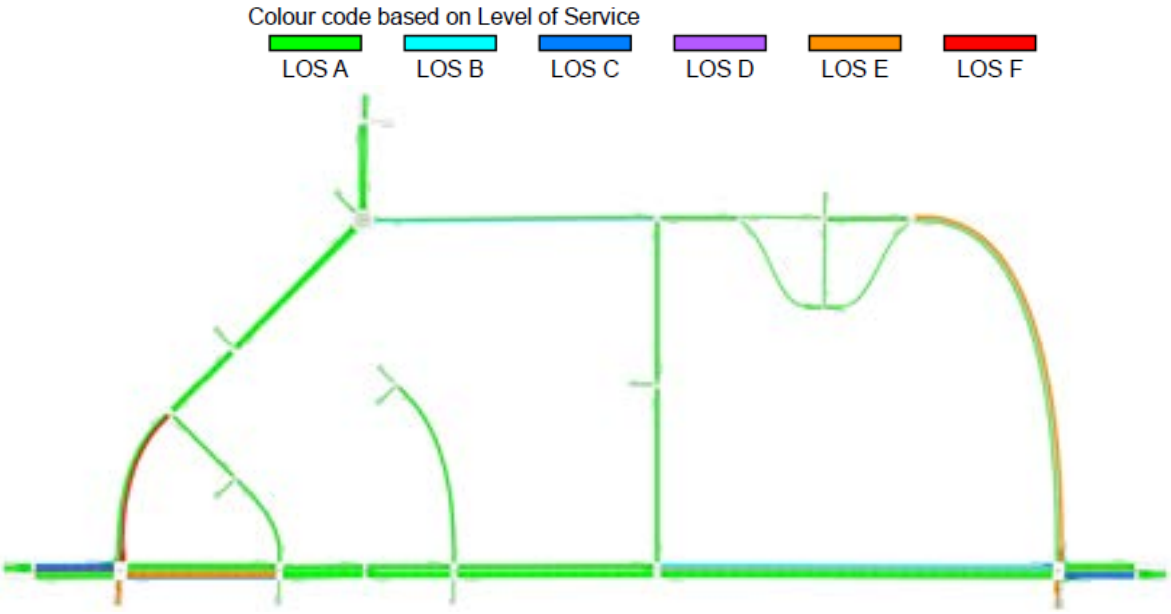
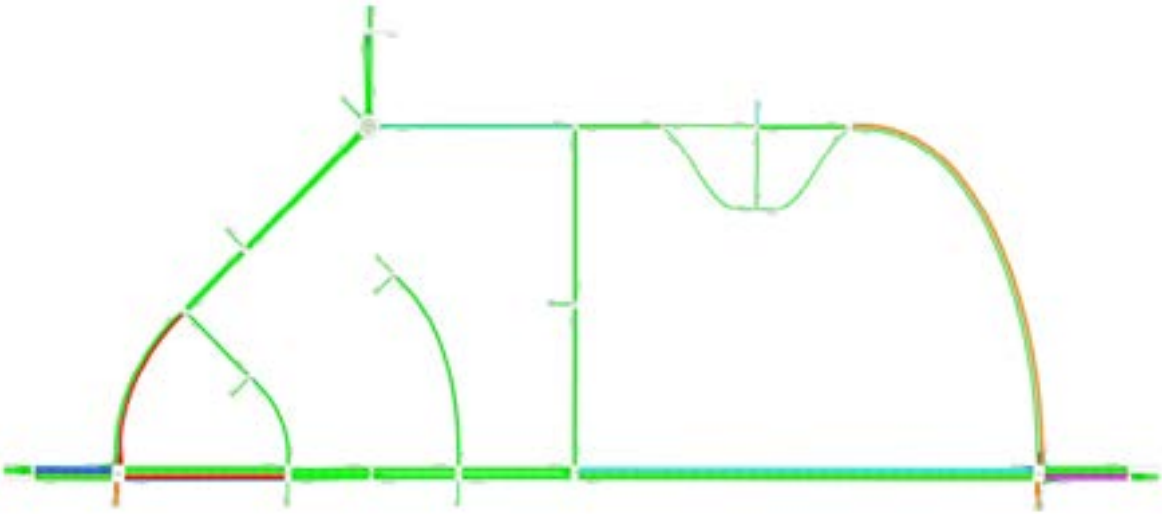
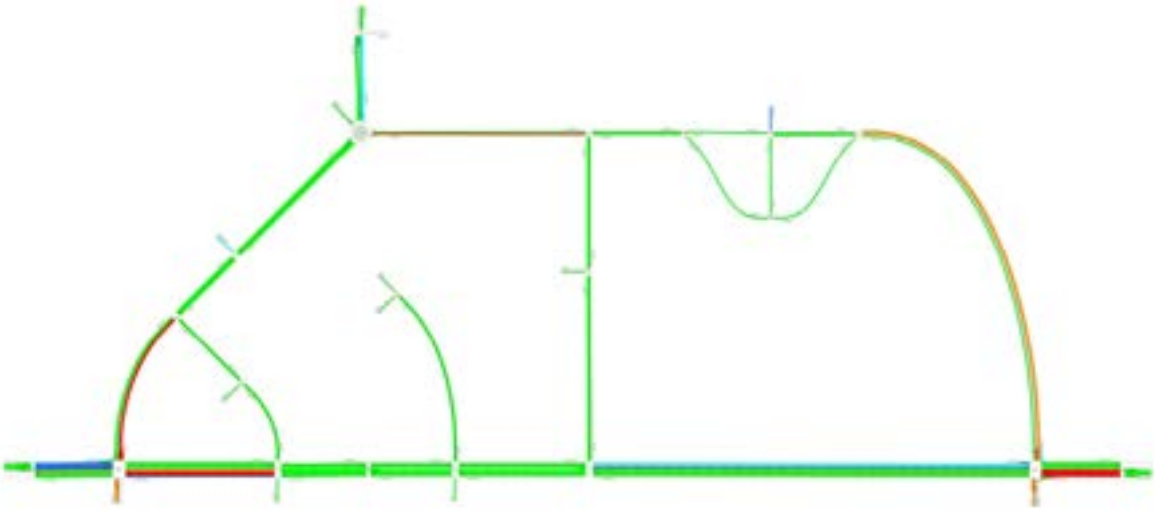
Figure 53 – SIDRA Output Network Level of Service AM Peak Proposed Road Network



2021 Land Uses



2031 Land Uses



2041 Land Uses

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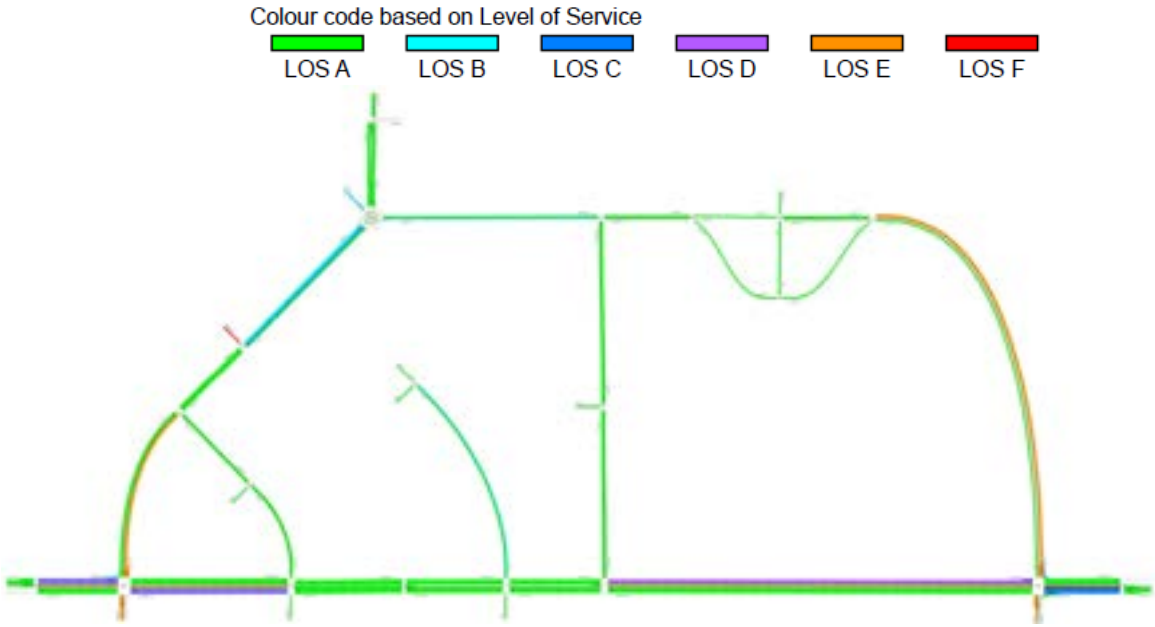
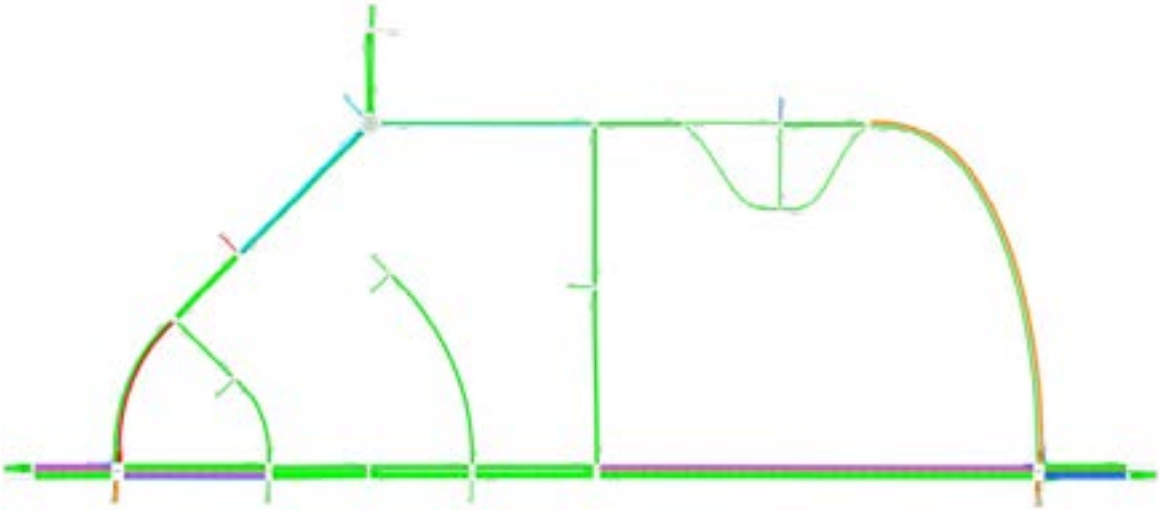
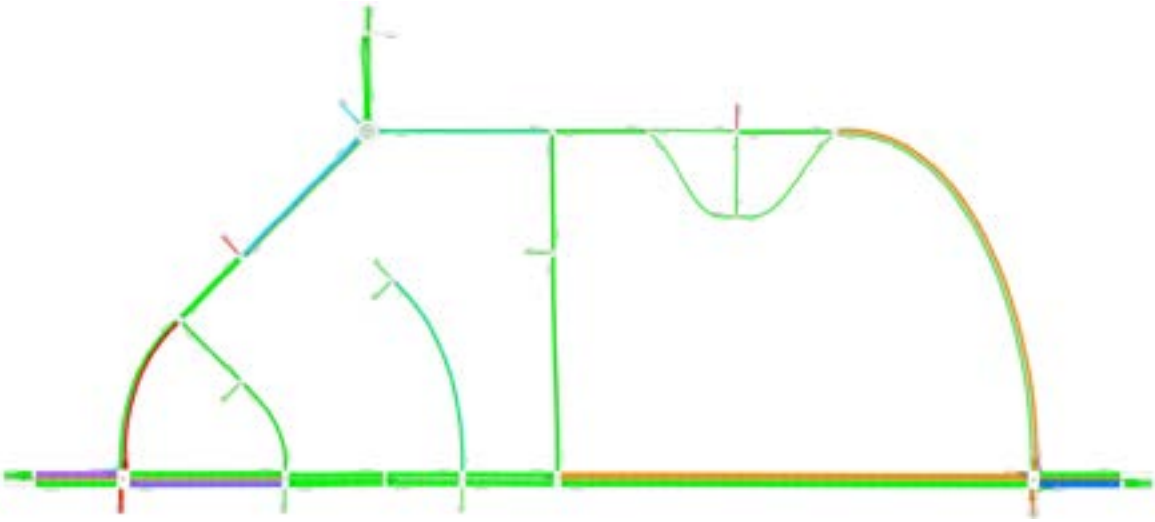
Figure 54 – SIDRA Output Network Level of Service PM Peak Proposed Road Network



2021 Land Uses



2031 Land Uses



2041 Land Uses

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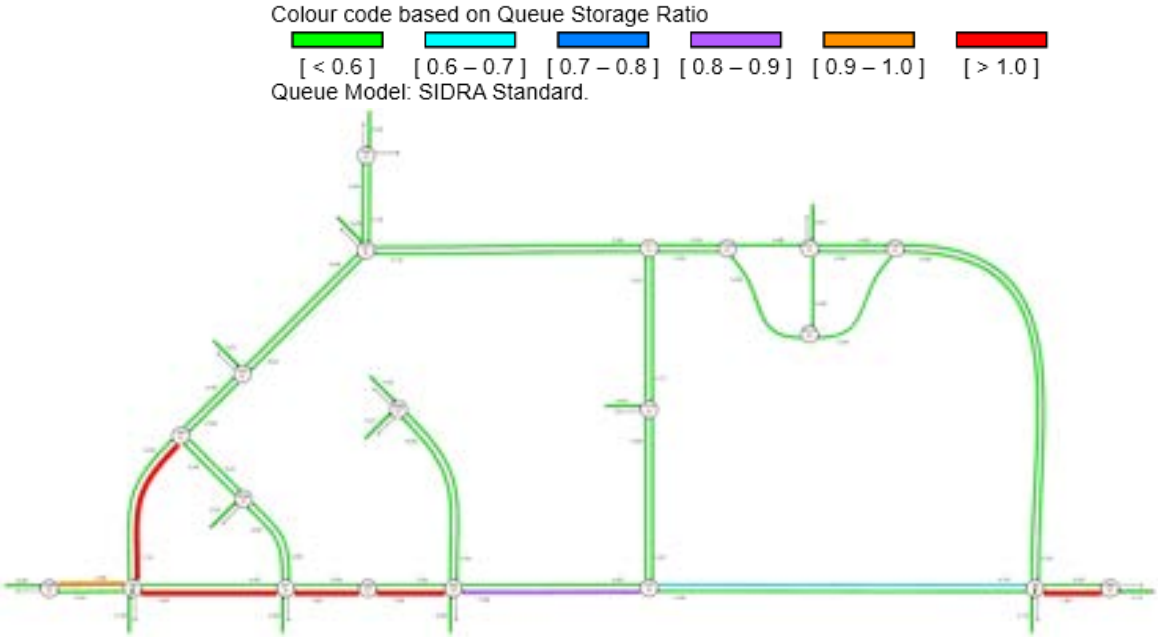
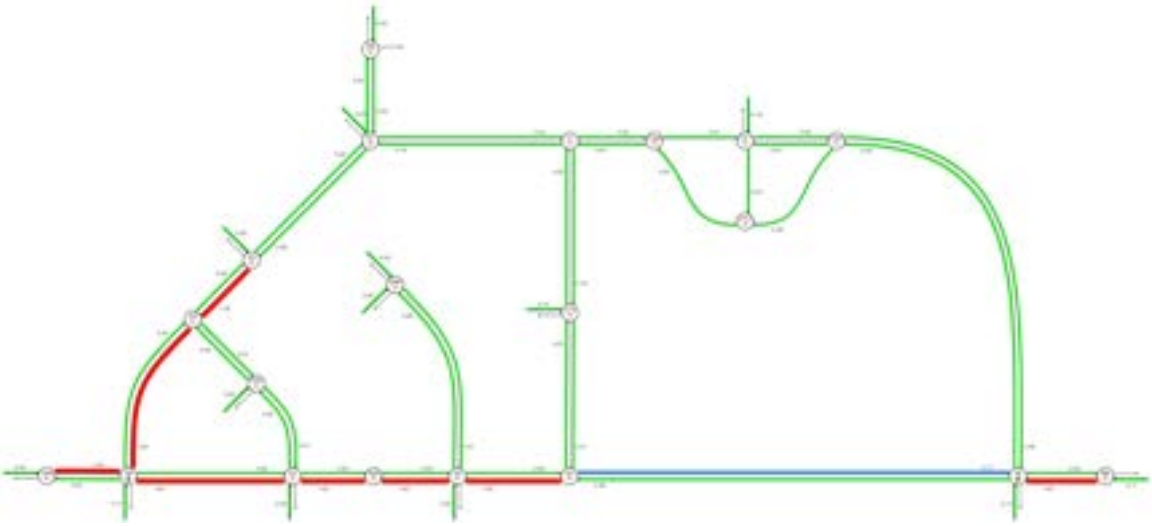
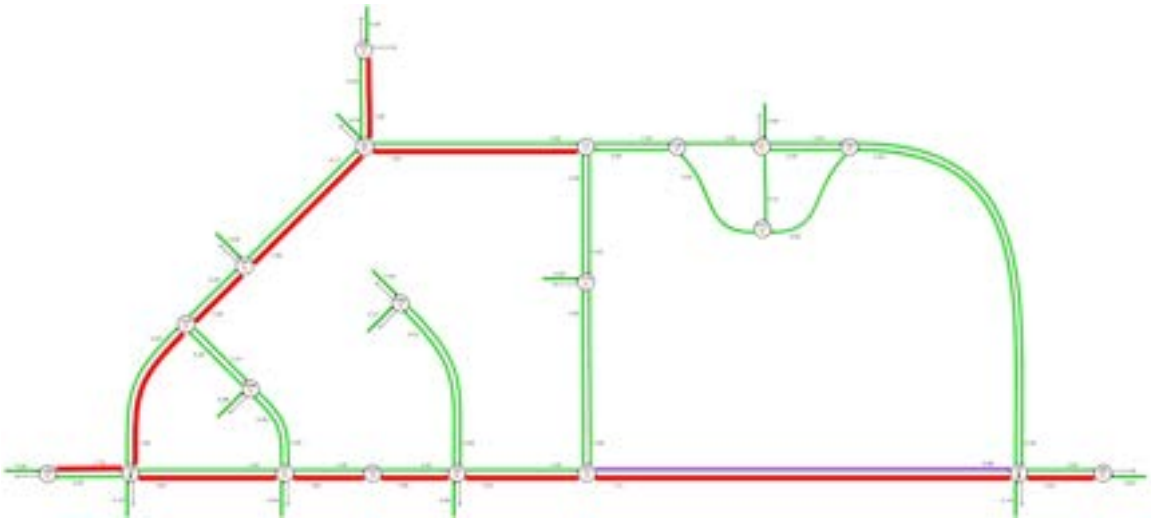
Figure 55 – SIDRA Output Network Queue Storage Ratio AM Peak Proposed Road Network



2021 Land Uses



2031 Land Uses



2041 Land Uses

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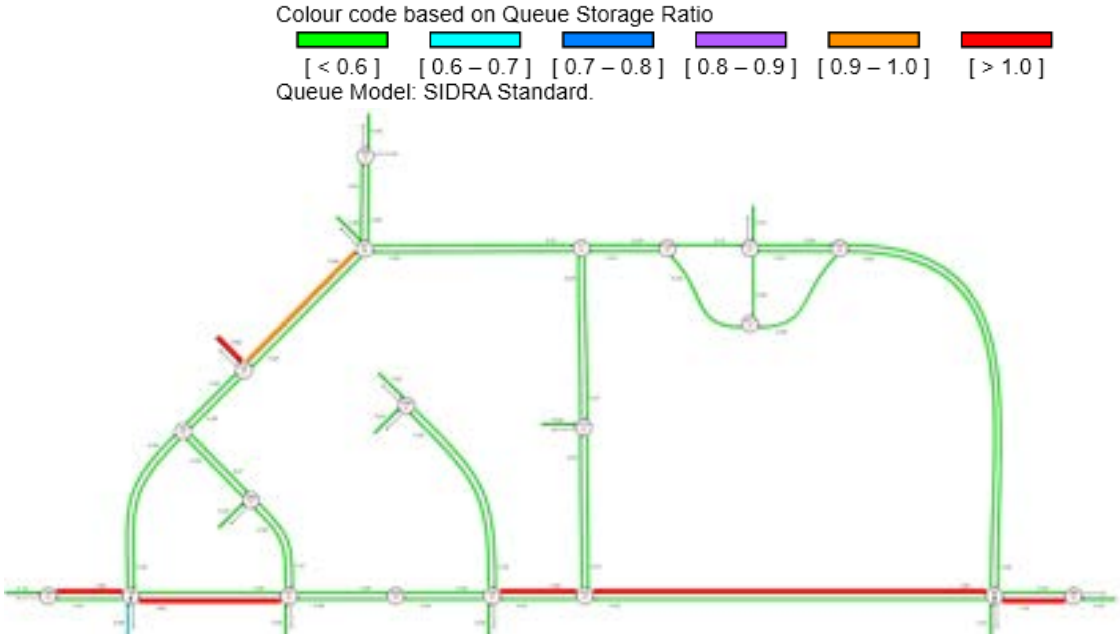
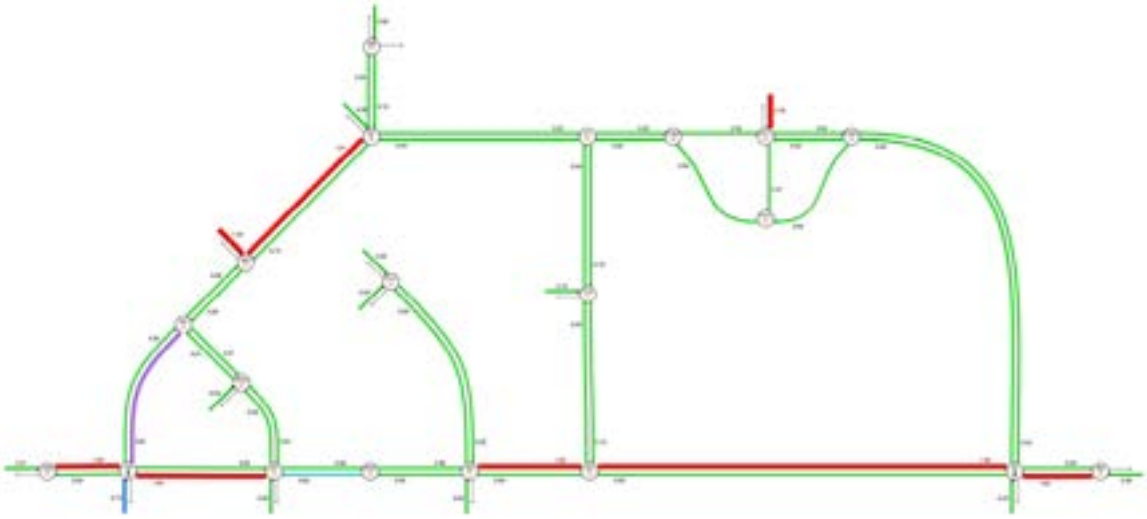
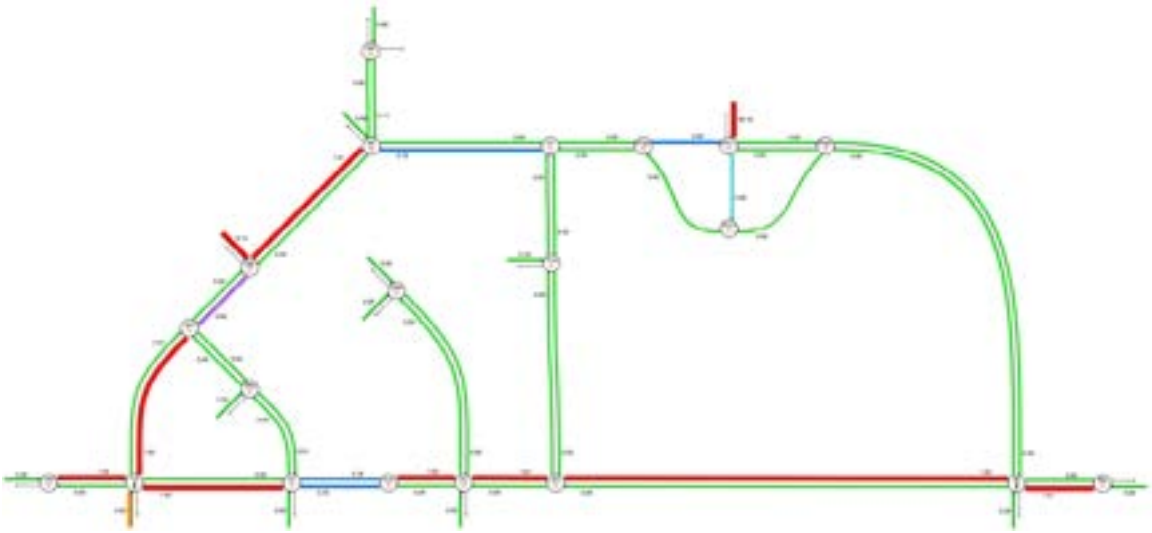
Figure 56 – SIDRA Output Network Queue Storage Ratio PM Peak Proposed Road Network



2021 Land Uses



2031 Land Uses



2041 Land Uses

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The SIDRA Network modelling of the proposed road network demonstrates that the level of congestion in 2021 and 2031 is generally consistent with the congestion predicted for the 2021 and 2031 existing road network scenario. The internal roads are predicted to operate well within their capacity.

The SIDRA Network modelling of the proposed road network and full build out of the Golden Gateway precinct demonstrates that the level of congestion is 2041 is generally consistent with the congestion predicted for the 2041 existing road network scenario, with added congestion along Resolution Drive associated with the development of the Ascot Racecourse landholdings. Congestion along the Resolution Drive approach to Great Eastern Highway is predicted to increase in the AM peak period, while congestion along the Stoneham Street approach to Great Eastern Highway will increase in the PM peak period. The other internal roads are predicted to operate well within their capacity.

5.7.3 Ascot Event Modelling

To understand how the road network performs under as Ascot event, the following four scenarios have been assessed:

- Existing road network, 2021 PM peak volumes with Melbourne Cup event traffic;
- Proposed road network, 2021 PM peak volumes with Melbourne Cup event traffic;
- Proposed road network, 2031 PM peak background volumes and development traffic with Melbourne Cup event traffic;
- Proposed road network, 2041 PM peak background volumes and development traffic with Melbourne Cup event traffic.

The SIDRA predicted PM peak hour performance of an Ascot Melbourne Cup event with 2021 volumes (existing network and proposed network) is shown in Figure 57. The SIDRA predicted PM peak hour performance of an Ascot Melbourne Cup event with the proposed network and 2031 and 2041 volumes are shown in Figure 58. The SIDRA predicted level of service for the signalised and roundabout controlled intersections in the existing network and proposed road network are summarised in Table 23.

Detailed SIDRA Network output for these intersections is displayed in Appendix 7.

Table 23 – SIDRA Predicted Intersection Approach Level of Service – Ascot Event

Approach	Existing Network 2021 vols + event	Proposed Network 2021 vols + event	Proposed Network 2031 vols + event	Proposed Network 2041 vols + event
Great Eastern Hwy / Stoneham St / Belgravia St				
Belgravia St	E	E	E	F
Great Eastern Hwy east	D	D	D	D
Stoneham St	E	E	F	F
Great Eastern Hwy west	C	C	C	D
Great Eastern Hwy / Resolution Dr / Hardey Rd				
Hardey Rd	E	E	E	E
Great Eastern Hwy east	D	D	F	F
Resolution Dr	E	E	E	E
Great Eastern Hwy west	D	D	D	E
Stoneham St / Grandstand Rd / Resolution Dr				
Resolution Dr east	B	B	B	B
Grandstand Rd north	A	A	A	A
Resolution Dr west	B	B	B	B
Stoneham St south	A	B	B	B

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Figure 57 – SIDRA Output Network Level of Service Ascot Event PM Peak with 2021 Volumes

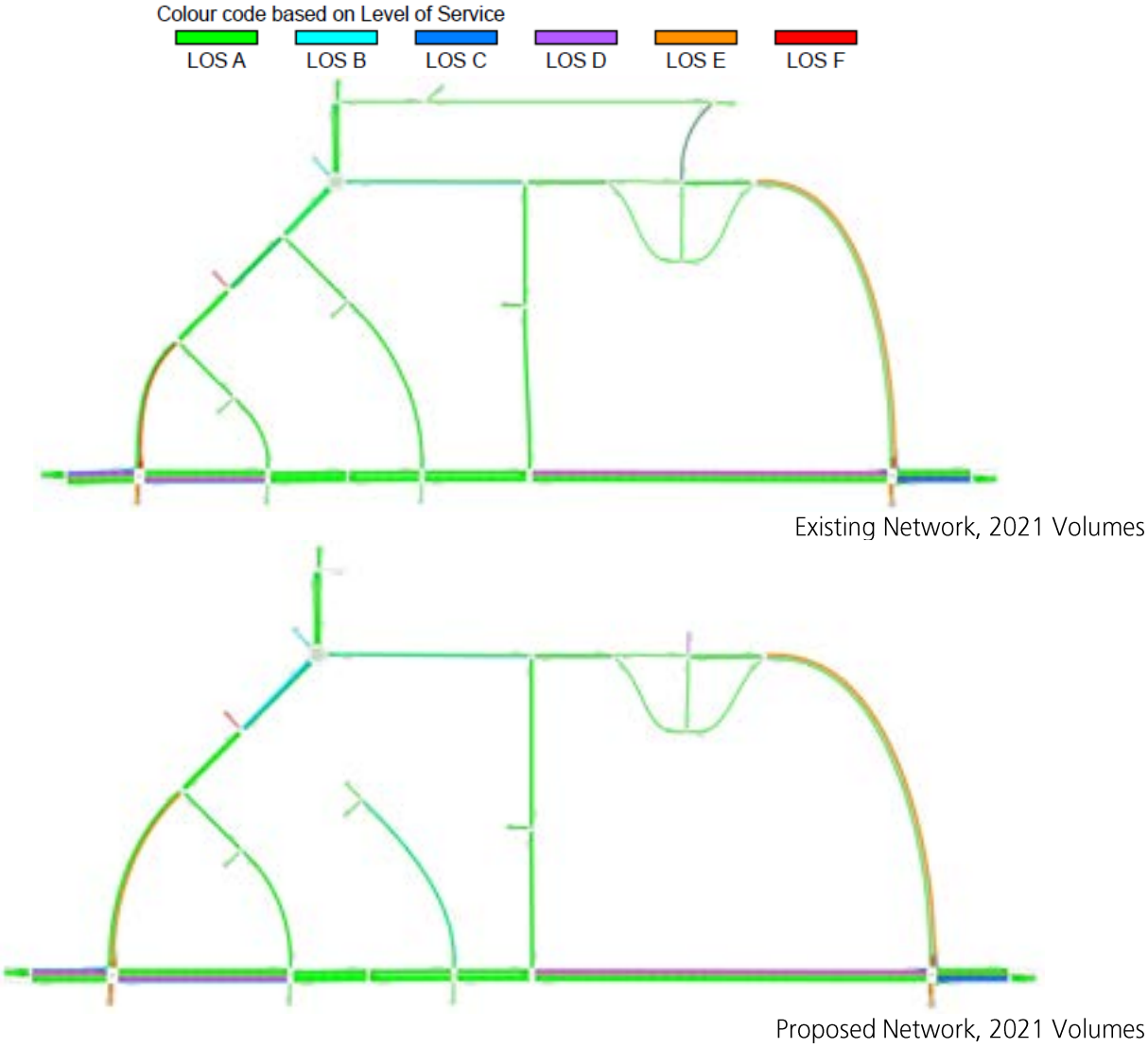

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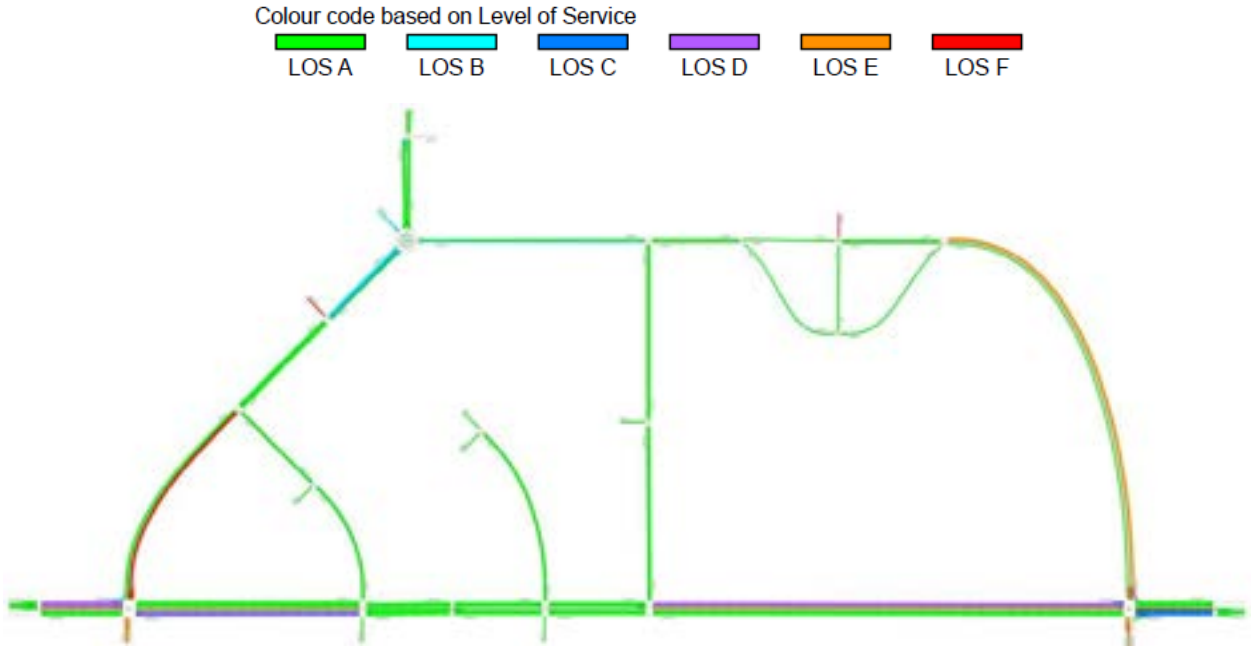
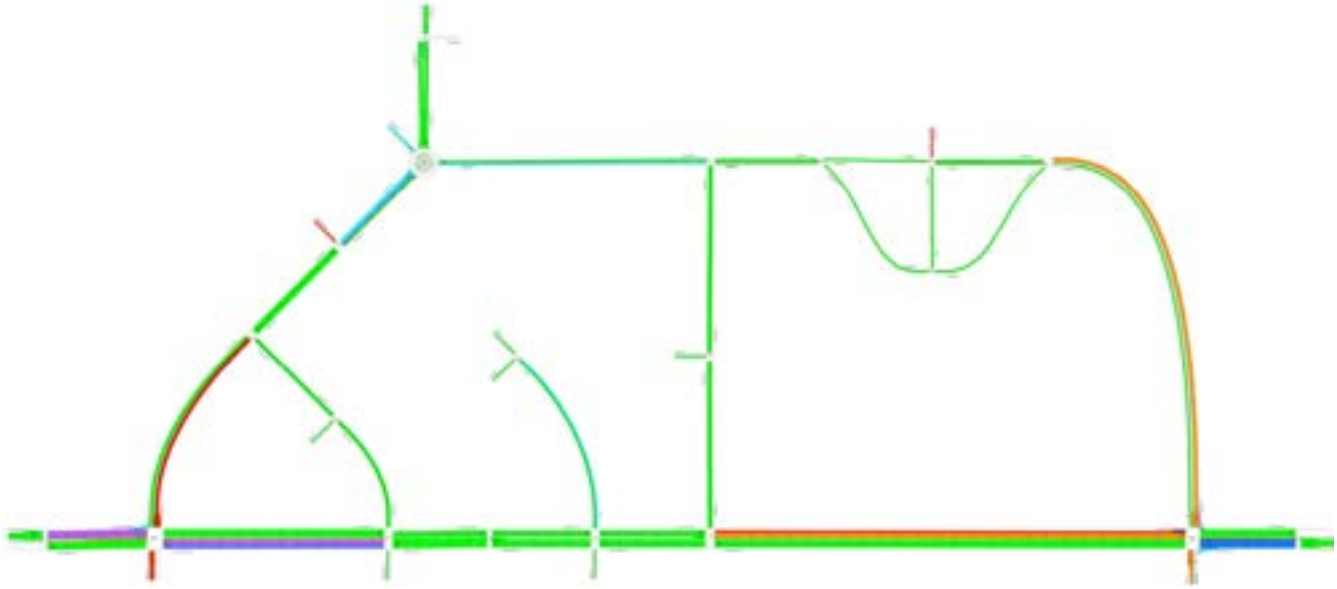
Figure 58 – SIDRA Output Network Level of Service Ascot Event PM Peak Proposed Network with Development Volumes



Proposed Road Network, 2031 Land Uses



Proposed Road Network, 2041 Land Uses

The SIDRA Network base modelling demonstrates that the signalised intersections along the Great Eastern Highway corridor are congested in each of the peak hours. While the Great Eastern Highway approaches currently operate at a level of service C and D, the side roads, particularly Stoneham Street, Belgravia Street, and Hardey Street currently operate at a level of service E of F in the peak periods. The side roads experience congestion as more than half of the traffic signal green time is allocated to Great Eastern Highway.

The addition of Ascot event traffic to this busy PM peak increases the congestion in this period. Traffic exiting an event at Ascot is predicted to cause local congestion where this traffic joins the external road network, at the intersection of Raconteur Drive and Resolution Drive.

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6. CONCLUSIONS

6.1 Golden Gateway Local Structure Plan Context

The Golden Gateway Precinct is located within the City of Belmont and the LSP area is bounded by Ascot Racecourse to the north/northeast, Hardey Road to the east, Great Eastern Highway to the south, Swan River to the west and Ascot Waters residential estate to the west/northwest.

The Golden Gateway LSP is comprised of three main land uses, residential dwellings (approximately 2,268 dwellings), commercial space (6,979m^2 NLA) and retail space (1,200m^2 NLA). It is proposed that the three land uses will primarily be provided in mixed-use development sites across the Golden Gateway LSP area.

As noted in the Structure Plan Report, the LSP has been formulated around the following vision:

> *"The development of the Golden Gateway will transform this degraded and fragmented area into a vibrant precinct of residential and mixed use development, with strengthened connections to the Swan River and Ascot Waters, with uses, density and built form that derive best value from these attributes while respecting the area's rich culture and heritage."*

The overarching objectives for the Golden Gateway Precinct as established by the project team and reinforced through stakeholder engagement include:

- Improve self-containment of facilities – reduce car dependence;
- Improve people's connection to the Swan River;
- Create accessible, quality public realm within the precinct; and
- Identify appropriate uses/densities in conjunction with infrastructure improvements.

6.2 Conclusions

The weekday peak hour performance of the existing, and proposed movement networks under a range of Golden Gateway land use scenarios has been assessed. Traffic performance at an Ascot Racecourse event day has also been investigated.

6.2.1 Background Growth in Traffic

Traffic volumes along the section of Great Eastern Highway between Stoneham Street and Resolution Drive (site 1012) have reduced from 64,800 vpd in 2014 to 54,100 vpd in 2018, a reduction of 16.5% over the 4 year period. Similarly at sites 3404 and 7938 (along Great Eastern Highway to the west and east of the Golden Gateway precinct respectively), daily traffic volumes on Great Eastern Highway reduced by between 1.4% and 4.3% over the two year period between 2018 and 2020. Despite these reductions, background traffic volumes are expected to increase over time.

As traffic volumes continue to increase, the proportion of total traffic occurring during the morning and afternoon peak hours reduces. This phenomenon is called peak spreading, and results in a lengthening of the peak period. This also results in the growth in peak hour traffic being less than the growth in daily traffic volumes.

An annual peak hour growth rate of 0.5% has been assumed. This represents an increase of 5.1% between 2021 and 2031 and an increase of 10.5% between 2021 and 2041. The peak hour growth rate has been applied to all through traffic (excluding buses) travelling on regional and district roads such as Great Eastern Highway, Stoneham Street, Resolution Drive and Grandstand Road (north). The growth in regional peak hour traffic, without any development traffic, is predicted to lead to the deterioration of signalised intersection operation to level of service F by 2041 in the AM peak hour.

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6.2.2 Intersection Performance

Stoneham Street/Great Eastern Highway Intersection

This intersection currently operates at an overall level of service D in both the AM and PM peak. The Great Eastern Highway approaches operate at a level of service C/D, which is particularly good given the traffic volumes. Belgravia Street and Stoneham Street operate at a level of service E/F.

As traffic volumes increase over time (without the inclusion of traffic associated with the development of the Golden Gateway precinct) the performance of the intersection will decrease, particularly in the AM peak hour, where a level of service F is predicted by 2041 (the PM peak hour is still predicted to operate at a level of service D).

When traffic associated with the development of the Golden Gateway precinct and Ascot Racecourse landholdings is included, the performance of the Belgravia Street and Stoneham Street approaches decreases. The overall intersection level of service in 2041 is predicted to be F in the AM peak hour, and E in the PM peak hour.

Resolution Drive/Great Eastern Highway Intersection

This intersection currently operates at an overall level of service C in the AM and D in the PM peak. The Great Eastern Highway approaches operate at a level of service C in the AM peak hour and D in the PM peak hour, which is very good given the traffic volumes. Hardey Road and Resolution Drive operate at a level of service D/E.

As traffic volumes increase over time (without the inclusion of traffic associated with the development of the Golden Gateway precinct) the performance of the intersection will decrease, particularly in the AM peak hour, where a level of service F is predicted by 2041, while a level of service E is predicted for the PM peak hour.

When traffic associated with the development of the Golden Gateway precinct and Ascot Racecourse landholdings is included, the performance of the Resolution Drive approach decreases in the AM peak, as does the Great Eastern Highway east approach (westbound) in the PM peak hour. The overall intersection level of service in 2041 is predicted to be F in both the AM and PM peak hours.

Grandstand Road/Resolution Drive/Stoneham Street Intersection

This roundabout controlled intersection currently operates at an overall level of service A in both the AM and PM peak, with all approaches operating at a level of service A/B.

As traffic volumes increase over time (without the inclusion of traffic associated with the development of the Golden Gateway precinct) the performance of the intersection is predicted to maintain a level of service A by 2041 in the AM peak hour and decrease to a level of service B in the PM peak hour.

When traffic associated with the development of the Golden Gateway precinct and Ascot Racecourse landholdings is included, the performance of the Resolution Drive approach to the roundabout reduces, however the overall intersection level of service is predicted to be C in the AM peak hour and B in the PM peak hour in 2041. Traffic volumes along Resolution Drive are forecast to increase with the development of the Ascot Racecourse landholdings, with the most traffic intensive developments (Ascot Racecourse Area E) to be accessed via Resolution Drive.

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6.2.3 Pedestrian, Cycle and Public Transport Networks

The future development of the Golden Gateway Structure Plan would not only transform the pedestrian and cycle connections throughout the precinct, but also provide a resident population that could be the catalyst in a step change in public transport service provision across the local area.

To achieve the 20% reduction in car driver and car passenger mode share, the following strategies are recommended:

- Implementation of a precinct wide 30km/h speed zone (excluding Grandstand Road and Stoneham Street as the main through route for traffic) to improve the environment for walking and cycling
- Completing gaps in the shared path network and implementing the long term cycle network routes through the precinct.
- Increasing the tree canopy coverage along all roads within the precinct to create a pleasant environment for walking and cycling.
- Ensuring there are a variety of local amenities within a short and pleasant walking or biking distance.
- The introduction of a bike or electric scooter share scheme.
- The introduction of a car share scheme.
- The imposition of a parking cap for residential and commercial uses.
- The City should lobby the PTA to improve bus services to the precinct and explore the potential of other transit options such as a superbus or trackless tram

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Appendix 1 – SIDRA Network Output 2021 Existing Network

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NETWORK SUMMARY

Network: N101 [2021 AM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS D					
Speed Efficiency	0.58					
Travel Time Index	5.34					
Congestion Coefficient	1.72					
Travel Speed (Average)	34.7	km/h			35.1	km/h
Travel Distance (Total)	10603.9	veh-km/h			16521.7	pers-km/h
Travel Time (Total)	305.4	veh-h/h			470.2	pers-h/h
Desired Speed (Program)	59.8	km/h				
Demand Flows (Total for all Sites)	47016	veh/h			75212	pers/h
Arrival Flows (Total for all Sites)	47016	veh/h			75212	pers/h
Demand Flows (Entry Total)	6526	veh/h				
Midblock Inflows (Total)	98	veh/h				
Midblock Outflows (Total)	-90	veh/h				
Percent Heavy Vehicles (Demand)	4.3	%				
Percent Heavy Vehicles (Arrival)	4.3	%				
Degree of Saturation	1.001					
Control Delay (Total)	127.01	veh-h/h			183.54	pers-h/h
Control Delay (Average)	9.7	sec			8.8	sec
Control Delay (Worst Lane)	109.3	sec				
Control Delay (Worst Movement)	109.6	sec			109.6	sec
Geometric Delay (Average)	0.6	sec				
Stop-Line Delay (Average)	9.1	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	10215	veh/h			19053	pers/h
Effective Stop Rate	0.22		0.96	per km	0.25	
Proportion Queued	0.20				0.18	
Performance Index	893.5				893.5	
Cost (Total)	15229.39	$/h	1.44	$/km	15229.39	$/h
Fuel Consumption (Total)	1348.6	L/h	127.2	mL/km		
Fuel Economy	12.7	L/100km				
Carbon Dioxide (Total)	3199.2	kg/h	301.7	g/km		
Hydrocarbons (Total)	0.280	kg/h	0.026	g/km		
Carbon Monoxide (Total)	3.288	kg/h	0.310	g/km		
NOx (Total)	7.463	kg/h	0.704	g/km		

Network Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.0% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	22,567,680	veh/y	36,101,960	pers/y
Delay	60,963	veh-h/y	88,101	pers-h/y
Effective Stops	4,903,093	veh/y	9,145,675	pers/y
Travel Distance	5,089,875	veh-km/y	7,930,398	pers-km/y
Travel Time	146,599	veh-h/y	225,674	pers-h/y
Cost	7,310,108	$/y	7,310,108	$/y
Fuel Consumption	647,308	L/y		
Carbon Dioxide	1,535,624	kg/y		
Hydrocarbons	135	kg/y		
Carbon Monoxide	1,578	kg/y		
NOx	3,582	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	60	5.0	60	5.0	0.371	65.2	LOS E	5.1	38.4	0.96	0.77	0.96	12.2
2	T1	107	8.4	107	8.4	* 0.371	59.6	LOS E	5.2	39.8	0.96	0.75	0.96	13.2
3	R2	70	10.0	70	10.0	0.334	65.2	LOS E	4.3	34.1	0.95	0.76	0.95	12.2
Approach		237	8.0	237	8.0	0.371	62.7	LOS E	5.2	39.8	0.96	0.76	0.96	12.6
East: Great Eastern Hwy														
4	L2	194	5.7	194	5.7	0.280	28.6	LOS C	8.7	66.7	0.65	0.73	0.65	24.3
5	T1	2486	4.5	2486	4.5	* 0.934	55.7	LOS E	17.8	130.6	1.00	1.06	1.18	6.0
6	R2	18	5.6	18	5.6	0.171	72.1	LOS E	1.2	9.6	0.98	0.70	0.98	4.9
6u	U	1	0.0	1	0.0	0.171	73.8	LOS E	1.2	9.6	0.98	0.70	0.98	4.9
Approach		2699	4.6	2699	4.6	0.934	53.9	LOS D	17.8	130.6	0.97	1.04	1.14	7.1
North: Stoneham St														
7	L2	6	16.7	6	16.7	0.031	60.2	LOS E	0.3	3.3	0.89	0.66	0.89	8.1
8	T1	293	4.1	293	4.1	* 1.001	108.2	LOS F	24.1	169.0	1.00	1.21	1.63	11.4
9	R2	459	0.4	459	0.4	1.001	109.6	LOS F	21.7	152.7	1.00	1.13	1.57	5.1
Approach		758	2.0	758	2.0	1.001	108.7	LOS F	24.1	169.0	1.00	1.16	1.59	7.8
West: Great Eastern Hwy														
10	L2	217	1.4	217	1.4	0.141	6.6	LOS A	1.6	11.0	0.18	0.60	0.18	31.6
11	T1	1426	5.3	1426	5.3	0.431	20.8	LOS C	12.7	94.5	0.55	0.48	0.55	15.8
12	R2	58	3.4	58	3.4	* 0.797	80.4	LOS F	6.3	44.6	1.00	0.89	1.27	12.9
12u	U	30	0.0	30	0.0	0.797	82.0	LOS F	6.3	44.6	1.00	0.89	1.27	5.1
Approach		1731	4.7	1731	4.7	0.797	22.0	LOS C	12.7	94.5	0.53	0.52	0.54	15.8
All Vehicles		5425	4.4	5425	4.4	1.001	51.8	LOS D	24.1	169.0	0.83	0.88	1.01	9.0

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	97	2.1	97	2.1	0.514	67.8	LOS E	6.5	48.3	0.99	0.79	0.99	15.3
2	T1	108	5.6	108	5.6	0.514	61.7	LOS E	6.5	45.9	0.98	0.77	0.98	17.0
3	R2	124	4.0	124	4.0	* 0.626	69.2	LOS E	8.0	59.3	1.00	0.81	1.02	15.4
Approach		329	4.0	329	4.0	0.626	66.3	LOS E	8.0	59.3	0.99	0.79	1.00	15.9
East: Great Eastern Hwy														
4	L2	127	4.7	127	4.7	0.089	7.8	LOS A	1.3	9.1	0.22	0.61	0.22	45.2
5	T1	2479	4.8	2479	4.8	* 0.693	26.7	LOS C	22.2	163.2	0.81	0.73	0.81	13.0
6	R2	140	7.1	140	7.1	* 0.857	79.3	LOS E	11.0	83.1	1.00	0.95	1.30	5.2
6u	U	13	0.0	13	0.0	0.857	80.9	LOS F	11.0	83.1	1.00	0.95	1.30	5.2
Approach		2759	4.9	2759	4.9	0.857	28.8	LOS C	22.2	163.2	0.80	0.74	0.81	13.6
North: Resolution Dr														
7	L2	250	2.0	250	2.0	0.424	15.4	LOS B	7.2	51.8	0.53	0.73	0.53	21.5
8	T1	134	7.5	134	7.5	0.611	67.7	LOS E	5.7	40.0	1.00	0.77	1.02	19.1
9	R2	86	1.2	86	1.2	* 0.628	74.0	LOS E	5.7	40.4	1.00	0.79	1.04	6.3
Approach		470	3.4	470	3.4	0.628	41.0	LOS D	7.2	51.8	0.75	0.75	0.76	16.2
West: Great Eastern Hwy														
10	L2	8	0.0	8	0.0	0.030	23.8	LOS C	0.7	7.3	0.53	0.50	0.53	21.1
11	T1	1391	6.0	1391	6.0	0.495	18.3	LOS B	14.9	111.4	0.54	0.48	0.54	22.5
12	R2	100	1.0	100	1.0	0.638	70.3	LOS E	7.7	54.1	1.00	0.81	1.03	19.0
12u	U	18	0.0	18	0.0	0.638	71.9	LOS E	7.7	54.1	1.00	0.81	1.03	8.1
Approach		1517	5.6	1517	5.6	0.638	22.4	LOS C	14.9	111.4	0.58	0.51	0.58	21.4
All Vehicles		5075	4.9	5075	4.9	0.857	30.4	LOS C	22.2	163.2	0.74	0.68	0.75	16.2

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 AM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	28	7.1	28	7.1	0.358	6.8	LOS A	1.9	13.9	0.69	0.88	0.70	29.3
6a	R1	15	6.7	15	6.7	0.358	12.1	LOS B	1.9	13.9	0.69	0.88	0.70	39.3
6	R2	232	4.7	232	4.7	0.358	13.2	LOS B	1.9	13.9	0.69	0.88	0.70	29.3
Approach		275	5.1	275	5.1	0.358	12.5	LOS B	1.9	13.9	0.69	0.88	0.70	30.0
North: Grandstand Rd														
7	L2	408	2.7	408	2.7	0.405	3.9	LOS A	2.7	19.0	0.33	0.50	0.33	33.6
9a	R1	723	1.1	723	1.1	0.405	8.7	LOS A	2.7	19.0	0.34	0.57	0.34	31.0
9b	R3	6	0.0	6	0.0	0.405	11.2	LOS B	2.6	18.6	0.34	0.59	0.34	46.7
9u	U	2	0.0	2	0.0	0.405	12.4	LOS B	2.6	18.6	0.34	0.59	0.34	30.3
Approach		1139	1.7	1139	1.7	0.405	7.0	LOS A	2.7	19.0	0.34	0.54	0.34	31.9
NorthWest: Resolution Dr														
27b	L3	12	8.3	12	8.3	0.113	4.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
27a	L1	48	0.0	48	0.0	0.113	3.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
29	R2	46	0.0	46	0.0	0.113	9.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
Approach		106	0.9	106	0.9	0.113	6.0	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
SouthWest: Stoneham St														
30	L2	18	0.0	18	0.0	0.151	2.1	LOS A	0.8	6.0	0.42	0.43	0.42	47.1
30a	L1	318	2.8	318	2.8	0.151	2.2	LOS A	0.8	6.0	0.42	0.46	0.42	31.1
32a	R1	21	0.0	21	0.0	0.151	6.3	LOS A	0.8	5.8	0.43	0.49	0.43	30.3
32u	U	4	25.0	4	25.0	0.151	10.3	LOS B	0.8	5.8	0.43	0.49	0.43	30.3
Approach		361	2.8	361	2.8	0.151	2.5	LOS A	0.8	6.0	0.43	0.46	0.43	33.1
All Vehicles		1881	2.3	1881	2.3	0.405	6.9	LOS A	2.7	19.0	0.41	0.58	0.42	31.9

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

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NETWORK SUMMARY

Network: N101 [2021 PM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS D					
Speed Efficiency	0.51					
Travel Time Index	4.57					
Congestion Coefficient	1.96					
Travel Speed (Average)	30.5	km/h			31.5	km/h
Travel Distance (Total)	11447.1	veh-km/h			16730.4	pers-km/h
Travel Time (Total)	375.0	veh-h/h			531.8	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	50964	veh/h			75154	pers/h
Arrival Flows (Total for all Sites)	50628	veh/h			74750	pers/h
Demand Flows (Entry Total)	7292	veh/h				
Midblock Inflows (Total)	577	veh/h				
Midblock Outflows (Total)	-234	veh/h				
Percent Heavy Vehicles (Demand)	2.2	%				
Percent Heavy Vehicles (Arrival)	2.2	%				
Degree of Saturation	1.504					
Control Delay (Total)	182.04	veh-h/h			247.62	pers-h/h
Control Delay (Average)	12.9	sec			11.9	sec
Control Delay (Worst Lane)	490.9	sec				
Control Delay (Worst Movement)	531.6	sec			531.6	sec
Geometric Delay (Average)	0.7	sec				
Stop-Line Delay (Average)	12.2	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.59					
Total Effective Stops	14496	veh/h			20918	pers/h
Effective Stop Rate	0.29		1.27	per km	0.28	
Proportion Queued	0.23				0.22	
Performance Index	1146.1				1146.1	
Cost (Total)	16864.10	$/h	1.47	$/km	16864.10	$/h
Fuel Consumption (Total)	1394.0	L/h	121.8	mL/km		
Fuel Economy	12.2	L/100km				
Carbon Dioxide (Total)	3292.4	kg/h	287.6	g/km		
Hydrocarbons (Total)	0.309	kg/h	0.027	g/km		
Carbon Monoxide (Total)	3.462	kg/h	0.302	g/km		
NOx (Total)	4.021	kg/h	0.351	g/km		

Network Model Variability Index (Iterations 3 to N): 0.7 %
Number of Iterations: 6 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.4% 0.3% 0.2%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	24,462,720	veh/y	36,073,730	pers/y
Delay	87,379	veh-h/y	118,860	pers-h/y
Effective Stops	6,958,220	veh/y	10,040,540	pers/y
Travel Distance	5,494,583	veh-km/y	8,030,580	pers-km/y
Travel Time	179,984	veh-h/y	255,284	pers-h/y
Cost	8,094,768	$/y	8,094,768	$/y
Fuel Consumption	669,123	L/y		
Carbon Dioxide	1,580,361	kg/y		
Hydrocarbons	148	kg/y		
Carbon Monoxide	1,662	kg/y		
NOx	1,930	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	200	0.5	200	0.5	0.812	66.7	LOS E	21.8	154.2	1.00	0.91	1.11	12.2
2	T1	416	1.4	416	1.4	* 0.812	60.6	LOS E	21.8	154.2	1.00	0.92	1.11	13.0
3	R2	254	1.2	254	1.2	0.666	60.5	LOS E	16.0	113.7	0.98	0.84	0.98	12.9
Approach		870	1.1	870	1.1	0.812	62.0	LOS E	21.8	154.2	0.99	0.90	1.07	12.8
East: Great Eastern Hwy														
4	L2	102	3.9	102	3.9	0.195	34.3	LOS C	5.5	44.9	0.69	0.71	0.69	22.3
5	T1	1442	2.6	1442	2.6	0.617	35.6	LOS D	18.4	130.6	0.86	0.76	0.86	8.9
6	R2	74	2.7	74	2.7	0.525	72.3	LOS E	5.8	41.5	1.00	0.78	1.00	4.9
6u	U	12	0.0	12	0.0	0.525	74.0	LOS E	5.8	41.5	1.00	0.78	1.00	4.9
Approach		1630	2.6	1630	2.6	0.617	37.5	LOS D	18.4	130.6	0.85	0.76	0.85	9.6
North: Stoneham St														
7	L2	9	0.0	9	0.0	0.046	66.9	LOS E	0.5	3.7	0.93	0.67	0.93	7.4
8	T1	224	0.0	213	0.0	* 0.804	71.8	LOS E	11.3	79.1	1.00	0.90	1.18	15.6
9	R2	255	2.0	243	2.1	0.804	77.2	LOS E	10.7	76.2	1.00	0.89	1.16	7.1
Approach		488	1.0	465 N1	1.1	0.804	74.5	LOS E	11.3	79.1	1.00	0.89	1.17	11.3
West: Great Eastern Hwy														
10	L2	733	0.4	733	0.4	0.615	12.8	LOS B	19.7	138.8	0.52	0.73	0.52	21.9
11	T1	2015	3.2	2015	3.2	* 0.777	35.0	LOS C	22.7	163.2	0.84	0.75	0.85	10.5
12	R2	83	0.0	83	0.0	* 0.549	72.8	LOS E	6.3	43.8	1.00	0.78	1.00	14.0
12u	U	10	0.0	10	0.0	0.549	74.4	LOS E	6.3	43.8	1.00	0.78	1.00	5.6
Approach		2841	2.4	2841	2.4	0.777	30.5	LOS C	22.7	163.2	0.76	0.75	0.77	12.3
All Vehicles		5829	2.2	5806 N1	2.2	0.812	40.7	LOS D	22.7	163.2	0.84	0.78	0.87	11.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	113	0.0	113	0.0	0.488	66.4	LOS E	8.0	55.7	0.97	0.79	0.97	15.6
2	T1	180	2.8	180	2.8	* 0.644	62.5	LOS E	11.1	79.4	1.00	0.82	1.00	16.8
3	R2	146	2.7	146	2.7	0.591	67.7	LOS E	9.5	68.7	0.99	0.81	0.99	15.7
Approach		439	2.1	439	2.1	0.644	65.2	LOS E	11.1	79.4	0.99	0.81	0.99	16.1
East: Great Eastern Hwy														
4	L2	131	0.0	131	0.0	0.092	9.0	LOS A	1.8	12.4	0.26	0.62	0.26	45.5
5	T1	1482	3.0	1482	3.0	0.451	27.4	LOS C	18.1	128.8	0.73	0.64	0.73	12.8
6	R2	240	0.4	240	0.4	* 0.967	100.7	LOS F	22.1	155.4	1.00	1.08	1.50	4.2
6u	U	15	0.0	15	0.0	0.967	102.3	LOS F	22.1	155.4	1.00	1.08	1.50	4.2
Approach		1868	2.4	1868	2.4	0.967	36.1	LOS D	22.1	155.4	0.73	0.70	0.80	12.0
North: Resolution Dr														
7	L2	141	3.5	141	3.5	0.265	30.0	LOS C	5.8	42.3	0.70	0.75	0.70	13.4
8	T1	147	3.4	147	3.4	* 0.738	73.1	LOS E	6.7	46.7	1.00	0.81	1.10	18.2
9	R2	23	0.0	23	0.0	0.191	74.5	LOS E	1.5	10.6	0.96	0.71	0.96	6.3
Approach		311	3.2	311	3.2	0.738	53.7	LOS D	6.7	46.7	0.86	0.77	0.91	16.0
West: Great Eastern Hwy														
10	L2	22	0.0	22	0.0	0.063	28.9	LOS C	1.6	15.5	0.59	0.58	0.59	17.8
11	T1	2331	2.8	2331	2.8	* 0.894	38.3	LOS D	36.4	261.1	0.92	0.90	1.00	13.4
12	R2	168	1.8	168	1.8	0.746	70.6	LOS E	13.0	91.3	1.00	0.86	1.09	18.9
12u	U	22	0.0	22	0.0	0.746	72.2	LOS E	13.0	91.3	1.00	0.86	1.09	8.1
Approach		2543	2.7	2543	2.7	0.894	40.6	LOS D	36.4	261.1	0.92	0.90	1.00	14.1
All Vehicles		5161	2.6	5161	2.6	0.967	41.9	LOS D	36.4	261.1	0.86	0.81	0.92	13.9

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	49	2.0	49	2.0	0.610	6.9	LOS A	4.9	35.2	0.70	0.87	0.83	29.1
6a	R1	40	0.0	40	0.0	0.610	12.0	LOS B	4.9	35.2	0.70	0.87	0.83	40.0
6	R2	507	2.2	507	2.2	0.610	13.4	LOS B	4.9	35.2	0.70	0.87	0.83	29.1
Approach		596	2.0	596	2.0	0.610	12.7	LOS B	4.9	35.2	0.70	0.87	0.83	30.0
North: Grandstand Rd														
7	L2	207	2.4	207	2.4	0.208	3.6	LOS A	1.2	8.6	0.24	0.48	0.24	34.5
9a	R1	380	0.3	380	0.3	0.208	8.4	LOS A	1.2	8.6	0.24	0.55	0.24	31.8
9b	R3	8	0.0	8	0.0	0.208	10.9	LOS B	1.2	8.3	0.25	0.57	0.25	47.5
9u	U	4	0.0	4	0.0	0.208	12.1	LOS B	1.2	8.3	0.25	0.57	0.25	31.1
Approach		599	1.0	599	1.0	0.208	6.8	LOS A	1.2	8.6	0.24	0.52	0.24	32.9
NorthWest: Resolution Dr														
27b	L3	13	0.0	13	0.0	0.190	9.7	LOS A	1.0	7.3	0.87	0.93	0.87	28.8
27a	L1	25	4.0	25	4.0	0.190	9.0	LOS A	1.0	7.3	0.87	0.93	0.87	28.8
29	R2	34	2.9	34	2.9	0.190	15.0	LOS B	1.0	7.3	0.87	0.93	0.87	28.8
Approach		72	2.8	72	2.8	0.190	11.9	LOS B	1.0	7.3	0.87	0.93	0.87	28.8
SouthWest: Stoneham St														
30	L2	50	0.0	47	0.0	0.756	8.7	LOS A	3.5	24.9	0.95	1.03	1.29	34.2
30a	L1	1425	0.5	1338	0.5	0.756	9.4	LOS A	3.5	24.9	0.95	1.05	1.31	14.2
32a	R1	16	6.2	15	6.6	0.756	14.3	LOS B	3.5	24.9	0.95	1.08	1.34	13.7
32u	U	5	0.0	5	0.0	0.756	17.9	LOS B	3.5	24.9	0.95	1.08	1.34	13.7
Approach		1496	0.5	1404 N1	0.6	0.756	9.5	LOS A	3.5	24.9	0.95	1.05	1.31	15.4
All Vehicles		2763	1.0	2671 N1	1.0	0.756	9.7	LOS A	4.9	35.2	0.74	0.89	0.95	24.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 2 – SIDRA Network Output 2031 Existing Network

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

NETWORK SUMMARY

Network: N101 [2031 AM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS D					
Speed Efficiency	0.51					
Travel Time Index	4.58					
Congestion Coefficient	1.95					
Travel Speed (Average)	30.6	km/h			31.6	km/h
Travel Distance (Total)	11123.4	veh-km/h			17145.1	pers-km/h
Travel Time (Total)	363.3	veh-h/h			542.6	pers-h/h
Desired Speed (Program)	59.8	km/h				
Demand Flows (Total for all Sites)	49353	veh/h			78017	pers/h
Arrival Flows (Total for all Sites)	49329	veh/h			77988	pers/h
Demand Flows (Entry Total)	6820	veh/h				
Midblock Inflows (Total)	89	veh/h				
Midblock Outflows (Total)	-30	veh/h				
Percent Heavy Vehicles (Demand)	4.2	%				
Percent Heavy Vehicles (Arrival)	4.2	%				
Degree of Saturation	1.052					
Control Delay (Total)	175.44	veh-h/h			244.61	pers-h/h
Control Delay (Average)	12.8	sec			11.3	sec
Control Delay (Worst Lane)	138.6	sec				
Control Delay (Worst Movement)	138.9	sec			138.9	sec
Geometric Delay (Average)	0.6	sec				
Stop-Line Delay (Average)	12.2	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	11920	veh/h			21255	pers/h
Effective Stop Rate	0.24		1.07	per km	0.27	
Proportion Queued	0.21				0.19	
Performance Index	1039.4				1039.4	
Cost (Total)	17614.30	$/h	1.58	$/km	17614.30	$/h
Fuel Consumption (Total)	1505.3	L/h	135.3	mL/km		
Fuel Economy	13.5	L/100km				
Carbon Dioxide (Total)	3569.9	kg/h	320.9	g/km		
Hydrocarbons (Total)	0.321	kg/h	0.029	g/km		
Carbon Monoxide (Total)	3.619	kg/h	0.325	g/km		
NOx (Total)	8.302	kg/h	0.746	g/km		

Network Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.0% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	23,689,440	veh/y	37,448,070	pers/y
Delay	84,210	veh-h/y	117,415	pers-h/y
Effective Stops	5,721,724	veh/y	10,202,420	pers/y
Travel Distance	5,339,232	veh-km/y	8,229,638	pers-km/y
Travel Time	174,372	veh-h/y	260,425	pers-h/y
Cost	8,454,863	$/y	8,454,863	$/y
Fuel Consumption	722,563	L/y		
Carbon Dioxide	1,713,534	kg/y		
Hydrocarbons	154	kg/y		
Carbon Monoxide	1,737	kg/y		
NOx	3,985	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	63	4.8	63	4.8	0.387	65.4	LOS E	5.4	40.1	0.96	0.77	0.96	12.2
2	T1	112	8.0	112	8.0	* 0.387	59.7	LOS E	5.5	41.7	0.96	0.76	0.96	13.2
3	R2	73	9.6	73	9.6	0.347	65.3	LOS E	4.5	35.4	0.96	0.77	0.96	12.1
Approach		248	7.7	248	7.7	0.387	62.8	LOS E	5.5	41.7	0.96	0.76	0.96	12.6
East: Great Eastern Hwy														
4	L2	204	5.9	204	5.9	0.297	29.4	LOS C	9.3	71.0	0.67	0.74	0.67	23.9
5	T1	2612	4.5	2612	4.5	* 0.998	87.4	LOS F	17.8	130.6	1.00	1.24	1.40	4.0
6	R2	19	5.3	19	5.3	0.179	72.2	LOS E	1.3	10.1	0.98	0.71	0.98	4.9
6u	U	1	0.0	1	0.0	0.179	73.9	LOS E	1.3	10.1	0.98	0.71	0.98	4.9
Approach		2836	4.6	2836	4.6	0.998	83.1	LOS F	17.8	130.6	0.97	1.20	1.34	4.8
North: Stoneham St														
7	L2	5	0.0	5	0.0	0.019	59.0	LOS E	0.3	2.0	0.88	0.65	0.88	8.2
8	T1	308	4.2	308	4.2	* 1.052	137.4	LOS F	28.9	202.2	1.00	1.33	1.82	9.2
9	R2	482	0.4	482	0.4	1.052	138.9	LOS F	26.1	183.6	1.00	1.23	1.77	4.0
Approach		795	1.9	795	1.9	1.052	137.8	LOS F	28.9	202.2	1.00	1.27	1.78	6.2
West: Great Eastern Hwy														
10	L2	228	1.3	228	1.3	0.149	6.7	LOS A	1.8	12.6	0.19	0.61	0.19	31.3
11	T1	1496	5.3	1496	5.3	0.463	21.9	LOS C	14.1	104.6	0.58	0.51	0.58	15.2
12	R2	61	3.3	61	3.3	* 0.842	82.6	LOS F	6.8	48.0	1.00	0.93	1.35	12.6
12u	U	32	0.0	32	0.0	0.842	84.3	LOS F	6.8	48.0	1.00	0.93	1.35	5.0
Approach		1817	4.7	1817	4.7	0.842	23.1	LOS C	14.1	104.6	0.55	0.54	0.57	15.3
All Vehicles		5696	4.4	5696	4.4	1.052	70.7	LOS E	28.9	202.2	0.84	0.98	1.14	6.8

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	102	2.0	102	2.0	0.538	68.0	LOS E	6.8	50.7	0.99	0.79	0.99	15.3
2	T1	113	5.3	113	5.3	0.538	61.9	LOS E	6.8	50.7	0.99	0.78	0.99	16.9
3	R2	130	3.8	130	3.8	* 0.655	69.7	LOS E	8.5	62.5	1.00	0.82	1.04	15.3
Approach		345	3.8	345	3.8	0.655	66.7	LOS E	8.5	62.5	0.99	0.80	1.01	15.8
East: Great Eastern Hwy														
4	L2	133	4.5	133	4.5	0.094	8.0	LOS A	1.4	10.1	0.23	0.61	0.23	45.0
5	T1	2605	4.8	2605	4.8	* 0.881	42.5	LOS D	22.2	163.2	0.94	0.95	1.06	8.9
6	R2	147	7.5	147	7.5	* 0.905	85.1	LOS F	12.2	92.0	1.00	1.01	1.41	4.9
6u	U	14	0.0	14	0.0	0.905	86.7	LOS F	12.2	92.0	1.00	1.01	1.41	4.9
Approach		2899	4.9	2899	4.9	0.905	43.3	LOS D	22.2	163.2	0.91	0.94	1.04	9.8
North: Resolution Dr														
7	L2	262	1.9	262	1.9	0.459	16.7	LOS B	8.2	58.8	0.57	0.74	0.57	20.4
8	T1	140	7.1	140	7.1	0.636	68.0	LOS E	5.9	41.9	1.00	0.78	1.03	19.1
9	R2	90	1.1	90	1.1	* 0.851	81.5	LOS F	6.5	46.1	1.00	0.91	1.31	5.8
Approach		492	3.3	492	3.3	0.851	43.1	LOS D	8.2	58.8	0.77	0.78	0.84	15.6
West: Great Eastern Hwy														
10	L2	8	0.0	8	0.0	0.030	23.9	LOS C	0.7	7.3	0.53	0.50	0.53	21.1
11	T1	1459	6.0	1459	6.0	0.520	18.6	LOS B	16.0	119.9	0.55	0.49	0.55	22.3
12	R2	105	1.0	105	1.0	0.700	71.9	LOS E	8.3	58.0	1.00	0.84	1.09	18.7
12u	U	19	0.0	19	0.0	0.700	73.5	LOS E	8.3	58.0	1.00	0.84	1.09	8.0
Approach		1591	5.6	1591	5.6	0.700	22.8	LOS C	16.0	119.9	0.59	0.52	0.60	21.2
All Vehicles		5327	4.9	5327	4.9	0.905	38.6	LOS D	22.2	163.2	0.81	0.79	0.89	13.5

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 AM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	29	6.9	29	6.9	0.382	7.2	LOS A	2.1	15.5	0.72	0.91	0.76	28.8
6a	R1	16	6.3	16	6.3	0.382	12.5	LOS B	2.1	15.5	0.72	0.91	0.76	38.9
6	R2	242	4.5	242	4.5	0.382	13.6	LOS B	2.1	15.5	0.72	0.91	0.76	28.8
Approach		287	4.9	287	4.9	0.382	12.9	LOS B	2.1	15.5	0.72	0.91	0.76	29.6
North: Grandstand Rd														
7	L2	426	2.6	426	2.6	0.425	3.9	LOS A	2.9	20.5	0.34	0.51	0.34	33.4
9a	R1	759	1.1	759	1.1	0.425	8.7	LOS A	2.9	20.5	0.36	0.57	0.36	30.9
9b	R3	6	0.0	6	0.0	0.425	11.2	LOS B	2.8	20.0	0.36	0.59	0.36	46.5
9u	U	2	0.0	2	0.0	0.425	12.5	LOS B	2.8	20.0	0.36	0.59	0.36	30.2
Approach		1193	1.6	1193	1.6	0.425	7.0	LOS A	2.9	20.5	0.35	0.55	0.35	31.8
NorthWest: Resolution Dr														
27b	L3	13	7.7	13	7.7	0.120	4.4	LOS A	0.5	3.5	0.51	0.61	0.51	35.5
27a	L1	50	0.0	50	0.0	0.120	3.4	LOS A	0.5	3.5	0.51	0.61	0.51	35.5
29	R2	48	0.0	48	0.0	0.120	9.4	LOS A	0.5	3.5	0.51	0.61	0.51	35.5
Approach		111	0.9	111	0.9	0.120	6.1	LOS A	0.5	3.5	0.51	0.61	0.51	35.5
SouthWest: Stoneham St														
30	L2	19	0.0	19	0.0	0.160	2.1	LOS A	0.9	6.4	0.43	0.44	0.43	47.0
30a	L1	334	2.7	334	2.7	0.160	2.3	LOS A	0.9	6.4	0.44	0.47	0.44	30.9
32a	R1	22	0.0	22	0.0	0.160	6.4	LOS A	0.9	6.3	0.44	0.50	0.44	30.1
32u	U	4	25.0	4	25.0	0.160	10.4	LOS B	0.9	6.3	0.44	0.50	0.44	30.1
Approach		379	2.6	379	2.6	0.160	2.6	LOS A	0.9	6.4	0.44	0.47	0.44	32.9
All Vehicles		1970	2.2	1970	2.2	0.425	7.0	LOS A	2.9	20.5	0.43	0.59	0.44	31.7

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

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NETWORK SUMMARY

Network: N101 [2031 PM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.45					
Travel Time Index	3.90					
Congestion Coefficient	2.22					
Travel Speed (Average)	26.9	km/h			28.5	km/h
Travel Distance (Total)	11965.4	veh-km/h			18550.5	pers-km/h
Travel Time (Total)	444.0	veh-h/h			650.6	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	53437	veh/h			85765	pers/h
Arrival Flows (Total for all Sites)	52906	veh/h			85106	pers/h
Demand Flows (Entry Total)	7638	veh/h				
Midblock Inflows (Total)	391	veh/h				
Midblock Outflows (Total)	-23	veh/h				
Percent Heavy Vehicles (Demand)	2.1	%				
Percent Heavy Vehicles (Arrival)	2.1	%				
Degree of Saturation	1.937					
Control Delay (Total)	241.83	veh-h/h			330.15	pers-h/h
Control Delay (Average)	16.5	sec			14.0	sec
Control Delay (Worst Lane)	875.1	sec				
Control Delay (Worst Movement)	912.1	sec			912.1	sec
Geometric Delay (Average)	0.7	sec				
Stop-Line Delay (Average)	15.7	sec				
Ave. Queue Storage Ratio (Worst Lane)	2.35					
Total Effective Stops	16273	veh/h			27080	pers/h
Effective Stop Rate	0.31		1.36	per km	0.32	
Proportion Queued	0.24				0.21	
Performance Index	1320.4				1320.4	
Cost (Total)	20345.79	$/h	1.70	$/km	20345.79	$/h
Fuel Consumption (Total)	1528.9	L/h	127.8	mL/km		
Fuel Economy	12.8	L/100km				
Carbon Dioxide (Total)	3609.7	kg/h	301.7	g/km		
Hydrocarbons (Total)	0.344	kg/h	0.029	g/km		
Carbon Monoxide (Total)	3.718	kg/h	0.311	g/km		
NOx (Total)	4.218	kg/h	0.353	g/km		

Network Model Variability Index (Iterations 3 to N): 0.6 %
Number of Iterations: 9 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.1% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	25,649,760	veh/y	41,167,300	pers/y
Delay	116,076	veh-h/y	158,471	pers-h/y
Effective Stops	7,811,153	veh/y	12,998,270	pers/y
Travel Distance	5,743,401	veh-km/y	8,904,247	pers-km/y
Travel Time	213,118	veh-h/y	312,269	pers-h/y
Cost	9,765,982	$/y	9,765,982	$/y
Fuel Consumption	733,861	L/y		
Carbon Dioxide	1,732,659	kg/y		
Hydrocarbons	165	kg/y		
Carbon Monoxide	1,785	kg/y		
NOx	2,025	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	210	0.5	210	0.5	0.866	71.9	LOS E	24.7	174.2	1.00	0.96	1.19	11.4
2	T1	437	1.4	437	1.4	* 0.866	65.9	LOS E	24.7	174.2	1.00	0.98	1.20	12.2
3	R2	267	1.1	267	1.1	0.700	61.3	LOS E	17.0	121.0	0.98	0.85	0.99	12.7
Approach		914	1.1	914	1.1	0.866	65.9	LOS E	24.7	174.2	1.00	0.94	1.14	12.2
East: Great Eastern Hwy														
4	L2	107	3.7	107	3.7	0.201	34.4	LOS C	5.8	46.6	0.69	0.72	0.69	22.3
5	T1	1514	2.4	1514	2.4	0.648	36.2	LOS D	18.4	130.6	0.87	0.77	0.87	8.8
6	R2	78	2.6	78	2.6	0.555	72.5	LOS E	6.1	44.0	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.555	74.3	LOS E	6.1	44.0	1.00	0.78	1.00	4.9
Approach		1712	2.5	1712	2.5	0.648	38.0	LOS D	18.4	130.6	0.87	0.77	0.87	9.4
North: Stoneham St														
7	L2	9	0.0	8	0.0	0.044	66.9	LOS E	0.5	3.6	0.93	0.67	0.93	7.4
8	T1	234	0.0	218	0.0	* 0.822	72.8	LOS E	11.7	81.6	1.00	0.92	1.21	15.5
9	R2	267	1.9	249	2.0	0.822	78.0	LOS E	11.1	78.6	1.00	0.90	1.19	7.0
Approach		510	1.0	475 [N1]	1.1	0.822	75.4	LOS E	11.7	81.6	1.00	0.91	1.19	11.2
West: Great Eastern Hwy														
10	L2	770	0.4	770	0.4	0.649	13.5	LOS B	22.2	155.9	0.55	0.74	0.55	21.2
11	T1	2115	3.2	2115	3.2	* 0.819	37.5	LOS D	22.7	163.2	0.87	0.80	0.90	9.9
12	R2	87	0.0	87	0.0	* 0.579	73.0	LOS E	6.6	46.3	1.00	0.78	1.00	14.0
12u	U	11	0.0	11	0.0	0.579	74.7	LOS E	6.6	46.3	1.00	0.78	1.00	5.5
Approach		2983	2.3	2983	2.3	0.819	32.5	LOS C	22.7	163.2	0.79	0.79	0.81	11.7
All Vehicles		6119	2.1	6084 [N1]	2.1	0.866	42.4	LOS D	24.7	174.2	0.86	0.81	0.91	11.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	119	0.0	119	0.0	0.511	66.7	LOS E	8.4	58.6	0.98	0.80	0.98	15.6
2	T1	188	2.7	188	2.7	* 0.675	63.1	LOS E	11.7	84.0	1.00	0.83	1.02	16.7
3	R2	153	2.6	153	2.6	0.618	68.0	LOS E	10.0	72.2	0.99	0.81	0.99	15.6
Approach		460	2.0	460	2.0	0.675	65.6	LOS E	11.7	84.0	0.99	0.82	1.00	16.0
East: Great Eastern Hwy														
4	L2	138	0.0	138	0.0	0.098	9.3	LOS A	2.0	13.7	0.27	0.62	0.27	45.3
5	T1	1557	2.9	1557	2.9	0.474	27.7	LOS C	19.3	137.4	0.74	0.65	0.74	12.7
6	R2	251	0.4	251	0.4	* 1.013	122.4	LOS F	23.2	163.2	1.00	1.16	1.66	3.5
6u	U	16	0.0	16	0.0	1.013	124.1	LOS F	23.2	163.2	1.00	1.16	1.66	3.5
Approach		1962	2.3	1962	2.3	1.013	39.3	LOS D	23.2	163.2	0.74	0.72	0.83	11.1
North: Resolution Dr														
7	L2	147	3.4	146	3.4	0.281	33.9	LOS C	6.5	47.0	0.74	0.76	0.74	12.2
8	T1	154	3.2	153	3.3	* 0.769	73.7	LOS E	7.0	49.1	1.00	0.82	1.12	18.1
9	R2	24	0.0	24	0.0	0.199	74.6	LOS E	1.6	11.0	0.96	0.71	0.96	6.3
Approach		325	3.1	324 N1	3.1	0.769	55.8	LOS E	7.0	49.1	0.88	0.79	0.94	15.6
West: Great Eastern Hwy														
10	L2	23	0.0	23	0.0	0.064	28.9	LOS C	1.6	15.8	0.59	0.59	0.59	17.8
11	T1	2444	2.7	2443	2.7	* 0.938	48.4	LOS D	36.4	261.1	0.97	1.01	1.13	11.1
12	R2	176	1.7	176	1.7	0.721	69.6	LOS E	12.6	88.7	1.00	0.85	1.06	19.1
12u	U	11	0.0	11	0.0	0.721	71.2	LOS E	12.6	88.7	1.00	0.85	1.06	8.2
Approach		2654	2.6	2653 N1	2.6	0.938	49.7	LOS D	36.4	261.1	0.97	1.00	1.12	12.0
All Vehicles		5401	2.5	5399 N1	2.5	1.013	47.7	LOS D	36.4	261.1	0.88	0.87	0.99	12.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	51	2.0	51	2.0	0.642	7.4	LOS A	5.5	39.5	0.74	0.91	0.89	28.5
6a	R1	42	0.0	42	0.0	0.642	12.6	LOS B	5.5	39.5	0.74	0.91	0.89	39.4
6	R2	529	2.1	527	2.1	0.642	13.9	LOS B	5.5	39.5	0.74	0.91	0.89	28.5
Approach		622	1.9	619 N1	1.9	0.642	13.3	LOS B	5.5	39.5	0.74	0.91	0.89	29.4
North: Grandstand Rd														
7	L2	217	2.3	217	2.3	0.219	3.7	LOS A	1.3	9.2	0.25	0.48	0.25	34.4
9a	R1	398	0.3	398	0.3	0.219	8.4	LOS A	1.3	9.2	0.25	0.55	0.25	31.8
9b	R3	8	0.0	8	0.0	0.219	10.9	LOS B	1.3	8.9	0.25	0.57	0.25	47.4
9u	U	4	0.0	4	0.0	0.219	12.1	LOS B	1.3	8.9	0.25	0.57	0.25	31.0
Approach		627	1.0	627	1.0	0.219	6.8	LOS A	1.3	9.2	0.25	0.53	0.25	32.8
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.212	10.2	LOS B	1.1	8.2	0.88	0.93	0.88	28.3
27a	L1	26	3.8	26	3.8	0.212	9.5	LOS A	1.1	8.2	0.88	0.93	0.88	28.3
29	R2	36	2.8	36	2.8	0.212	15.5	LOS B	1.1	8.2	0.88	0.93	0.88	28.3
Approach		76	2.6	76	2.6	0.212	12.5	LOS B	1.1	8.2	0.88	0.93	0.88	28.3
SouthWest: Stoneham St														
30	L2	53	0.0	48	0.0	0.794	10.4	LOS B	3.5	24.9	1.00	1.11	1.44	32.0
30a	L1	1498	0.5	1366	0.5	0.794	11.1	LOS B	3.5	24.9	1.00	1.13	1.46	12.5
32a	R1	17	5.9	16	6.4	0.794	16.2	LOS B	3.5	24.9	0.99	1.16	1.48	12.0
32u	U	5	0.0	5	0.0	0.794	19.7	LOS B	3.5	24.9	0.99	1.16	1.48	12.0
Approach		1573	0.5	1434 N1	0.6	0.794	11.2	LOS B	3.5	24.9	1.00	1.13	1.46	13.6
All Vehicles		2898	1.0	2757 N1	1.0	0.794	10.7	LOS B	5.5	39.5	0.76	0.94	1.04	23.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 3 – SIDRA Network Output 2041 Existing Network

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

NETWORK SUMMARY

Network: N101 [2041 AM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.38					
Travel Time Index	3.07					
Congestion Coefficient	2.66					
Travel Speed (Average)	22.5	km/h			23.7	km/h
Travel Distance (Total)	11607.3	veh-km/h			17725.7	pers-km/h
Travel Time (Total)	515.8	veh-h/h			749.4	pers-h/h
Desired Speed (Program)	59.8	km/h				
Demand Flows (Total for all Sites)	51917	veh/h			81094	pers/h
Arrival Flows (Total for all Sites)	51745	veh/h			80887	pers/h
Demand Flows (Entry Total)	7152	veh/h				
Midblock Inflows (Total)	217	veh/h				
Midblock Outflows (Total)	-156	veh/h				
Percent Heavy Vehicles (Demand)	4.2	%				
Percent Heavy Vehicles (Arrival)	4.2	%				
Degree of Saturation	1.158					
Control Delay (Total)	315.01	veh-h/h			435.33	pers-h/h
Control Delay (Average)	21.9	sec			19.4	sec
Control Delay (Worst Lane)	224.8	sec				
Control Delay (Worst Movement)	224.8	sec			224.8	sec
Geometric Delay (Average)	0.6	sec				
Stop-Line Delay (Average)	21.3	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	15104	veh/h			25604	pers/h
Effective Stop Rate	0.29		1.30	per km	0.32	
Proportion Queued	0.21				0.20	
Performance Index	1291.3				1291.3	
Cost (Total)	23857.12	$/h	2.06	$/km	23857.12	$/h
Fuel Consumption (Total)	1811.6	L/h	156.1	mL/km		
Fuel Economy	15.6	L/100km				
Carbon Dioxide (Total)	4293.3	kg/h	369.9	g/km		
Hydrocarbons (Total)	0.415	kg/h	0.036	g/km		
Carbon Monoxide (Total)	4.242	kg/h	0.365	g/km		
NOx (Total)	9.748	kg/h	0.840	g/km		

Network Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.0% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	24,920,160	veh/y	38,924,930	pers/y
Delay	151,205	veh-h/y	208,960	pers-h/y
Effective Stops	7,249,894	veh/y	12,289,960	pers/y
Travel Distance	5,571,491	veh-km/y	8,508,312	pers-km/y
Travel Time	247,562	veh-h/y	359,700	pers-h/y
Cost	11,451,420	$/y	11,451,420	$/y
Fuel Consumption	869,555	L/y		
Carbon Dioxide	2,060,780	kg/y		
Hydrocarbons	199	kg/y		
Carbon Monoxide	2,036	kg/y		
NOx	4,679	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	66	4.5	66	4.5	0.408	65.5	LOS E	5.7	42.4	0.97	0.77	0.97	12.2
2	T1	118	8.5	118	8.5	* 0.408	59.9	LOS E	5.7	44.1	0.97	0.76	0.97	13.1
3	R2	78	10.3	78	10.3	0.373	65.6	LOS E	4.8	38.3	0.96	0.77	0.96	12.1
Approach		262	8.0	262	8.0	0.408	63.0	LOS E	5.7	44.1	0.96	0.77	0.96	12.6
East: Great Eastern Hwy														
4	L2	214	5.6	214	5.6	0.309	29.5	LOS C	9.7	74.3	0.67	0.74	0.67	23.8
5	T1	2744	4.4	2744	4.4	* 1.048	119.5	LOS F	17.8	130.6	1.00	1.41	1.61	3.0
6	R2	20	5.0	20	5.0	0.187	72.2	LOS E	1.4	10.6	0.98	0.71	0.98	4.9
6u	U	1	0.0	1	0.0	0.187	73.9	LOS E	1.4	10.6	0.98	0.71	0.98	4.9
Approach		2979	4.5	2979	4.5	1.048	112.7	LOS F	17.8	130.6	0.97	1.36	1.54	3.6
North: Stoneham St														
7	L2	6	0.0	6	0.0	0.023	59.1	LOS E	0.3	2.4	0.89	0.66	0.89	8.2
8	T1	323	4.0	323	4.0	* 1.103	173.8	LOS F	32.6	228.5	1.00	1.46	2.03	7.5
9	R2	506	0.4	506	0.4	1.103	175.7	LOS F	31.3	219.8	1.00	1.34	1.97	3.2
Approach		835	1.8	835	1.8	1.103	174.1	LOS F	32.6	228.5	1.00	1.38	1.99	4.9
West: Great Eastern Hwy														
10	L2	239	1.3	239	1.3	0.157	6.7	LOS A	1.9	13.3	0.19	0.61	0.19	31.3
11	T1	1568	5.2	1568	5.2	0.487	22.1	LOS C	15.1	112.2	0.59	0.52	0.59	15.0
12	R2	64	3.1	64	3.1	* 0.877	85.3	LOS F	7.2	51.1	1.00	0.96	1.42	12.3
12u	U	33	0.0	33	0.0	0.877	86.9	LOS F	7.2	51.1	1.00	0.96	1.42	4.8
Approach		1904	4.6	1904	4.6	0.877	23.5	LOS C	15.1	112.2	0.56	0.55	0.58	15.1
All Vehicles		5980	4.3	5980	4.3	1.103	90.7	LOS F	32.6	228.5	0.84	1.08	1.27	5.4

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	107	1.9	107	1.9	0.562	68.2	LOS E	7.2	53.1	0.99	0.79	0.99	15.3
2	T1	118	5.1	118	5.1	0.562	62.1	LOS E	7.2	53.1	0.99	0.78	0.99	16.9
3	R2	136	3.7	136	3.7	* 0.684	70.3	LOS E	9.0	65.8	1.00	0.83	1.06	15.2
Approach		361	3.6	361	3.6	0.684	67.0	LOS E	9.0	65.8	0.99	0.81	1.02	15.8
East: Great Eastern Hwy														
4	L2	141	5.0	141	5.0	0.101	8.4	LOS A	1.7	11.8	0.25	0.61	0.25	44.5
5	T1	2736	4.8	2736	4.8	* 1.099	165.0	LOS F	22.2	163.2	1.00	1.65	1.92	2.5
6	R2	153	7.2	153	7.2	* 0.936	91.2	LOS F	13.2	99.3	1.00	1.05	1.50	4.6
6u	U	14	0.0	14	0.0	0.936	92.8	LOS F	13.2	99.3	1.00	1.05	1.50	4.6
Approach		3044	4.9	3044	4.9	1.099	153.7	LOS F	22.2	163.2	0.97	1.57	1.82	3.1
North: Resolution Dr														
7	L2	274	1.8	274	1.8	0.494	18.1	LOS B	9.3	66.4	0.61	0.76	0.61	19.3
8	T1	147	6.8	147	6.8	0.666	68.3	LOS E	6.3	44.2	1.00	0.79	1.05	19.0
9	R2	95	1.1	95	1.1	* 1.158	224.8	LOS F	12.7	89.8	1.00	1.29	2.35	2.2
Approach		516	3.1	516	3.1	1.158	70.5	LOS E	12.7	89.8	0.79	0.87	1.06	10.4
West: Great Eastern Hwy														
10	L2	9	0.0	9	0.0	0.032	23.9	LOS C	0.7	7.5	0.53	0.51	0.53	20.9
11	T1	1531	6.0	1531	6.0	0.547	18.9	LOS B	17.3	129.5	0.57	0.51	0.57	22.1
12	R2	110	0.9	110	0.9	0.775	74.6	LOS E	9.0	62.8	1.00	0.89	1.18	18.3
12u	U	20	0.0	20	0.0	0.775	76.2	LOS E	9.0	62.8	1.00	0.89	1.18	7.7
Approach		1670	5.6	1670	5.6	0.775	23.3	LOS C	17.3	129.5	0.60	0.54	0.62	20.9
All Vehicles		5591	4.8	5591	4.8	1.158	101.5	LOS F	22.2	163.2	0.84	1.15	1.34	5.9

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 AM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	31	6.5	31	6.5	0.413	7.8	LOS A	2.4	17.6	0.74	0.93	0.82	28.2
6a	R1	16	6.3	16	6.2	0.413	13.0	LOS B	2.4	17.6	0.74	0.93	0.82	38.3
6	R2	254	4.7	254	4.7	0.413	14.2	LOS B	2.4	17.6	0.74	0.93	0.82	28.2
Approach		301	5.0	301	5.0	0.413	13.5	LOS B	2.4	17.6	0.74	0.93	0.82	28.9
North: Grandstand Rd														
7	L2	446	2.7	446	2.7	0.449	4.0	LOS A	3.1	22.4	0.36	0.51	0.36	33.2
9a	R1	797	1.1	797	1.1	0.449	8.8	LOS A	3.1	22.4	0.38	0.57	0.38	30.7
9b	R3	7	0.0	7	0.0	0.449	11.3	LOS B	3.1	21.8	0.38	0.60	0.38	46.3
9u	U	2	0.0	2	0.0	0.449	12.5	LOS B	3.1	21.8	0.38	0.60	0.38	30.0
Approach		1252	1.7	1252	1.7	0.449	7.1	LOS A	3.1	22.4	0.37	0.55	0.37	31.6
NorthWest: Resolution Dr														
27b	L3	13	7.7	13	7.7	0.129	4.5	LOS A	0.5	3.8	0.52	0.62	0.52	35.4
27a	L1	53	0.0	53	0.0	0.129	3.5	LOS A	0.5	3.8	0.52	0.62	0.52	35.4
29	R2	51	0.0	51	0.0	0.129	9.5	LOS A	0.5	3.8	0.52	0.62	0.52	35.4
Approach		117	0.9	117	0.9	0.129	6.2	LOS A	0.5	3.8	0.52	0.62	0.52	35.4
SouthWest: Stoneham St														
30	L2	20	0.0	20	0.0	0.171	2.2	LOS A	1.0	7.0	0.45	0.45	0.45	46.9
30a	L1	351	2.8	351	2.8	0.171	2.3	LOS A	1.0	7.0	0.46	0.48	0.46	30.6
32a	R1	23	0.0	23	0.0	0.171	6.5	LOS A	0.9	6.8	0.46	0.51	0.46	29.8
32u	U	4	25.0	4	25.0	0.171	10.4	LOS B	0.9	6.8	0.46	0.51	0.46	29.8
Approach		398	2.8	398	2.8	0.171	2.6	LOS A	1.0	7.0	0.46	0.48	0.46	32.6
All Vehicles		2068	2.3	2068	2.3	0.449	7.1	LOS A	3.1	22.4	0.45	0.60	0.46	31.4

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

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NETWORK SUMMARY

Network: N101 [2041 PM Peak (Network Folder: General)]

New Network
Network Category: (None)

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.38					
Travel Time Index	3.10					
Congestion Coefficient	2.64					
Travel Speed (Average)	22.7	km/h			24.5	km/h
Travel Distance (Total)	12510.3	veh-km/h			19071.6	pers-km/h
Travel Time (Total)	552.2	veh-h/h			777.8	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	56031	veh/h			87878	pers/h
Arrival Flows (Total for all Sites)	55259	veh/h			86914	pers/h
Demand Flows (Entry Total)	8011	veh/h				
Midblock Inflows (Total)	431	veh/h				
Midblock Outflows (Total)	-44	veh/h				
Percent Heavy Vehicles (Demand)	2.1	%				
Percent Heavy Vehicles (Arrival)	2.1	%				
Degree of Saturation	2.596					
Control Delay (Total)	340.05	veh-h/h			448.22	pers-h/h
Control Delay (Average)	22.2	sec			18.6	sec
Control Delay (Worst Lane)	1466.0	sec				
Control Delay (Worst Movement)	1499.0	sec			1499.0	sec
Geometric Delay (Average)	0.7	sec				
Stop-Line Delay (Average)	21.4	sec				
Ave. Queue Storage Ratio (Worst Lane)	3.10					
Total Effective Stops	18075	veh/h			28702	pers/h
Effective Stop Rate	0.33		1.44	per km	0.33	
Proportion Queued	0.24				0.22	
Performance Index	1566.8				1566.8	
Cost (Total)	24160.01	$/h	1.93	$/km	24160.01	$/h
Fuel Consumption (Total)	1722.5	L/h	137.7	mL/km		
Fuel Economy	13.8	L/100km				
Carbon Dioxide (Total)	4065.9	kg/h	325.0	g/km		
Hydrocarbons (Total)	0.394	kg/h	0.031	g/km		
Carbon Monoxide (Total)	4.064	kg/h	0.325	g/km		
NOx (Total)	4.660	kg/h	0.373	g/km		

Network Model Variability Index (Iterations 3 to N): 20.6 %
Number of Iterations: 7 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.9% 0.7% 0.3%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	26,894,880	veh/y	42,181,630	pers/y
Delay	163,225	veh-h/y	215,145	pers-h/y
Effective Stops	8,675,784	veh/y	13,776,860	pers/y
Travel Distance	6,004,929	veh-km/y	9,154,381	pers-km/y
Travel Time	265,053	veh-h/y	373,325	pers-h/y
Cost	11,596,800	$/y	11,596,800	$/y
Fuel Consumption	826,816	L/y		
Carbon Dioxide	1,951,608	kg/y		
Hydrocarbons	189	kg/y		
Carbon Monoxide	1,951	kg/y		
NOx	2,237	kg/y		

MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	221	0.5	221	0.5	0.927	83.3	LOS F	29.1	205.6	1.00	1.04	1.32	10.1
2	T1	460	1.5	460	1.5	* 0.927	77.5	LOS E	29.1	205.6	1.00	1.07	1.34	10.7
3	R2	280	1.1	280	1.1	0.758	63.4	LOS E	18.4	130.8	0.99	0.87	1.05	12.4
Approach		961	1.1	961	1.1	0.927	74.7	LOS E	29.1	205.6	1.00	1.01	1.25	11.0
East: Great Eastern Hwy														
4	L2	112	3.6	112	3.6	0.208	34.5	LOS C	6.0	48.3	0.70	0.72	0.70	22.2
5	T1	1591	2.5	1591	2.5	0.682	36.9	LOS D	18.4	130.6	0.89	0.79	0.89	8.6
6	R2	82	2.4	82	2.4	0.578	72.7	LOS E	6.4	46.0	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.578	74.4	LOS E	6.4	46.0	1.00	0.78	1.00	4.9
Approach		1798	2.5	1798	2.5	0.682	38.7	LOS D	18.4	130.6	0.88	0.79	0.88	9.3
North: Stoneham St														
7	L2	10	0.0	9	0.0	0.048	67.0	LOS E	0.6	3.9	0.93	0.67	0.93	7.3
8	T1	246	0.0	224	0.0	* 0.848	74.4	LOS E	12.2	85.5	1.00	0.94	1.25	15.2
9	R2	280	2.1	256	2.3	0.848	79.5	LOS E	11.6	82.3	1.00	0.92	1.22	6.9
Approach		536	1.1	489 N1	1.2	0.848	76.9	LOS E	12.2	85.5	1.00	0.93	1.23	11.0
West: Great Eastern Hwy														
10	L2	810	0.4	810	0.4	0.686	14.3	LOS B	23.2	163.2	0.59	0.76	0.59	20.4
11	T1	2220	3.2	2220	3.2	* 0.866	42.2	LOS D	22.7	163.2	0.90	0.87	0.98	9.0
12	R2	92	0.0	92	0.0	* 0.608	73.4	LOS E	7.0	48.9	1.00	0.79	1.02	13.9
12u	U	11	0.0	11	0.0	0.608	75.1	LOS E	7.0	48.9	1.00	0.79	1.02	5.5
Approach		3133	2.3	3133	2.3	0.866	36.0	LOS D	23.2	163.2	0.83	0.84	0.88	10.7
All Vehicles		6428	2.1	6381 N1	2.1	0.927	45.7	LOS D	29.1	205.6	0.88	0.86	0.96	10.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	125	0.0	125	0.0	0.536	66.9	LOS E	8.8	61.6	0.98	0.80	0.98	15.6
2	T1	197	2.5	197	2.5	* 0.708	64.0	LOS E	12.4	89.1	1.00	0.85	1.05	16.5
3	R2	161	2.5	161	2.5	0.650	68.5	LOS E	10.6	76.5	1.00	0.82	1.01	15.5
Approach		483	1.9	483	1.9	0.708	66.2	LOS E	12.4	89.1	0.99	0.83	1.02	15.9
East: Great Eastern Hwy														
4	L2	145	0.0	145	0.0	0.104	9.5	LOS A	2.1	15.0	0.28	0.62	0.28	45.0
5	T1	1636	2.9	1636	2.9	0.500	28.1	LOS C	20.6	146.9	0.75	0.66	0.75	12.5
6	R2	263	0.4	263	0.4	* 1.062	152.7	LOS F	23.2	163.2	1.00	1.25	1.85	2.8
6u	U	17	0.0	17	0.0	1.062	154.3	LOS F	23.2	163.2	1.00	1.25	1.85	2.8
Approach		2061	2.3	2061	2.3	1.062	43.7	LOS D	23.2	163.2	0.75	0.74	0.87	10.1
North: Resolution Dr														
7	L2	155	3.9	154	3.9	0.305	38.7	LOS D	7.3	53.6	0.80	0.77	0.80	10.9
8	T1	160	3.1	159	3.1	* 0.798	74.4	LOS E	7.3	51.4	1.00	0.84	1.15	18.0
9	R2	25	0.0	25	0.0	0.207	74.7	LOS E	1.6	11.4	0.96	0.71	0.96	6.3
Approach		340	3.2	338 N1	3.3	0.798	58.1	LOS E	7.3	53.6	0.90	0.80	0.97	15.1
West: Great Eastern Hwy														
10	L2	24	0.0	24	0.0	0.066	28.9	LOS C	1.6	16.0	0.59	0.59	0.59	17.7
11	T1	2564	2.7	2563	2.7	* 0.985	68.2	LOS E	36.4	261.1	1.00	1.15	1.29	8.4
12	R2	185	1.6	185	1.6	0.755	70.8	LOS E	13.4	94.4	1.00	0.87	1.10	18.9
12u	U	11	0.0	11	0.0	0.755	72.4	LOS E	13.4	94.4	1.00	0.87	1.10	8.1
Approach		2784	2.6	2783 N1	2.6	0.985	68.1	LOS E	36.4	261.1	0.99	1.12	1.27	9.3
All Vehicles		5668	2.5	5665 N1	2.5	1.062	58.5	LOS E	36.4	261.1	0.90	0.94	1.08	10.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	54	1.9	53	1.9	0.672	8.0	LOS A	6.1	43.9	0.77	0.95	0.96	27.8
6a	R1	44	0.0	43	0.0	0.672	13.2	LOS B	6.1	43.9	0.77	0.95	0.96	38.7
6	R2	554	2.2	542	2.2	0.672	14.5	LOS B	6.1	43.9	0.77	0.95	0.96	27.8
Approach		652	2.0	638 N1	2.0	0.672	13.9	LOS B	6.1	43.9	0.77	0.95	0.96	28.7
North: Grandstand Rd														
7	L2	230	3.5	230	3.5	0.232	3.7	LOS A	1.4	9.9	0.26	0.48	0.26	34.3
9a	R1	417	0.2	417	0.2	0.232	8.4	LOS A	1.4	9.9	0.26	0.55	0.26	31.7
9b	R3	9	0.0	9	0.0	0.232	10.9	LOS B	1.4	9.5	0.26	0.58	0.26	47.3
9u	U	4	0.0	4	0.0	0.232	12.2	LOS B	1.4	9.5	0.26	0.58	0.26	30.9
Approach		660	1.4	660	1.4	0.232	6.8	LOS A	1.4	9.9	0.26	0.53	0.26	32.8
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.230	10.7	LOS B	1.2	9.0	0.89	0.94	0.89	27.8
27a	L1	28	3.6	28	3.6	0.230	10.1	LOS B	1.2	9.0	0.89	0.94	0.89	27.8
29	R2	37	2.7	37	2.7	0.230	16.1	LOS B	1.2	9.0	0.89	0.94	0.89	27.8
Approach		79	2.5	79	2.5	0.230	13.0	LOS B	1.2	9.0	0.89	0.94	0.89	27.8
SouthWest: Stoneham St														
30	L2	55	0.0	49	0.0	0.833	12.6	LOS B	3.5	24.9	1.00	1.18	1.58	29.3
30a	L1	1575	0.5	1398	0.6	0.833	13.4	LOS B	3.5	24.9	1.00	1.20	1.61	10.7
32a	R1	18	5.6	16	6.2	0.833	18.7	LOS B	3.5	24.9	1.00	1.23	1.63	10.3
32u	U	6	0.0	5	0.0	0.833	22.1	LOS C	3.5	24.9	1.00	1.23	1.63	10.3
Approach		1654	0.5	1469 N1	0.6	0.833	13.5	LOS B	3.5	24.9	1.00	1.20	1.61	11.7
All Vehicles		3045	1.1	2845 N1	1.2	0.833	12.0	LOS B	6.1	43.9	0.77	0.98	1.13	21.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 4 – SIDRA Network Output 2021 Proposed Road Network

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

NETWORK SUMMARY

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

Proposed Network
2021 Traffic Volumes
Network Category: Proposed Design 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS D					
Speed Efficiency	0.58					
Travel Time Index	5.37					
Congestion Coefficient	1.71					
Travel Speed (Average)	34.9	km/h			35.3	km/h
Travel Distance (Total)	10611.7	veh-km/h			16520.4	pers-km/h
Travel Time (Total)	304.0	veh-h/h			468.2	pers-h/h
Desired Speed (Program)	59.8	km/h				
Demand Flows (Total for all Sites)	45822	veh/h			73780	pers/h
Arrival Flows (Total for all Sites)	45822	veh/h			73780	pers/h
Demand Flows (Entry Total)	6528	veh/h				
Midblock Inflows (Total)	104	veh/h				
Midblock Outflows (Total)	-77	veh/h				
Percent Heavy Vehicles (Demand)	4.3	%				
Percent Heavy Vehicles (Arrival)	4.3	%				
Degree of Saturation	0.986					
Control Delay (Total)	125.39	veh-h/h			181.56	pers-h/h
Control Delay (Average)	9.9	sec			8.9	sec
Control Delay (Worst Lane)	101.2	sec				
Control Delay (Worst Movement)	101.5	sec			101.5	sec
Geometric Delay (Average)	0.6	sec				
Stop-Line Delay (Average)	9.2	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	10175	veh/h			19002	pers/h
Effective Stop Rate	0.22		0.96	per km	0.26	
Proportion Queued	0.20				0.18	
Performance Index	893.5				893.5	
Cost (Total)	15191.53	$/h	1.43	$/km	15191.53	$/h
Fuel Consumption (Total)	1355.4	L/h	127.7	mL/km		
Fuel Economy	12.8	L/100km				
Carbon Dioxide (Total)	3215.4	kg/h	303.0	g/km		
Hydrocarbons (Total)	0.283	kg/h	0.027	g/km		
Carbon Monoxide (Total)	3.308	kg/h	0.312	g/km		
NOx (Total)	7.476	kg/h	0.705	g/km		

Network Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.0% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	21,994,560	veh/y	35,414,210	pers/y
Delay	60,188	veh-h/y	87,151	pers-h/y
Effective Stops	4,883,829	veh/y	9,120,820	pers/y
Travel Distance	5,093,591	veh-km/y	7,929,785	pers-km/y
Travel Time	145,919	veh-h/y	224,734	pers-h/y
Cost	7,291,933	$/y	7,291,933	$/y
Fuel Consumption	650,606	L/y		
Carbon Dioxide	1,543,384	kg/y		
Hydrocarbons	136	kg/y		
Carbon Monoxide	1,588	kg/y		

NOx	3,589	kg/y

Document Set ID: 5882082
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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 AM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	60	5.0	60	5.0	0.371	65.2	LOS E	5.1	38.4	0.96	0.77	0.96	12.2
2	T1	107	8.4	107	8.4	* 0.371	59.6	LOS E	5.2	39.8	0.96	0.75	0.96	13.2
3	R2	70	10.0	70	10.0	0.334	65.2	LOS E	4.3	34.1	0.95	0.76	0.95	12.2
Approach		237	8.0	237	8.0	0.371	62.7	LOS E	5.2	39.8	0.96	0.76	0.96	12.6
East: Great Eastern Hwy														
4	L2	194	5.7	194	5.7	0.280	28.6	LOS C	8.7	66.7	0.65	0.73	0.65	24.3
5	T1	2486	4.5	2486	4.5	* 0.934	55.7	LOS E	17.8	130.6	1.00	1.06	1.18	6.0
6	R2	18	5.6	18	5.6	0.171	72.1	LOS E	1.2	9.6	0.98	0.70	0.98	4.9
6u	U	1	0.0	1	0.0	0.171	73.8	LOS E	1.2	9.6	0.98	0.70	0.98	4.9
Approach		2699	4.6	2699	4.6	0.934	53.9	LOS D	17.8	130.6	0.97	1.04	1.14	7.1
North: Stoneham St														
7	L2	7	14.3	7	14.3	0.035	60.2	LOS E	0.4	3.7	0.89	0.67	0.89	8.1
8	T1	293	4.1	293	4.1	* 0.986	100.4	LOS F	22.9	160.3	1.00	1.18	1.57	12.1
9	R2	452	0.4	452	0.4	0.986	101.5	LOS F	20.6	144.6	1.00	1.10	1.52	5.5
Approach		752	2.0	752	2.0	0.986	100.7	LOS F	22.9	160.3	1.00	1.13	1.53	8.3
West: Great Eastern Hwy														
10	L2	217	1.4	217	1.4	0.141	6.6	LOS A	1.6	11.0	0.18	0.60	0.18	31.6
11	T1	1426	5.3	1426	5.3	0.431	20.8	LOS C	12.7	94.5	0.55	0.48	0.55	15.8
12	R2	58	3.4	58	3.4	* 0.797	80.4	LOS F	6.3	44.6	1.00	0.89	1.27	12.9
12u	U	30	0.0	30	0.0	0.797	82.0	LOS F	6.3	44.6	1.00	0.89	1.27	5.1
Approach		1731	4.7	1731	4.7	0.797	22.0	LOS C	12.7	94.5	0.53	0.52	0.54	15.8
All Vehicles		5419	4.4	5419	4.4	0.986	50.6	LOS D	22.9	160.3	0.83	0.87	1.00	9.1

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 AM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	97	2.1	97	2.1	0.514	67.8	LOS E	6.5	48.3	0.99	0.79	0.99	15.3
2	T1	108	5.6	108	5.6	0.514	61.7	LOS E	6.5	45.9	0.98	0.77	0.98	17.0
3	R2	124	4.0	124	4.0	* 0.626	69.2	LOS E	8.0	59.3	1.00	0.81	1.02	15.4
Approach		329	4.0	329	4.0	0.626	66.3	LOS E	8.0	59.3	0.99	0.79	1.00	15.9
East: Great Eastern Hwy														
4	L2	127	4.7	127	4.7	0.089	7.9	LOS A	1.4	9.6	0.23	0.61	0.23	45.0
5	T1	2479	4.8	2479	4.8	* 0.693	26.7	LOS C	22.2	163.2	0.81	0.73	0.81	13.0
6	R2	140	7.1	140	7.1	* 0.857	79.3	LOS E	11.0	83.1	1.00	0.95	1.30	5.2
6u	U	13	0.0	13	0.0	0.857	80.9	LOS F	11.0	83.1	1.00	0.95	1.30	5.2
Approach		2759	4.9	2759	4.9	0.857	28.8	LOS C	22.2	163.2	0.80	0.74	0.81	13.6
North: Resolution Dr														
7	L2	250	2.0	250	2.0	0.425	15.4	LOS B	7.2	51.8	0.53	0.73	0.53	21.5
8	T1	134	7.5	134	7.5	0.611	67.7	LOS E	5.7	40.0	1.00	0.77	1.02	19.1
9	R2	86	1.2	86	1.2	* 0.628	74.0	LOS E	5.7	40.4	1.00	0.79	1.04	6.3
Approach		470	3.4	470	3.4	0.628	41.0	LOS D	7.2	51.8	0.75	0.75	0.76	16.2
West: Great Eastern Hwy														
10	L2	8	0.0	8	0.0	0.030	23.8	LOS C	0.7	7.3	0.53	0.50	0.53	21.1
11	T1	1395	6.0	1395	6.0	0.497	18.3	LOS B	15.0	112.0	0.54	0.48	0.54	22.5
12	R2	104	1.0	104	1.0	0.658	70.7	LOS E	8.0	56.2	1.00	0.82	1.05	19.0
12u	U	18	0.0	18	0.0	0.658	72.3	LOS E	8.0	56.2	1.00	0.82	1.05	8.1
Approach		1525	5.6	1525	5.6	0.658	22.5	LOS C	15.0	112.0	0.58	0.51	0.58	21.4
All Vehicles		5083	4.9	5083	4.9	0.857	30.5	LOS C	22.2	163.2	0.74	0.68	0.75	16.2

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 AM Peak with proposed road network
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	28	7.1	28	7.1	0.358	6.8	LOS A	1.9	13.9	0.69	0.88	0.70	29.3
6a	R1	15	6.7	15	6.7	0.358	12.1	LOS B	1.9	13.9	0.69	0.88	0.70	39.3
6	R2	232	4.7	232	4.7	0.358	13.2	LOS B	1.9	13.9	0.69	0.88	0.70	29.3
Approach		275	5.1	275	5.1	0.358	12.5	LOS B	1.9	13.9	0.69	0.88	0.70	30.0
North: Grandstand Rd														
7	L2	408	2.7	408	2.7	0.405	3.9	LOS A	2.7	19.0	0.33	0.50	0.33	33.6
9a	R1	723	1.1	723	1.1	0.405	8.7	LOS A	2.7	19.0	0.34	0.57	0.34	31.0
9b	R3	6	0.0	6	0.0	0.405	11.2	LOS B	2.6	18.6	0.34	0.59	0.34	46.7
9u	U	2	0.0	2	0.0	0.405	12.4	LOS B	2.6	18.6	0.34	0.59	0.34	30.3
Approach		1139	1.7	1139	1.7	0.405	7.0	LOS A	2.7	19.0	0.34	0.54	0.34	31.9
NorthWest: Resolution Dr														
27b	L3	12	8.3	12	8.3	0.113	4.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
27a	L1	48	0.0	48	0.0	0.113	3.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
29	R2	46	0.0	46	0.0	0.113	9.3	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
Approach		106	0.9	106	0.9	0.113	6.0	LOS A	0.5	3.3	0.50	0.60	0.50	35.7
SouthWest: Stoneham St														
30	L2	18	0.0	18	0.0	0.151	3.8	LOS A	0.8	6.0	0.42	0.43	0.42	44.8
30a	L1	318	2.8	318	2.8	0.151	3.5	LOS A	0.8	6.0	0.42	0.46	0.42	35.2
32a	R1	21	0.0	21	0.0	0.151	8.7	LOS A	0.8	5.8	0.43	0.49	0.43	34.6
32u	U	4	25.0	4	25.0	0.151	12.6	LOS B	0.8	5.8	0.43	0.49	0.43	34.6
Approach		361	2.8	361	2.8	0.151	3.9	LOS A	0.8	6.0	0.43	0.46	0.43	36.0
All Vehicles		1881	2.3	1881	2.3	0.405	7.1	LOS A	2.7	19.0	0.41	0.58	0.42	32.4

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

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NETWORK SUMMARY

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

Proposed Network
2021 Traffic Volumes
Network Category: Proposed Design 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS D					
Speed Efficiency	0.51					
Travel Time Index	4.59					
Congestion Coefficient	1.95					
Travel Speed (Average)	30.7	km/h			31.6	km/h
Travel Distance (Total)	11461.9	veh-km/h			16737.6	pers-km/h
Travel Time (Total)	373.8	veh-h/h			530.1	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	48965	veh/h			72755	pers/h
Arrival Flows (Total for all Sites)	48738	veh/h			72482	pers/h
Demand Flows (Entry Total)	7296	veh/h				
Midblock Inflows (Total)	587	veh/h				
Midblock Outflows (Total)	-225	veh/h				
Percent Heavy Vehicles (Demand)	2.3	%				
Percent Heavy Vehicles (Arrival)	2.3	%				
Degree of Saturation	1.475					
Control Delay (Total)	180.62	veh-h/h			245.88	pers-h/h
Control Delay (Average)	13.3	sec			12.2	sec
Control Delay (Worst Lane)	464.6	sec				
Control Delay (Worst Movement)	504.4	sec			504.4	sec
Geometric Delay (Average)	0.8	sec				
Stop-Line Delay (Average)	12.5	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.54					
Total Effective Stops	14517	veh/h			20940	pers/h
Effective Stop Rate	0.30		1.27	per km	0.29	
Proportion Queued	0.24				0.23	
Performance Index	1167.5				1167.5	
Cost (Total)	16827.04	$/h	1.47	$/km	16827.04	$/h
Fuel Consumption (Total)	1395.6	L/h	121.8	mL/km		
Fuel Economy	12.2	L/100km				
Carbon Dioxide (Total)	3296.1	kg/h	287.6	g/km		
Hydrocarbons (Total)	0.311	kg/h	0.027	g/km		
Carbon Monoxide (Total)	3.464	kg/h	0.302	g/km		
NOx (Total)	4.031	kg/h	0.352	g/km		

Network Model Variability Index (Iterations 3 to N): 0.2 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.3% 0.2% 0.2%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	23,503,200	veh/y	34,922,310	pers/y
Delay	86,698	veh-h/y	118,024	pers-h/y
Effective Stops	6,968,119	veh/y	10,051,170	pers/y
Travel Distance	5,501,712	veh-km/y	8,034,062	pers-km/y
Travel Time	179,401	veh-h/y	254,466	pers-h/y
Cost	8,076,979	$/y	8,076,979	$/y
Fuel Consumption	669,870	L/y		
Carbon Dioxide	1,582,124	kg/y		
Hydrocarbons	149	kg/y		
Carbon Monoxide	1,663	kg/y		

NOx	1,935	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	200	0.5	200	0.5	0.812	66.7	LOS E	21.8	154.2	1.00	0.91	1.11	12.2
2	T1	416	1.4	416	1.4	* 0.812	60.6	LOS E	21.8	154.2	1.00	0.92	1.11	13.0
3	R2	254	1.2	254	1.2	0.666	60.5	LOS E	16.0	113.7	0.98	0.84	0.98	12.9
Approach		870	1.1	870	1.1	0.812	62.0	LOS E	21.8	154.2	0.99	0.90	1.07	12.8
East: Great Eastern Hwy														
4	L2	102	3.9	102	3.9	0.195	34.3	LOS C	5.5	44.9	0.69	0.71	0.69	22.3
5	T1	1442	2.6	1442	2.6	0.617	35.6	LOS D	18.4	130.6	0.86	0.76	0.86	8.9
6	R2	74	2.7	74	2.7	0.525	72.3	LOS E	5.8	41.5	1.00	0.78	1.00	4.9
6u	U	12	0.0	12	0.0	0.525	74.0	LOS E	5.8	41.5	1.00	0.78	1.00	4.9
Approach		1630	2.6	1630	2.6	0.617	37.5	LOS D	18.4	130.6	0.85	0.76	0.85	9.6
North: Stoneham St														
7	L2	9	0.0	9	0.0	0.046	66.9	LOS E	0.5	3.7	0.93	0.67	0.93	7.4
8	T1	211	0.0	201	0.0	* 0.762	70.1	LOS E	10.5	73.5	1.00	0.87	1.13	15.9
9	R2	242	2.1	231	2.2	0.762	75.6	LOS E	10.0	70.8	1.00	0.86	1.11	7.2
Approach		462	1.1	440 [N1]	1.1	0.762	72.9	LOS E	10.5	73.5	1.00	0.86	1.12	11.5
West: Great Eastern Hwy														
10	L2	733	0.4	733	0.4	0.615	12.8	LOS B	19.7	138.8	0.52	0.73	0.52	21.9
11	T1	2015	3.2	2015	3.2	* 0.777	35.0	LOS C	22.7	163.2	0.84	0.75	0.85	10.5
12	R2	83	0.0	83	0.0	* 0.549	72.8	LOS E	6.3	43.8	1.00	0.78	1.00	14.0
12u	U	10	0.0	10	0.0	0.549	74.4	LOS E	6.3	43.8	1.00	0.78	1.00	5.6
Approach		2841	2.4	2841	2.4	0.777	30.5	LOS C	22.7	163.2	0.76	0.75	0.77	12.3
All Vehicles		5803	2.2	5781 [N1]	2.2	0.812	40.4	LOS D	22.7	163.2	0.84	0.78	0.86	11.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	113	0.0	113	0.0	0.488	66.4	LOS E	8.0	55.7	0.97	0.79	0.97	15.6
2	T1	180	2.8	180	2.8	* 0.644	62.5	LOS E	11.1	79.4	1.00	0.82	1.00	16.8
3	R2	146	2.7	146	2.7	0.591	67.7	LOS E	9.5	68.7	0.99	0.81	0.99	15.7
Approach		439	2.1	439	2.1	0.644	65.2	LOS E	11.1	79.4	0.99	0.81	0.99	16.1
East: Great Eastern Hwy														
4	L2	131	0.0	131	0.0	0.093	9.2	LOS A	1.9	13.0	0.27	0.62	0.27	45.3
5	T1	1482	3.0	1482	3.0	0.451	27.4	LOS C	18.1	128.8	0.73	0.64	0.73	12.8
6	R2	240	0.4	240	0.4	* 0.967	100.7	LOS F	22.1	155.4	1.00	1.08	1.50	4.2
6u	U	15	0.0	15	0.0	0.967	102.3	LOS F	22.1	155.4	1.00	1.08	1.50	4.2
Approach		1868	2.4	1868	2.4	0.967	36.1	LOS D	22.1	155.4	0.73	0.70	0.80	12.0
North: Resolution Dr														
7	L2	141	3.5	141	3.5	0.265	30.0	LOS C	5.8	42.3	0.70	0.75	0.70	13.4
8	T1	147	3.4	147	3.4	* 0.738	73.1	LOS E	6.7	46.7	1.00	0.81	1.10	18.2
9	R2	23	0.0	23	0.0	0.191	74.5	LOS E	1.5	10.6	0.96	0.71	0.96	6.3
Approach		311	3.2	311	3.2	0.738	53.7	LOS D	6.7	46.7	0.86	0.77	0.91	16.0
West: Great Eastern Hwy														
10	L2	22	0.0	22	0.0	0.063	28.9	LOS C	1.6	15.5	0.59	0.58	0.59	17.8
11	T1	2345	2.8	2345	2.8	* 0.899	39.2	LOS D	36.4	261.1	0.92	0.91	1.01	13.1
12	R2	182	1.6	182	1.6	0.798	73.1	LOS E	14.4	100.9	1.00	0.89	1.15	18.5
12u	U	22	0.0	22	0.0	0.798	74.7	LOS E	14.4	100.9	1.00	0.89	1.15	7.9
Approach		2571	2.6	2571	2.6	0.899	41.9	LOS D	36.4	261.1	0.93	0.91	1.02	13.8
All Vehicles		5189	2.5	5189	2.5	0.967	42.5	LOS D	36.4	261.1	0.86	0.82	0.93	13.8

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak with proposed road network
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	49	2.0	49	2.0	0.610	6.9	LOS A	4.9	35.2	0.70	0.87	0.83	29.1
6a	R1	40	0.0	40	0.0	0.610	12.0	LOS B	4.9	35.2	0.70	0.87	0.83	40.0
6	R2	507	2.2	507	2.2	0.610	13.4	LOS B	4.9	35.2	0.70	0.87	0.83	29.1
Approach		596	2.0	596	2.0	0.610	12.7	LOS B	4.9	35.2	0.70	0.87	0.83	30.0
North: Grandstand Rd														
7	L2	207	2.4	207	2.4	0.209	3.6	LOS A	1.2	8.6	0.24	0.48	0.24	34.5
9a	R1	380	0.3	380	0.3	0.209	8.4	LOS A	1.2	8.6	0.24	0.55	0.24	31.8
9b	R3	8	0.0	8	0.0	0.209	10.9	LOS B	1.2	8.3	0.25	0.57	0.25	47.5
9u	U	4	0.0	4	0.0	0.209	12.1	LOS B	1.2	8.3	0.25	0.57	0.25	31.1
Approach		599	1.0	599	1.0	0.209	6.8	LOS A	1.2	8.6	0.24	0.52	0.24	32.9
NorthWest: Resolution Dr														
27b	L3	13	0.0	13	0.0	0.191	9.7	LOS A	1.0	7.3	0.87	0.93	0.87	28.8
27a	L1	25	4.0	25	4.0	0.191	9.0	LOS A	1.0	7.3	0.87	0.93	0.87	28.8
29	R2	34	2.9	34	2.9	0.191	15.0	LOS B	1.0	7.3	0.87	0.93	0.87	28.8
Approach		72	2.8	72	2.8	0.191	12.0	LOS B	1.0	7.3	0.87	0.93	0.87	28.8
SouthWest: Stoneham St														
30	L2	50	0.0	47	0.0	0.759	10.6	LOS B	10.4	73.2	0.96	1.03	1.30	36.4
30a	L1	1425	0.5	1343	0.5	0.759	10.8	LOS B	10.4	73.2	0.96	1.06	1.32	23.8
32a	R1	16	6.3	15	6.6	0.759	16.8	LOS B	9.8	68.8	0.96	1.08	1.35	23.0
32u	U	5	0.0	5	0.0	0.759	20.3	LOS C	9.8	68.8	0.96	1.08	1.35	23.0
Approach		1496	0.5	1410 N1	0.6	0.759	10.8	LOS B	10.4	73.2	0.96	1.06	1.32	24.5
All Vehicles		2763	1.0	2677 N1	1.0	0.759	10.4	LOS B	10.4	73.2	0.74	0.89	0.96	27.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 5 – SIDRA Network Output 2031 Proposed Road Network

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NETWORK SUMMARY

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

Proposed Network
25% of Ascot Kilns and Golden Gateway development
50% of Ascot Racecourse development
Network Category: Future Conditions 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.46					
Travel Time Index	3.98					
Congestion Coefficient	2.18					
Travel Speed (Average)	27.4	km/h			28.9	km/h
Travel Distance (Total)	11381.5	veh-km/h			18343.7	pers-km/h
Travel Time (Total)	415.3	veh-h/h			634.8	pers-h/h
Desired Speed (Program)	59.8	km/h				
Demand Flows (Total for all Sites)	49837	veh/h			87594	pers/h
Arrival Flows (Total for all Sites)	49582	veh/h			86309	pers/h
Demand Flows (Entry Total)	7118	veh/h				
Midblock Inflows (Total)	82	veh/h				
Midblock Outflows (Total)	-86	veh/h				
Percent Heavy Vehicles (Demand)	4.2	%				
Percent Heavy Vehicles (Arrival)	4.2	%				
Degree of Saturation	1.201					
Control Delay (Total)	220.28	veh-h/h			311.22	pers-h/h
Control Delay (Average)	16.0	sec			13.0	sec
Control Delay (Worst Lane)	259.0	sec				
Control Delay (Worst Movement)	260.5	sec			260.5	sec
Geometric Delay (Average)	0.7	sec				
Stop-Line Delay (Average)	15.3	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	12962	veh/h			26984	pers/h
Effective Stop Rate	0.26		1.14	per km	0.31	
Proportion Queued	0.22				0.19	
Performance Index	1201.3				1201.3	
Cost (Total)	20328.28	$/h	1.79	$/km	20328.28	$/h
Fuel Consumption (Total)	1612.2	L/h	141.7	mL/km		
Fuel Economy	14.2	L/100km				
Carbon Dioxide (Total)	3821.2	kg/h	335.7	g/km		
Hydrocarbons (Total)	0.352	kg/h	0.031	g/km		
Carbon Monoxide (Total)	3.836	kg/h	0.337	g/km		
NOx (Total)	8.452	kg/h	0.743	g/km		

Network Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.0% 0.0% 0.0%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	23,921,760	veh/y	42,045,120	pers/y
Delay	105,733	veh-h/y	149,385	pers-h/y
Effective Stops	6,221,603	veh/y	12,952,480	pers/y
Travel Distance	5,463,101	veh-km/y	8,804,996	pers-km/y
Travel Time	199,334	veh-h/y	304,696	pers-h/y
Cost	9,757,576	$/y	9,757,576	$/y
Fuel Consumption	773,852	L/y		
Carbon Dioxide	1,834,172	kg/y		

Hydrocarbons	169	kg/y
Carbon Monoxide	1,842	kg/y
NOx	4,057	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	63	4.8	63	4.8	0.396	65.4	LOS E	5.5	41.1	0.96	0.77	0.96	12.2
2	T1	116	7.8	116	7.8	* 0.396	59.8	LOS E	5.6	42.6	0.96	0.76	0.96	13.2
3	R2	76	9.2	76	9.2	0.360	65.4	LOS E	4.7	36.8	0.96	0.77	0.96	12.1
Approach		255	7.5	255	7.5	0.396	62.9	LOS E	5.6	42.6	0.96	0.77	0.96	12.6
East: Great Eastern Hwy														
4	L2	204	5.9	204	5.9	0.297	29.4	LOS C	9.3	71.0	0.67	0.74	0.67	23.9
5	T1	2612	4.5	2612	4.5	* 0.998	87.4	LOS F	17.8	130.6	1.00	1.24	1.40	4.0
6	R2	19	5.3	19	5.3	0.179	72.2	LOS E	1.3	10.1	0.98	0.71	0.98	4.9
6u	U	1	0.0	1	0.0	0.179	73.9	LOS E	1.3	10.1	0.98	0.71	0.98	4.9
Approach		2836	4.6	2836	4.6	0.998	83.1	LOS F	17.8	130.6	0.97	1.20	1.34	4.8
North: Stoneham St														
7	L2	6	0.0	6	0.0	0.023	59.1	LOS E	0.3	2.4	0.89	0.66	0.89	8.2
8	T1	325	4.0	325	4.0	* 1.190	243.5	LOS F	32.6	228.5	1.00	1.68	2.38	5.5
9	R2	570	0.4	570	0.4	1.190	246.2	LOS F	32.5	228.5	1.00	1.52	2.34	2.3
Approach		901	1.7	901	1.7	1.190	244.0	LOS F	32.6	228.5	1.00	1.57	2.35	3.5
West: Great Eastern Hwy														
10	L2	250	1.2	250	1.2	0.164	6.7	LOS A	2.0	14.0	0.19	0.61	0.19	31.3
11	T1	1500	5.3	1500	5.3	0.466	21.9	LOS C	14.2	105.6	0.58	0.51	0.58	15.2
12	R2	61	3.3	61	3.3	* 0.842	82.6	LOS F	6.8	48.0	1.00	0.93	1.35	12.6
12u	U	32	0.0	32	0.0	0.842	84.3	LOS F	6.8	48.0	1.00	0.93	1.35	5.0
Approach		1843	4.6	1843	4.6	0.842	22.9	LOS C	14.2	105.6	0.55	0.54	0.57	15.4
All Vehicles		5835	4.3	5835	4.3	1.190	88.1	LOS F	32.6	228.5	0.84	1.03	1.23	5.6

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	102	2.0	102	2.0	0.538	68.0	LOS E	6.8	50.7	0.99	0.79	0.99	15.3
2	T1	116	5.2	116	5.2	0.538	62.0	LOS E	7.0	49.7	0.99	0.78	0.99	16.9
3	R2	130	3.8	130	3.8	* 0.655	69.7	LOS E	8.5	62.5	1.00	0.82	1.04	15.3
Approach		348	3.7	348	3.7	0.655	66.7	LOS E	8.5	62.5	0.99	0.80	1.01	15.8
East: Great Eastern Hwy														
4	L2	133	4.5	133	4.5	0.094	8.2	LOS A	1.5	10.6	0.24	0.61	0.24	44.8
5	T1	2605	4.8	2605	4.8	* 0.881	42.5	LOS D	22.2	163.2	0.94	0.95	1.06	8.9
6	R2	205	5.4	205	5.4	* 1.201	258.9	LOS F	22.0	163.2	1.00	1.53	2.48	1.6
6u	U	14	0.0	14	0.0	1.201	260.5	LOS F	22.0	163.2	1.00	1.53	2.48	1.6
Approach		2957	4.8	2957	4.8	1.201	57.0	LOS E	22.2	163.2	0.91	0.98	1.13	7.6
North: Resolution Dr														
7	L2	283	1.8	283	1.8	0.488	16.6	LOS B	9.0	64.2	0.58	0.75	0.58	20.5
8	T1	144	6.9	144	6.9	0.653	68.2	LOS E	6.1	43.2	1.00	0.79	1.04	19.1
9	R2	90	1.1	90	1.1	* 0.851	81.5	LOS F	6.5	46.1	1.00	0.91	1.31	5.8
Approach		517	3.1	517	3.1	0.851	42.2	LOS D	9.0	64.2	0.77	0.79	0.84	15.8
West: Great Eastern Hwy														
10	L2	29	0.0	29	0.0	0.053	24.1	LOS C	1.4	12.2	0.54	0.60	0.54	19.7
11	T1	1481	5.9	1481	5.9	0.528	18.7	LOS B	16.5	123.2	0.56	0.50	0.56	22.2
12	R2	114	0.9	114	0.9	0.746	73.2	LOS E	9.0	63.2	1.00	0.86	1.14	18.5
12u	U	19	0.0	19	0.0	0.746	74.8	LOS E	9.0	63.2	1.00	0.86	1.14	7.9
Approach		1643	5.4	1643	5.4	0.746	23.3	LOS C	16.5	123.2	0.60	0.53	0.61	21.0
All Vehicles		5465	4.8	5465	4.8	1.201	46.1	LOS D	22.2	163.2	0.81	0.82	0.94	11.7

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	92	2.2	86	2.0	0.473	8.3	LOS A	3.0	21.9	0.77	0.96	0.91	28.1
6a	R1	25	4.0	23	3.7	0.473	13.6	LOS B	3.0	21.9	0.77	0.96	0.91	38.9
6	R2	254	4.3	235	4.3	0.473	14.9	LOS B	3.0	21.9	0.77	0.96	0.91	28.1
Approach		371	3.8	344 [N1]	3.7	0.473	13.1	LOS B	3.0	21.9	0.77	0.96	0.91	29.1
North: Grandstand Rd														
7	L2	447	2.5	447	2.5	0.459	4.2	LOS A	3.2	22.8	0.42	0.54	0.42	32.7
9a	R1	783	1.0	783	1.0	0.459	9.0	LOS A	3.2	22.8	0.43	0.60	0.43	30.3
9b	R3	6	0.0	6	0.0	0.459	11.5	LOS B	3.1	22.2	0.43	0.62	0.43	45.9
9u	U	2	0.0	2	0.0	0.459	12.8	LOS B	3.1	22.2	0.43	0.62	0.43	29.6
Approach		1238	1.5	1238	1.5	0.459	7.3	LOS A	3.2	22.8	0.42	0.58	0.42	31.1
NorthWest: Resolution Dr														
27b	L3	13	7.7	13	7.7	0.154	4.5	LOS A	0.6	4.6	0.52	0.63	0.52	35.2
27a	L1	61	0.0	61	0.0	0.154	3.4	LOS A	0.6	4.6	0.52	0.63	0.52	35.2
29	R2	67	0.0	67	0.0	0.154	9.5	LOS A	0.6	4.6	0.52	0.63	0.52	35.2
Approach		141	0.7	141	0.7	0.154	6.4	LOS A	0.6	4.6	0.52	0.63	0.52	35.2
SouthWest: Stoneham St														
30	L2	26	0.0	26	0.0	0.172	3.9	LOS A	1.0	7.1	0.44	0.44	0.44	44.6
30a	L1	339	2.7	339	2.7	0.172	3.5	LOS A	1.0	7.1	0.45	0.47	0.45	34.6
32a	R1	37	0.0	37	0.0	0.172	8.7	LOS A	1.0	6.9	0.45	0.51	0.45	33.8
32u	U	4	25.0	4	25.0	0.172	12.7	LOS B	1.0	6.9	0.45	0.51	0.45	33.8
Approach		406	2.5	406	2.5	0.172	4.1	LOS A	1.0	7.1	0.45	0.47	0.45	35.6
All Vehicles		2156	2.0	2129 [N1]	2.1	0.473	7.6	LOS A	3.2	22.8	0.49	0.62	0.51	31.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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NETWORK SUMMARY

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

Proposed Network
25% of Ascot Kilns and Golden Gateway development
50% of Ascot Racecourse development
Network Category: Future Conditions 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.37					
Travel Time Index	2.96					
Congestion Coefficient	2.73					
Travel Speed (Average)	21.9	km/h			23.3	km/h
Travel Distance (Total)	12303.7	veh-km/h			20451.0	pers-km/h
Travel Time (Total)	562.7	veh-h/h			877.0	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	54040	veh/h			106812	pers/h
Arrival Flows (Total for all Sites)	52903	veh/h			102661	pers/h
Demand Flows (Entry Total)	8051	veh/h				
Midblock Inflows (Total)	393	veh/h				
Midblock Outflows (Total)	-21	veh/h				
Percent Heavy Vehicles (Demand)	2.1	%				
Percent Heavy Vehicles (Arrival)	2.1	%				
Degree of Saturation	2.581					
Control Delay (Total)	351.88	veh-h/h			517.73	pers-h/h
Control Delay (Average)	23.9	sec			18.2	sec
Control Delay (Worst Lane)	1454.1	sec				
Control Delay (Worst Movement)	1490.4	sec			1490.4	sec
Geometric Delay (Average)	0.8	sec				
Stop-Line Delay (Average)	23.1	sec				
Ave. Queue Storage Ratio (Worst Lane)	2.94					
Total Effective Stops	17637	veh/h			41732	pers/h
Effective Stop Rate	0.33		1.43	per km	0.41	
Proportion Queued	0.26				0.25	
Performance Index	1633.8				1633.8	
Cost (Total)	26843.04	$/h	2.18	$/km	26843.04	$/h
Fuel Consumption (Total)	1713.5	L/h	139.3	mL/km		
Fuel Economy	13.9	L/100km				
Carbon Dioxide (Total)	4043.5	kg/h	328.6	g/km		
Hydrocarbons (Total)	0.395	kg/h	0.032	g/km		
Carbon Monoxide (Total)	4.018	kg/h	0.327	g/km		
NOx (Total)	4.326	kg/h	0.352	g/km		

Network Model Variability Index (Iterations 3 to N): 2.2 %
Number of Iterations: 10 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 7.1% 0.7% 0.6%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	25,939,200	veh/y	51,269,760	pers/y
Delay	168,904	veh-h/y	248,512	pers-h/y
Effective Stops	8,465,573	veh/y	20,031,340	pers/y
Travel Distance	5,905,771	veh-km/y	9,816,458	pers-km/y
Travel Time	270,083	veh-h/y	420,966	pers-h/y
Cost	12,884,660	$/y	12,884,660	$/y
Fuel Consumption	822,470	L/y		
Carbon Dioxide	1,940,881	kg/y		

Hydrocarbons	190	kg/y
Carbon Monoxide	1,929	kg/y
NOx	2,077	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	210	0.5	210	0.5	0.883	74.3	LOS E	25.8	182.0	1.00	0.98	1.22	11.1
2	T1	447	1.3	447	1.3	* 0.883	68.3	LOS E	25.8	182.0	1.00	1.01	1.23	11.8
3	R2	272	1.1	272	1.1	0.713	61.7	LOS E	17.4	124.1	0.99	0.85	1.01	12.7
Approach		929	1.1	929	1.1	0.883	67.8	LOS E	25.8	182.0	1.00	0.96	1.16	11.9
East: Great Eastern Hwy														
4	L2	107	3.7	107	3.7	0.201	34.4	LOS C	5.8	46.6	0.69	0.72	0.69	22.3
5	T1	1514	2.4	1514	2.4	0.648	36.2	LOS D	18.4	130.6	0.87	0.77	0.87	8.8
6	R2	78	2.6	78	2.6	0.555	72.5	LOS E	6.1	44.0	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.555	74.3	LOS E	6.1	44.0	1.00	0.78	1.00	4.9
Approach		1712	2.5	1712	2.5	0.648	38.0	LOS D	18.4	130.6	0.87	0.77	0.87	9.4
North: Stoneham St														
7	L2	10	0.0	9	0.0	0.048	67.0	LOS E	0.6	3.9	0.93	0.67	0.93	7.3
8	T1	240	0.0	215	0.0	* 0.967	95.7	LOS F	16.2	113.3	1.00	1.11	1.55	12.6
9	R2	366	1.4	333	1.5	0.967	99.4	LOS F	15.1	107.3	1.00	1.08	1.51	5.6
Approach		616	0.8	557 N1	0.9	0.967	97.4	LOS F	16.2	113.3	1.00	1.08	1.52	8.5
West: Great Eastern Hwy														
10	L2	819	0.4	819	0.4	0.687	13.9	LOS B	23.2	163.2	0.58	0.76	0.58	20.7
11	T1	2132	3.1	2132	3.1	* 0.829	38.4	LOS D	22.7	163.2	0.88	0.82	0.92	9.7
12	R2	87	0.0	87	0.0	* 0.579	73.0	LOS E	6.6	46.3	1.00	0.78	1.00	14.0
12u	U	11	0.0	11	0.0	0.579	74.7	LOS E	6.6	46.3	1.00	0.78	1.00	5.5
Approach		3049	2.3	3049	2.3	0.829	32.9	LOS C	23.2	163.2	0.80	0.80	0.83	11.5
All Vehicles		6306	2.0	6247 N1	2.0	0.967	45.3	LOS D	25.8	182.0	0.87	0.84	0.95	10.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	119	0.0	119	0.0	0.523	66.8	LOS E	8.6	60.0	0.98	0.80	0.98	15.6
2	T1	195	2.6	195	2.6	* 0.690	63.5	LOS E	12.0	86.3	1.00	0.84	1.03	16.6
3	R2	153	2.6	153	2.6	0.618	68.0	LOS E	10.0	72.2	0.99	0.81	0.99	15.6
Approach		467	1.9	467	1.9	0.690	65.8	LOS E	12.0	86.3	0.99	0.82	1.01	16.0
East: Great Eastern Hwy														
4	L2	138	0.0	138	0.0	0.099	9.5	LOS A	2.0	14.3	0.28	0.62	0.28	45.0
5	T1	1557	2.9	1557	2.9	0.474	27.7	LOS C	19.3	137.4	0.74	0.65	0.74	12.7
6	R2	367	0.3	367	0.3	* 1.442	464.7	LOS F	23.2	163.2	1.00	1.91	3.18	0.9
6u	U	16	0.0	16	0.0	1.442	466.4	LOS F	23.2	163.2	1.00	1.91	3.18	0.9
Approach		2078	2.2	2078	2.2	1.442	107.1	LOS F	23.2	163.2	0.76	0.88	1.16	4.5
North: Resolution Dr														
7	L2	187	2.7	186	2.7	0.348	34.7	LOS C	8.5	61.1	0.77	0.77	0.77	11.9
8	T1	159	3.1	158	3.2	* 0.793	74.2	LOS E	7.3	50.9	1.00	0.83	1.15	18.0
9	R2	24	0.0	24	0.0	0.198	74.6	LOS E	1.6	10.9	0.96	0.71	0.96	6.3
Approach		370	2.7	368 N1	2.7	0.793	54.3	LOS D	8.5	61.1	0.88	0.80	0.94	15.3
West: Great Eastern Hwy														
10	L2	39	0.0	39	0.0	0.083	29.2	LOS C	2.2	20.1	0.60	0.63	0.60	17.3
11	T1	2454	2.7	2453	2.7	* 0.945	51.0	LOS D	36.4	261.1	0.98	1.03	1.15	10.7
12	R2	191	1.6	191	1.6	0.777	71.8	LOS E	14.0	98.5	1.00	0.88	1.12	18.8
12u	U	11	0.0	11	0.0	0.777	73.4	LOS E	14.0	98.5	1.00	0.88	1.12	8.0
Approach		2695	2.6	2694 N1	2.6	0.945	52.2	LOS D	36.4	261.1	0.97	1.02	1.14	11.6
All Vehicles		5610	2.4	5607 N1	2.4	1.442	73.8	LOS E	36.4	261.1	0.89	0.93	1.12	8.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	171	0.6	153	0.6	0.721	8.9	LOS A	7.5	53.2	0.81	0.98	1.07	27.3
6a	R1	55	0.0	48	0.0	0.721	14.1	LOS B	7.5	53.2	0.81	0.98	1.07	38.5
6	R2	550	2.0	483	2.2	0.721	15.4	LOS B	7.5	53.2	0.81	0.98	1.07	27.3
Approach		776	1.5	684 N1	1.7	0.721	13.9	LOS B	7.5	53.2	0.81	0.98	1.07	28.4
North: Grandstand Rd														
7	L2	252	2.0	252	2.0	0.247	3.9	LOS A	1.4	10.0	0.31	0.50	0.31	34.0
9a	R1	409	0.2	409	0.2	0.247	8.6	LOS A	1.4	10.0	0.32	0.57	0.32	31.1
9b	R3	8	0.0	8	0.0	0.247	11.1	LOS B	1.4	9.7	0.32	0.59	0.32	46.8
9u	U	4	0.0	4	0.0	0.247	12.4	LOS B	1.4	9.7	0.32	0.59	0.32	30.5
Approach		673	0.9	673	0.9	0.247	6.9	LOS A	1.4	10.0	0.32	0.54	0.32	32.3
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.251	9.8	LOS A	1.4	9.7	0.88	0.94	0.88	28.7
27a	L1	32	3.1	32	3.1	0.251	9.1	LOS A	1.4	9.7	0.88	0.94	0.88	28.7
29	R2	47	2.1	47	2.1	0.251	15.1	LOS B	1.4	9.7	0.88	0.94	0.88	28.7
Approach		93	2.2	93	2.2	0.251	12.2	LOS B	1.4	9.7	0.88	0.94	0.88	28.7
SouthWest: Stoneham St														
30	L2	62	0.0	56	0.0	0.784	11.0	LOS B	11.5	80.6	0.98	1.06	1.36	35.8
30a	L1	1511	0.5	1341	0.5	0.784	11.2	LOS B	11.5	80.6	0.98	1.08	1.38	23.1
32a	R1	53	1.9	51	2.0	0.784	17.1	LOS B	10.7	75.7	0.98	1.11	1.40	22.2
32u	U	5	0.0	4	0.0	0.784	20.8	LOS C	10.7	75.7	0.98	1.11	1.40	22.2
Approach		1631	0.5	1453 N1	0.6	0.784	11.4	LOS B	11.5	80.6	0.98	1.08	1.38	23.8
All Vehicles		3173	0.9	2903 N1	1.0	0.784	11.0	LOS B	11.5	80.6	0.79	0.93	1.04	27.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 6 – SIDRA Network Output 2041 Proposed Road Network

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

NETWORK SUMMARY

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

Proposed Network
100% of Ascot Kilns, Golden Gateway and Ascot Racecourse development
Network Category: Future Conditions 2

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS F					
Speed Efficiency	0.28					
Travel Time Index	1.94					
Congestion Coefficient	3.64					
Travel Speed (Average)	16.4	km/h			18.9	km/h
Travel Distance (Total)	12315.3	veh-km/h			21191.1	pers-km/h
Travel Time (Total)	750.1	veh-h/h			1121.4	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	55967	veh/h			113744	pers/h
Arrival Flows (Total for all Sites)	54666	veh/h			106097	pers/h
Demand Flows (Entry Total)	7968	veh/h				
Midblock Inflows (Total)	216	veh/h				
Midblock Outflows (Total)	-185	veh/h				
Percent Heavy Vehicles (Demand)	3.9	%				
Percent Heavy Vehicles (Arrival)	3.9	%				
Degree of Saturation	1.793					
Control Delay (Total)	528.98	veh-h/h			733.22	pers-h/h
Control Delay (Average)	34.8	sec			24.9	sec
Control Delay (Worst Lane)	769.5	sec				
Control Delay (Worst Movement)	771.1	sec			771.1	sec
Geometric Delay (Average)	0.8	sec				
Stop-Line Delay (Average)	34.1	sec				
Ave. Queue Storage Ratio (Worst Lane)	1.00					
Total Effective Stops	19512	veh/h			43399	pers/h
Effective Stop Rate	0.36		1.58	per km	0.41	
Proportion Queued	0.23				0.20	
Performance Index	1919.1				1919.1	
Cost (Total)	34790.18	$/h	2.82	$/km	34790.18	$/h
Fuel Consumption (Total)	2211.6	L/h	179.6	mL/km		
Fuel Economy	18.0	L/100km				
Carbon Dioxide (Total)	5234.0	kg/h	425.0	g/km		
Hydrocarbons (Total)	0.531	kg/h	0.043	g/km		
Carbon Monoxide (Total)	4.978	kg/h	0.404	g/km		
NOx (Total)	10.187	kg/h	0.827	g/km		

Network Model Variability Index (Iterations 3 to N): 50.4 %
Number of Iterations: 10 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 54.0% 40.5% 31.8%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	26,864,160	veh/y	54,597,310	pers/y
Delay	253,909	veh-h/y	351,946	pers-h/y
Effective Stops	9,365,632	veh/y	20,831,730	pers/y
Travel Distance	5,911,321	veh-km/y	10,171,720	pers-km/y
Travel Time	360,062	veh-h/y	538,271	pers-h/y
Cost	16,699,290	$/y	16,699,290	$/y
Fuel Consumption	1,061,558	L/y		
Carbon Dioxide	2,512,333	kg/y		
Hydrocarbons	255	kg/y		

Carbon Monoxide	2,390	kg/y
NOx	4,890	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	66	4.5	66	4.5	0.428	65.7	LOS E	6.0	44.8	0.97	0.78	0.97	12.2
2	T1	127	7.9	127	7.9	* 0.428	60.1	LOS E	6.1	46.4	0.97	0.77	0.97	13.1
3	R2	92	8.7	92	8.7	0.428	66.0	LOS E	6.1	46.4	0.97	0.78	0.97	12.0
Approach		285	7.4	285	7.4	0.428	63.3	LOS E	6.1	46.4	0.97	0.77	0.97	12.5
East: Great Eastern Hwy														
4	L2	214	5.6	214	5.6	0.309	29.5	LOS C	9.7	74.3	0.67	0.74	0.67	23.8
5	T1	2744	4.4	2744	4.4	* 1.048	119.5	LOS F	17.8	130.6	1.00	1.41	1.61	3.0
6	R2	20	5.0	20	5.0	0.187	72.2	LOS E	1.4	10.6	0.98	0.71	0.98	4.9
6u	U	1	0.0	1	0.0	0.187	73.9	LOS E	1.4	10.6	0.98	0.71	0.98	4.9
Approach		2979	4.5	2979	4.5	1.048	112.7	LOS F	17.8	130.6	0.97	1.36	1.54	3.6
North: Stoneham St														
7	L2	6	0.0	6	0.0	0.023	59.1	LOS E	0.3	2.4	0.89	0.66	0.89	8.2
8	T1	376	3.5	369	3.3	1.388	410.7	LOS F	32.6	228.5	1.00	2.12	3.08	3.4
9	R2	806	0.2	777	0.2	* 1.589	589.2	LOS F	32.5	228.5	1.00	2.16	3.62	1.0
Approach		1188	1.3	1151 N1	1.2	1.589	529.3	LOS F	32.6	228.5	1.00	2.14	3.43	1.6
West: Great Eastern Hwy														
10	L2	286	1.0	286	1.0	0.188	6.9	LOS A	2.5	17.5	0.21	0.61	0.21	30.9
11	T1	1584	5.2	1584	5.2	0.495	22.3	LOS C	15.6	115.4	0.59	0.52	0.59	15.0
12	R2	64	3.1	64	3.1	* 0.877	85.3	LOS F	7.2	51.1	1.00	0.96	1.42	12.3
12u	U	33	0.0	33	0.0	0.877	86.9	LOS F	7.2	51.1	1.00	0.96	1.42	4.8
Approach		1967	4.4	1967	4.4	0.877	23.2	LOS C	15.6	115.4	0.56	0.56	0.58	15.2
All Vehicles		6419	4.0	6382 N1	4.0	1.589	158.1	LOS F	32.6	228.5	0.85	1.23	1.56	3.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	107	1.9	107	1.9	0.562	68.2	LOS E	7.2	53.1	0.99	0.79	0.99	15.3
2	T1	123	4.9	123	4.9	0.562	62.3	LOS E	7.5	53.0	0.99	0.79	0.99	16.9
3	R2	136	3.7	136	3.7	* 0.684	70.3	LOS E	9.0	65.8	1.00	0.83	1.06	15.2
Approach		366	3.6	366	3.6	0.684	67.0	LOS E	9.0	65.8	1.00	0.81	1.02	15.8
East: Great Eastern Hwy														
4	L2	141	5.0	141	5.0	0.103	8.9	LOS A	1.9	13.0	0.26	0.62	0.26	44.0
5	T1	2736	4.8	2736	4.8	* 1.098	164.5	LOS F	22.2	163.2	1.00	1.65	1.92	2.5
6	R2	321	3.4	321	3.4	* 1.793	769.5	LOS F	22.5	163.2	1.00	2.35	4.13	0.6
6u	U	14	0.0	14	0.0	1.793	771.1	LOS F	22.5	163.2	1.00	2.35	4.13	0.6
Approach		3212	4.6	3212	4.6	1.793	220.8	LOS F	22.5	163.2	0.97	1.68	2.07	2.1
North: Resolution Dr														
7	L2	315	1.6	315	1.6	0.567	19.7	LOS B	11.8	84.0	0.67	0.78	0.67	18.2
8	T1	155	6.5	155	6.5	0.700	68.8	LOS E	6.7	46.9	1.00	0.80	1.07	18.9
9	R2	95	1.1	95	1.1	* 1.158	224.8	LOS F	12.7	89.8	1.00	1.29	2.35	2.2
Approach		565	2.8	565	2.8	1.158	67.6	LOS E	12.7	89.8	0.82	0.87	1.06	10.7
West: Great Eastern Hwy														
10	L2	94	0.0	94	0.0	0.123	24.9	LOS C	3.6	28.2	0.56	0.68	0.56	18.6
11	T1	1608	5.7	1608	5.7	0.577	19.5	LOS B	19.2	143.1	0.59	0.53	0.59	21.6
12	R2	135	0.7	135	0.7	0.902	84.8	LOS F	11.7	82.0	1.00	1.00	1.41	16.7
12u	U	20	0.0	20	0.0	0.902	86.5	LOS F	11.7	82.0	1.00	1.00	1.41	6.9
Approach		1857	5.0	1857	5.0	0.902	25.3	LOS C	19.2	143.1	0.63	0.58	0.66	19.9
All Vehicles		6000	4.5	6000	4.5	1.793	136.5	LOS F	22.5	163.2	0.85	1.21	1.48	4.5

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	272	0.7	230	0.5	1.040	74.4	LOS F	26.3	188.0	1.00	2.63	5.60	7.4
6a	R1	40	2.5	33	1.8	1.040	79.8	LOS F	26.3	188.0	1.00	2.63	5.60	13.0
6	R2	288	4.2	231	4.0	1.040	81.1	LOS F	26.3	188.0	1.00	2.63	5.60	7.4
Approach		600	2.5	494 [N1]	2.2	1.040	77.9	LOS F	26.3	188.0	1.00	2.63	5.60	7.8
North: Grandstand Rd														
7	L2	481	2.5	481	2.5	0.887	9.2	LOS A	9.2	65.7	0.60	0.78	0.84	25.9
9a	R1	841	1.1	841	1.1	0.887	15.5	LOS B	17.5	124.0	0.55	0.83	0.85	23.7
9b	R3	7	0.0	7	0.0	0.887	19.2	LOS B	17.5	124.0	0.52	0.87	0.86	37.0
9u	U	2	0.0	2	0.0	0.887	20.4	LOS C	17.5	124.0	0.52	0.87	0.86	22.6
Approach		1331	1.6	1331	1.6	0.887	13.2	LOS B	17.5	124.0	0.57	0.81	0.85	24.5
NorthWest: Resolution Dr														
27b	L3	13	7.7	13	7.7	0.337	4.7	LOS A	3.7	26.3	0.56	0.68	0.56	34.7
27a	L1	84	0.0	84	0.0	0.337	3.6	LOS A	3.7	26.3	0.56	0.68	0.56	34.7
29	R2	103	0.0	103	0.0	0.337	9.7	LOS A	3.7	26.3	0.56	0.68	0.56	34.7
Approach		200	0.5	200	0.5	0.337	6.8	LOS A	3.7	26.3	0.56	0.68	0.56	34.7
SouthWest: Stoneham St														
30	L2	37	0.0	37	0.0	0.198	3.9	LOS A	1.2	8.7	0.47	0.45	0.47	44.3
30a	L1	361	2.8	361	2.8	0.198	3.5	LOS A	1.2	8.7	0.48	0.48	0.48	34.0
32a	R1	53	0.0	53	0.0	0.198	8.8	LOS A	1.1	8.2	0.48	0.52	0.48	33.1
32u	U	4	25.0	4	25.0	0.198	12.7	LOS B	1.1	8.2	0.48	0.52	0.48	33.1
Approach		455	2.4	455	2.4	0.198	4.3	LOS A	1.2	8.7	0.48	0.48	0.48	35.3
All Vehicles		2586	1.9	2480 [N1]	1.9	1.040	23.9	LOS C	26.3	188.0	0.64	1.10	1.70	17.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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NETWORK SUMMARY

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

Proposed Network
100% of Ascot Kilns, Golden Gateway and Ascot Racecourse development
Network Category: Future Conditions 2

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS F					
Speed Efficiency	0.21					
Travel Time Index	1.24					
Congestion Coefficient	4.73					
Travel Speed (Average)	12.6	km/h			9.0	km/h
Travel Distance (Total)	13290.8	veh-km/h			23661.1	pers-km/h
Travel Time (Total)	1053.8	veh-h/h			2637.6	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	60977	veh/h			147359	pers/h
Arrival Flows (Total for all Sites)	57804	veh/h			128564	pers/h
Demand Flows (Entry Total)	9017	veh/h				
Midblock Inflows (Total)	462	veh/h				
Midblock Outflows (Total)	-28	veh/h				
Percent Heavy Vehicles (Demand)	1.9	%				
Percent Heavy Vehicles (Arrival)	2.0	%				
Degree of Saturation	5.150					
Control Delay (Total)	816.98	veh-h/h			2187.72	pers-h/h
Control Delay (Average)	50.9	sec			61.3	sec
Control Delay (Worst Lane)	3771.4	sec				
Control Delay (Worst Movement)	3805.1	sec			3805.1	sec
Geometric Delay (Average)	0.9	sec				
Stop-Line Delay (Average)	50.0	sec				
Ave. Queue Storage Ratio (Worst Lane)	18.18					
Total Effective Stops	21877	veh/h			110223	pers/h
Effective Stop Rate	0.38		1.65	per km	0.86	
Proportion Queued	0.27				0.34	
Performance Index	2552.0				2552.0	
Cost (Total)	76466.39	$/h	5.75	$/km	76466.39	$/h
Fuel Consumption (Total)	2437.1	L/h	183.4	mL/km		
Fuel Economy	18.3	L/100km				
Carbon Dioxide (Total)	5745.3	kg/h	432.3	g/km		
Hydrocarbons (Total)	0.593	kg/h	0.045	g/km		
Carbon Monoxide (Total)	5.158	kg/h	0.388	g/km		
NOx (Total)	5.053	kg/h	0.380	g/km		

Network Model Variability Index (Iterations 3 to N): 32.1 %
Number of Iterations: 10 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 8.3% 7.3% 6.2%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	29,268,960	veh/y	70,732,220	pers/y
Delay	392,152	veh-h/y	1,050,106	pers-h/y
Effective Stops	10,501,030	veh/y	52,906,890	pers/y
Travel Distance	6,379,566	veh-km/y	11,357,320	pers-km/y
Travel Time	505,843	veh-h/y	1,266,068	pers-h/y
Cost	36,703,870	$/y	36,703,870	$/y
Fuel Consumption	1,169,816	L/y		
Carbon Dioxide	2,757,749	kg/y		
Hydrocarbons	285	kg/y		
Carbon Monoxide	2,476	kg/y		

NOx	2,426	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	221	0.5	221	0.5	0.964	95.6	LOS F	32.8	231.9	1.00	1.11	1.42	9.0
2	T1	480	1.5	480	1.5	* 0.964	90.0	LOS F	32.8	231.9	1.00	1.15	1.45	9.4
3	R2	300	1.0	300	1.0	0.884	74.5	LOS E	22.1	157.1	1.00	0.97	1.25	10.9
Approach		1001	1.1	1001	1.1	0.964	86.6	LOS F	32.8	231.9	1.00	1.08	1.38	9.7
East: Great Eastern Hwy														
4	L2	112	3.6	112	3.6	0.208	34.5	LOS C	6.0	48.3	0.70	0.72	0.70	22.2
5	T1	1591	2.5	1591	2.5	0.682	36.9	LOS D	18.4	130.6	0.89	0.79	0.89	8.6
6	R2	82	2.4	82	2.4	0.578	72.7	LOS E	6.4	46.0	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.578	74.4	LOS E	6.4	46.0	1.00	0.78	1.00	4.9
Approach		1798	2.5	1798	2.5	0.682	38.7	LOS D	18.4	130.6	0.88	0.79	0.88	9.3
North: Stoneham St														
7	L2	10	0.0	9	0.0	0.046	66.9	LOS E	0.5	3.7	0.93	0.67	0.93	7.4
8	T1	284	0.0	241	0.0	1.225	273.8	LOS F	32.6	228.5	1.00	1.64	2.50	4.9
9	R2	575	1.0	473	1.3	* 1.283	326.9	LOS F	32.2	228.5	1.00	1.67	2.68	1.7
Approach		869	0.7	723 [N1]	0.8	1.283	306.2	LOS F	32.6	228.5	1.00	1.65	2.60	2.7
West: Great Eastern Hwy														
10	L2	912	0.3	912	0.3	0.768	15.7	LOS B	23.2	163.2	0.67	0.79	0.67	19.1
11	T1	2288	3.1	2288	3.1	* 0.900	47.8	LOS D	22.7	163.2	0.94	0.94	1.06	8.1
12	R2	92	0.0	92	0.0	* 0.608	73.4	LOS E	7.0	48.9	1.00	0.79	1.02	13.9
12u	U	11	0.0	11	0.0	0.608	75.1	LOS E	7.0	48.9	1.00	0.79	1.02	5.5
Approach		3303	2.2	3303	2.2	0.900	39.8	LOS D	23.2	163.2	0.86	0.89	0.95	9.9
All Vehicles		6971	1.9	6824 [N1]	2.0	1.283	74.5	LOS E	32.8	231.9	0.90	0.97	1.17	6.8

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	125	0.0	125	0.0	0.560	67.2	LOS E	9.3	64.8	0.98	0.80	0.98	15.6
2	T1	212	2.4	212	2.4	* 0.740	64.9	LOS E	13.2	94.4	1.00	0.86	1.07	16.3
3	R2	161	2.5	161	2.5	0.650	68.5	LOS E	10.6	76.5	1.00	0.82	1.01	15.5
Approach		498	1.8	498	1.8	0.740	66.6	LOS E	13.2	94.4	1.00	0.83	1.03	15.9
East: Great Eastern Hwy														
4	L2	145	0.0	145	0.0	0.105	10.1	LOS B	2.3	16.1	0.30	0.63	0.30	44.4
5	T1	1636	2.9	1636	2.9	0.500	28.1	LOS C	20.6	146.9	0.75	0.66	0.75	12.5
6	R2	583	0.2	583	0.2	* 2.247	1174.9	LOS F	23.3	163.2	1.00	2.66	4.70	0.4
6u	U	17	0.0	17	0.0	2.247	1176.5	LOS F	23.3	163.2	1.00	2.66	4.70	0.4
Approach		2381	2.0	2381	2.0	2.247	316.0	LOS F	23.3	163.2	0.79	1.16	1.72	1.6
North: Resolution Dr														
7	L2	231	2.6	206	2.9	0.389	40.3	LOS D	10.2	73.5	0.83	0.79	0.83	10.6
8	T1	165	3.0	158	3.2	* 0.794	74.3	LOS E	7.3	51.1	1.00	0.83	1.15	18.0
9	R2	25	0.0	25	0.0	0.205	74.6	LOS E	1.6	11.3	0.96	0.71	0.96	6.3
Approach		421	2.6	389 N1	2.8	0.794	56.3	LOS E	10.2	73.5	0.91	0.80	0.97	14.6
West: Great Eastern Hwy														
10	L2	88	0.0	88	0.0	0.141	29.9	LOS C	4.2	34.0	0.62	0.69	0.62	16.5
11	T1	2564	2.7	2563	2.7	* 1.002	78.5	LOS E	36.4	261.1	1.00	1.20	1.35	7.4
12	R2	204	1.5	204	1.5	0.825	74.7	LOS E	15.4	108.1	1.00	0.91	1.18	18.3
12u	U	11	0.0	11	0.0	0.825	76.3	LOS E	15.4	108.1	1.00	0.91	1.18	7.7
Approach		2867	2.5	2866 N1	2.5	1.002	76.7	LOS E	36.4	261.1	0.99	1.16	1.32	8.4
All Vehicles		6167	2.3	6134 N1	2.3	2.247	167.5	LOS F	36.4	261.1	0.90	1.11	1.43	4.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	403	0.2	282	0.3	0.856	14.2	LOS B	13.2	94.1	0.97	1.22	1.60	22.8
6a	R1	79	0.0	58	0.0	0.856	19.4	LOS B	13.2	94.1	0.97	1.22	1.60	33.8
6	R2	581	2.1	439	2.6	0.856	20.8	LOS C	13.2	94.1	0.97	1.22	1.60	22.8
Approach		1063	1.2	779 N1	1.6	0.856	18.3	LOS B	13.2	94.1	0.97	1.22	1.60	23.9
North: Grandstand Rd														
7	L2	318	2.5	318	2.5	0.301	4.2	LOS A	1.8	12.8	0.40	0.53	0.40	33.4
9a	R1	440	0.2	440	0.2	0.301	9.0	LOS A	1.8	12.8	0.41	0.61	0.41	30.3
9b	R3	9	0.0	9	0.0	0.301	11.5	LOS B	1.8	12.3	0.42	0.63	0.42	46.0
9u	U	4	0.0	4	0.0	0.301	12.8	LOS B	1.8	12.3	0.42	0.63	0.42	29.7
Approach		771	1.2	771	1.2	0.301	7.1	LOS A	1.8	12.8	0.41	0.58	0.41	31.6
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.357	11.2	LOS B	2.0	14.5	0.90	0.98	0.99	27.3
27a	L1	46	2.2	46	2.2	0.357	10.5	LOS B	2.0	14.5	0.90	0.98	0.99	27.3
29	R2	67	1.5	67	1.5	0.357	16.5	LOS B	2.0	14.5	0.90	0.98	0.99	27.3
Approach		127	1.6	127	1.6	0.357	13.7	LOS B	2.0	14.5	0.90	0.98	0.99	27.3
SouthWest: Stoneham St														
30	L2	79	0.0	72	0.0	0.828	12.1	LOS B	13.8	97.1	1.00	1.09	1.44	34.5
30a	L1	1601	0.5	1388	0.6	0.828	12.3	LOS B	13.8	97.1	1.00	1.12	1.47	21.8
32a	R1	90	1.1	88	1.1	0.828	18.3	LOS B	12.9	91.3	1.00	1.15	1.50	20.9
32u	U	6	0.0	5	0.0	0.828	22.0	LOS C	12.9	91.3	1.00	1.15	1.50	20.9
Approach		1776	0.5	1553 N1	0.6	0.828	12.7	LOS B	13.8	97.1	1.00	1.12	1.47	22.6
All Vehicles		3737	0.9	3230 N1	1.0	0.856	12.7	LOS B	13.8	97.1	0.85	1.01	1.23	24.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 7 – SIDRA Network Output Ascot Event

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

NETWORK SUMMARY

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

Proposed Network
2021 Traffic Volumes with Ascot Weekday Event
Network Category: Proposed Design 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.49					
Travel Time Index	4.33					
Congestion Coefficient	2.04					
Travel Speed (Average)	29.2	km/h			24.6	km/h
Travel Distance (Total)	11825.6	veh-km/h			18838.1	pers-km/h
Travel Time (Total)	404.7	veh-h/h			764.6	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	50952	veh/h			97205	pers/h
Arrival Flows (Total for all Sites)	50676	veh/h			96874	pers/h
Demand Flows (Entry Total)	7697	veh/h				
Midblock Inflows (Total)	587	veh/h				
Midblock Outflows (Total)	-306	veh/h				
Percent Heavy Vehicles (Demand)	2.5	%				
Percent Heavy Vehicles (Arrival)	2.5	%				
Degree of Saturation	1.646					
Control Delay (Total)	205.18	veh-h/h			441.88	pers-h/h
Control Delay (Average)	14.6	sec			16.4	sec
Control Delay (Worst Lane)	617.1	sec				
Control Delay (Worst Movement)	656.8	sec			656.8	sec
Geometric Delay (Average)	0.8	sec				
Stop-Line Delay (Average)	13.8	sec				
Ave. Queue Storage Ratio (Worst Lane)	5.61					
Total Effective Stops	15837	veh/h			53953	pers/h
Effective Stop Rate	0.31		1.34	per km	0.56	
Proportion Queued	0.25				0.36	
Performance Index	1333.1				1333.1	
Cost (Total)	23442.75	$/h	1.98	$/km	23442.75	$/h
Fuel Consumption (Total)	1482.2	L/h	125.3	mL/km		
Fuel Economy	12.5	L/100km				
Carbon Dioxide (Total)	3502.1	kg/h	296.1	g/km		
Hydrocarbons (Total)	0.338	kg/h	0.029	g/km		
Carbon Monoxide (Total)	3.678	kg/h	0.311	g/km		
NOx (Total)	4.318	kg/h	0.365	g/km		

Network Model Variability Index (Iterations 3 to N): 0.5 %
Number of Iterations: 5 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 0.4% 0.7% 0.2%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	24,456,960	veh/y	46,658,310	pers/y
Delay	98,486	veh-h/y	212,104	pers-h/y
Effective Stops	7,601,861	veh/y	25,897,650	pers/y
Travel Distance	5,676,289	veh-km/y	9,042,264	pers-km/y
Travel Time	194,267	veh-h/y	366,984	pers-h/y
Cost	11,252,520	$/y	11,252,520	$/y
Fuel Consumption	711,444	L/y		
Carbon Dioxide	1,681,014	kg/y		
Hydrocarbons	162	kg/y		
Carbon Monoxide	1,765	kg/y		

NOx	2,073	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	200	0.5	200	0.5	0.812	66.7	LOS E	13.4	94.5	1.00	0.91	1.11	12.2
2	T1	416	1.4	416	1.4	* 0.812	60.6	LOS E	13.4	94.5	1.00	0.92	1.11	13.0
3	R2	254	1.2	254	1.2	0.666	60.5	LOS E	9.8	69.7	0.98	0.84	0.98	12.9
Approach		870	1.1	870	1.1	0.812	62.0	LOS E	13.4	94.5	0.99	0.90	1.07	12.8
East: Great Eastern Hwy														
4	L2	118	3.4	118	3.4	0.233	34.9	LOS C	4.1	33.9	0.71	0.72	0.71	22.2
5	T1	1507	3.0	1507	3.0	0.642	36.1	LOS D	11.3	80.0	0.87	0.77	0.87	8.8
6	R2	74	2.7	74	2.7	0.525	72.3	LOS E	3.5	25.4	1.00	0.78	1.00	4.9
6u	U	12	0.0	12	0.0	0.525	74.0	LOS E	3.5	25.4	1.00	0.78	1.00	4.9
Approach		1711	3.0	1711	3.0	0.642	37.8	LOS D	11.3	80.0	0.86	0.77	0.86	9.6
North: Stoneham St														
7	L2	9	0.0	8	0.0	0.045	66.9	LOS E	0.3	2.2	0.93	0.67	0.93	7.4
8	T1	211	0.0	199	0.0	* 0.843	74.1	LOS E	7.4	51.9	1.00	0.94	1.24	15.3
9	R2	292	1.7	278	1.8	0.843	79.3	LOS E	7.0	49.6	1.00	0.92	1.22	6.9
Approach		512	1.0	486 [N1]	1.0	0.843	76.9	LOS E	7.4	51.9	1.00	0.92	1.22	10.6
West: Great Eastern Hwy														
10	L2	741	1.5	741	1.5	0.625	12.8	LOS B	12.4	87.8	0.52	0.73	0.52	21.8
11	T1	2015	3.2	2015	3.2	* 0.778	35.0	LOS C	13.9	100.0	0.84	0.75	0.85	10.5
12	R2	83	0.0	83	0.0	* 0.549	72.8	LOS E	3.8	26.8	1.00	0.78	1.00	14.0
12u	U	10	0.0	10	0.0	0.549	74.4	LOS E	3.8	26.8	1.00	0.78	1.00	5.6
Approach		2849	2.7	2849	2.7	0.778	30.5	LOS C	13.9	100.0	0.76	0.75	0.77	12.3
All Vehicles		5942	2.4	5916 [N1]	2.4	0.843	41.0	LOS D	13.9	100.0	0.84	0.79	0.88	11.4

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	113	0.0	113	0.0	0.488	66.4	LOS E	4.9	34.1	0.97	0.79	0.97	15.6
2	T1	180	2.8	180	2.8	* 0.644	62.5	LOS E	6.8	48.7	1.00	0.82	1.00	16.8
3	R2	146	2.7	146	2.7	0.591	67.7	LOS E	5.8	42.1	0.99	0.81	0.99	15.7
Approach		439	2.1	439	2.1	0.644	65.2	LOS E	6.8	48.7	0.99	0.81	0.99	16.1
East: Great Eastern Hwy														
4	L2	131	0.0	131	0.0	0.094	9.5	LOS A	1.2	8.3	0.28	0.62	0.28	45.0
5	T1	1482	3.0	1482	3.0	0.451	27.4	LOS C	11.1	78.9	0.73	0.64	0.73	12.8
6	R2	240	0.4	240	0.4	* 0.967	100.7	LOS F	13.5	95.2	1.00	1.08	1.50	4.2
6u	U	15	0.0	15	0.0	0.967	102.3	LOS F	13.5	95.2	1.00	1.08	1.50	4.2
Approach		1868	2.4	1868	2.4	0.967	36.1	LOS D	13.5	95.2	0.73	0.70	0.80	12.0
North: Resolution Dr														
7	L2	287	1.7	287	1.7	0.533	34.0	LOS C	8.4	60.2	0.81	0.81	0.81	12.1
8	T1	170	2.9	170	2.9	0.851	76.1	LOS E	4.9	34.4	1.00	0.87	1.21	17.7
9	R2	104	7.7	104	7.7	* 0.912	90.6	LOS F	5.0	37.2	1.00	0.99	1.47	5.3
Approach		561	3.2	561	3.2	0.912	57.3	LOS E	8.4	60.2	0.90	0.86	1.06	12.9
West: Great Eastern Hwy														
10	L2	22	0.0	22	0.0	0.063	28.9	LOS C	1.0	9.5	0.59	0.58	0.59	17.8
11	T1	2345	2.8	2345	2.8	* 0.899	39.2	LOS D	22.3	160.0	0.92	0.91	1.01	13.1
12	R2	182	1.6	182	1.6	0.798	73.1	LOS E	8.8	61.8	1.00	0.89	1.15	18.5
12u	U	22	0.0	22	0.0	0.798	74.7	LOS E	8.8	61.8	1.00	0.89	1.15	7.9
Approach		2571	2.6	2571	2.6	0.899	41.9	LOS D	22.3	160.0	0.93	0.91	1.02	13.8
All Vehicles		5439	2.6	5439	2.6	0.967	43.4	LOS D	22.3	160.0	0.86	0.82	0.95	13.5

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

* Critical Movement (Signal Timing)

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	99	1.0	99	1.0	0.667	7.5	LOS A	2.4	17.6	0.75	0.91	0.92	28.5
6a	R1	40	0.0	40	0.0	0.667	12.7	LOS B	2.4	17.6	0.75	0.91	0.92	39.6
6	R2	513	3.3	513	3.3	0.667	14.1	LOS B	2.4	17.6	0.75	0.91	0.92	28.5
Approach		652	2.8	652	2.8	0.667	13.0	LOS B	2.4	17.6	0.75	0.91	0.92	29.4
North: Grandstand Rd														
7	L2	207	2.4	207	2.4	0.208	3.6	LOS A	0.5	3.5	0.24	0.48	0.24	34.5
9a	R1	380	0.3	380	0.3	0.208	8.4	LOS A	0.5	3.5	0.24	0.55	0.24	31.8
9b	R3	8	0.0	8	0.0	0.208	10.9	LOS B	0.5	3.4	0.25	0.57	0.25	47.5
9u	U	4	0.0	4	0.0	0.208	12.1	LOS B	0.5	3.4	0.25	0.57	0.25	31.1
Approach		599	1.0	599	1.0	0.208	6.8	LOS A	0.5	3.5	0.24	0.52	0.24	32.9
NorthWest: Resolution Dr														
27b	L3	13	0.0	13	0.0	0.193	9.8	LOS A	0.4	3.0	0.87	0.93	0.87	28.7
27a	L1	25	4.0	25	4.0	0.193	9.1	LOS A	0.4	3.0	0.87	0.93	0.87	28.7
29	R2	34	2.9	34	2.9	0.193	15.1	LOS B	0.4	3.0	0.87	0.93	0.87	28.7
Approach		72	2.8	72	2.8	0.193	12.1	LOS B	0.4	3.0	0.87	0.93	0.87	28.7
SouthWest: Stoneham St														
30	L2	50	0.0	46	0.0	0.769	11.0	LOS B	4.3	30.8	0.97	1.06	1.35	35.7
30a	L1	1433	1.0	1334	1.1	0.769	11.2	LOS B	4.3	30.8	0.97	1.08	1.37	23.2
32a	R1	16	6.3	15	6.7	0.769	17.3	LOS B	4.1	28.7	0.97	1.11	1.39	22.4
32u	U	5	0.0	5	0.0	0.769	20.8	LOS C	4.1	28.7	0.97	1.11	1.39	22.4
Approach		1504	1.1	1400 N1	1.1	0.769	11.3	LOS B	4.3	30.8	0.97	1.08	1.37	23.8
All Vehicles		2827	1.5	2723 N1	1.5	0.769	10.8	LOS B	4.3	30.8	0.76	0.91	1.00	27.4

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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NETWORK SUMMARY

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

Proposed Network
25% of Ascot Kilns and Golden Gateway development
50% of Ascot Racecourse development
Network Category: Future Conditions 1

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS E					
Speed Efficiency	0.32					
Travel Time Index	2.49					
Congestion Coefficient	3.08					
Travel Speed (Average)	19.3	km/h			5.4	km/h
Travel Distance (Total)	12505.2	veh-km/h			22006.4	pers-km/h
Travel Time (Total)	646.3	veh-h/h			4045.4	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	55958	veh/h			130718	pers/h
Arrival Flows (Total for all Sites)	54150	veh/h			124681	pers/h
Demand Flows (Entry Total)	8372	veh/h				
Midblock Inflows (Total)	415	veh/h				
Midblock Outflows (Total)	-44	veh/h				
Percent Heavy Vehicles (Demand)	2.3	%				
Percent Heavy Vehicles (Arrival)	2.4	%				
Degree of Saturation	2.781					
Control Delay (Total)	430.97	veh-h/h			3617.80	pers-h/h
Control Delay (Average)	28.7	sec			104.5	sec
Control Delay (Worst Lane)	1634.5	sec				
Control Delay (Worst Movement)	1670.6	sec			1670.6	sec
Geometric Delay (Average)	0.8	sec				
Stop-Line Delay (Average)	27.8	sec				
Ave. Queue Storage Ratio (Worst Lane)	42.18					
Total Effective Stops	20603	veh/h			196336	pers/h
Effective Stop Rate	0.38		1.65	per km	1.57	
Proportion Queued	0.26				0.38	
Performance Index	2048.7				2048.7	
Cost (Total)	114524.00	$/h	9.16	$/km	114524.00	$/h
Fuel Consumption (Total)	1871.5	L/h	149.7	mL/km		
Fuel Economy	15.0	L/100km				
Carbon Dioxide (Total)	4417.5	kg/h	353.2	g/km		
Hydrocarbons (Total)	0.453	kg/h	0.036	g/km		
Carbon Monoxide (Total)	4.322	kg/h	0.346	g/km		
NOx (Total)	4.760	kg/h	0.381	g/km		

Network Model Variability Index (Iterations 3 to N): 4.3 %
Number of Iterations: 10 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 9.5% 1.0% 0.7%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	26,859,840	veh/y	62,744,830	pers/y
Delay	206,865	veh-h/y	1,736,543	pers-h/y
Effective Stops	9,889,336	veh/y	94,241,200	pers/y
Travel Distance	6,002,488	veh-km/y	10,563,090	pers-km/y
Travel Time	310,212	veh-h/y	1,941,774	pers-h/y
Cost	54,971,540	$/y	54,971,540	$/y
Fuel Consumption	898,303	L/y		
Carbon Dioxide	2,120,378	kg/y		

Hydrocarbons	217	kg/y
Carbon Monoxide	2,075	kg/y
NOx	2,285	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	210	0.5	210	0.5	0.883	74.3	LOS E	15.8	111.5	1.00	0.98	1.22	11.1
2	T1	447	1.3	447	1.3	* 0.883	68.3	LOS E	15.8	111.5	1.00	1.01	1.23	11.8
3	R2	272	1.1	272	1.1	0.713	61.7	LOS E	10.7	76.1	0.99	0.85	1.01	12.7
Approach		929	1.1	929	1.1	0.883	67.8	LOS E	15.8	111.5	1.00	0.96	1.16	11.9
East: Great Eastern Hwy														
4	L2	123	3.3	119	3.4	0.214	34.6	LOS C	3.8	30.5	0.70	0.72	0.70	22.2
5	T1	1579	2.8	1562	2.8	0.673	36.7	LOS D	11.2	80.0	0.88	0.79	0.88	8.7
6	R2	78	2.6	78	2.6	0.555	72.5	LOS E	3.8	27.0	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.555	74.3	LOS E	3.8	27.0	1.00	0.78	1.00	4.9
Approach		1793	2.8	1771 N1	2.8	0.673	38.4	LOS D	11.2	80.0	0.88	0.78	0.88	9.4
North: Stoneham St														
7	L2	10	0.0	9	0.0	0.047	66.9	LOS E	0.3	2.3	0.93	0.67	0.93	7.3
8	T1	240	0.0	212	0.0	* 1.017	119.1	LOS F	11.7	82.2	1.00	1.21	1.72	10.5
9	R2	416	1.2	364	1.4	1.017	122.6	LOS F	10.9	77.7	1.00	1.16	1.69	4.6
Approach		666	0.8	585 N1	0.8	1.017	120.5	LOS F	11.7	82.2	1.00	1.17	1.69	6.9
West: Great Eastern Hwy														
10	L2	827	1.3	827	1.3	0.697	14.0	LOS B	14.1	100.0	0.59	0.76	0.59	20.6
11	T1	2132	3.1	2132	3.1	* 0.830	38.5	LOS D	13.9	100.0	0.88	0.82	0.92	9.7
12	R2	87	0.0	87	0.0	* 0.579	73.0	LOS E	4.1	28.4	1.00	0.78	1.00	14.0
12u	U	11	0.0	11	0.0	0.579	74.7	LOS E	4.1	28.4	1.00	0.78	1.00	5.5
Approach		3057	2.6	3057	2.6	0.830	33.0	LOS C	14.1	100.0	0.80	0.80	0.83	11.5
All Vehicles		6445	2.2	6342 N1	2.3	1.017	47.7	LOS D	15.8	111.5	0.87	0.85	0.97	10.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	119	0.0	119	0.0	0.523	66.8	LOS E	5.3	36.8	0.98	0.80	0.98	15.6
2	T1	195	2.6	195	2.6	* 0.690	63.5	LOS E	7.4	52.9	1.00	0.84	1.03	16.6
3	R2	153	2.6	153	2.6	0.618	68.0	LOS E	6.1	44.2	0.99	0.81	0.99	15.6
Approach		467	1.9	467	1.9	0.690	65.8	LOS E	7.4	52.9	0.99	0.82	1.01	16.0
East: Great Eastern Hwy														
4	L2	138	0.0	138	0.0	0.099	9.8	LOS A	1.3	9.0	0.29	0.62	0.29	44.7
5	T1	1557	2.9	1557	2.9	0.474	27.7	LOS C	11.8	84.2	0.74	0.65	0.74	12.7
6	R2	367	0.3	367	0.3	* 1.442	464.7	LOS F	14.2	100.0	1.00	1.91	3.18	0.9
6u	U	16	0.0	16	0.0	1.442	466.4	LOS F	14.2	100.0	1.00	1.91	3.18	0.9
Approach		2078	2.2	2078	2.2	1.442	107.1	LOS F	14.2	100.0	0.76	0.88	1.16	4.5
North: Resolution Dr														
7	L2	333	1.5	276	1.8	0.513	37.2	LOS D	8.4	59.7	0.83	0.81	0.83	11.3
8	T1	182	2.7	168	2.4	* 0.838	75.6	LOS E	4.8	33.6	1.00	0.86	1.19	17.8
9	R2	105	7.6	83	7.7	0.729	80.1	LOS F	3.6	27.2	1.00	0.84	1.15	5.9
Approach		620	2.9	527 N1	2.9	0.838	56.2	LOS E	8.4	59.7	0.91	0.83	1.00	13.3
West: Great Eastern Hwy														
10	L2	39	0.0	39	0.0	0.083	29.2	LOS C	1.4	12.3	0.60	0.63	0.60	17.3
11	T1	2454	2.7	2453	2.7	* 0.945	51.0	LOS D	22.3	160.0	0.98	1.03	1.15	10.7
12	R2	191	1.6	191	1.6	0.777	71.8	LOS E	8.6	60.3	1.00	0.88	1.12	18.8
12u	U	11	0.0	11	0.0	0.777	73.4	LOS E	8.6	60.3	1.00	0.88	1.12	8.0
Approach		2695	2.6	2694 N1	2.6	0.945	52.2	LOS D	22.3	160.0	0.97	1.02	1.14	11.6
All Vehicles		5860	2.4	5766 N1	2.5	1.442	73.4	LOS E	22.3	160.0	0.89	0.93	1.12	8.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	221	0.5	180	0.5	0.743	9.3	LOS A	3.3	23.3	0.83	1.01	1.12	27.0
6a	R1	55	0.0	47	0.0	0.743	14.5	LOS B	3.3	23.3	0.83	1.01	1.12	38.2
6	R2	556	3.1	477	3.1	0.743	15.9	LOS B	3.3	23.3	0.83	1.01	1.12	27.0
Approach		832	2.2	703 [N1]	2.2	0.743	14.1	LOS B	3.3	23.3	0.83	1.01	1.12	27.9
North: Grandstand Rd														
7	L2	253	2.0	253	2.0	0.247	3.9	LOS A	0.6	4.0	0.31	0.50	0.31	34.0
9a	R1	409	0.2	409	0.2	0.247	8.6	LOS A	0.6	4.0	0.32	0.57	0.32	31.1
9b	R3	8	0.0	8	0.0	0.247	11.1	LOS B	0.6	3.9	0.32	0.59	0.32	46.8
9u	U	4	0.0	4	0.0	0.247	12.4	LOS B	0.6	3.9	0.32	0.59	0.32	30.5
Approach		674	0.9	674	0.9	0.247	6.9	LOS A	0.6	4.0	0.32	0.54	0.32	32.3
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.252	9.8	LOS A	0.5	3.9	0.88	0.94	0.88	28.7
27a	L1	32	3.1	32	3.1	0.252	9.1	LOS A	0.5	3.9	0.88	0.94	0.88	28.7
29	R2	47	2.1	47	2.1	0.252	15.1	LOS B	0.5	3.9	0.88	0.94	0.88	28.7
Approach		93	2.2	93	2.2	0.252	12.2	LOS B	0.5	3.9	0.88	0.94	0.88	28.7
SouthWest: Stoneham St														
30	L2	62	0.0	56	0.0	0.784	11.0	LOS B	4.6	32.7	0.98	1.06	1.36	35.8
30a	L1	1519	1.0	1341	1.1	0.784	11.2	LOS B	4.6	32.7	0.98	1.08	1.38	23.2
32a	R1	53	1.9	51	2.0	0.784	17.0	LOS B	4.3	30.5	0.99	1.11	1.40	22.3
32u	U	5	0.0	4	0.0	0.784	20.7	LOS C	4.3	30.5	0.99	1.11	1.40	22.3
Approach		1639	1.0	1452 [N1]	1.1	0.784	11.4	LOS B	4.6	32.7	0.98	1.08	1.38	23.9
All Vehicles		3238	1.3	2923 [N1]	1.4	0.784	11.0	LOS B	4.6	32.7	0.79	0.93	1.06	27.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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NETWORK SUMMARY

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

Proposed Network
100% of Ascot Kilns, Golden Gateway and Ascot Racecourse development
PLUS Ascot Weekday Event
Network Category: Future Conditions 2

Network Performance - Hourly Values						
Performance Measure	**Vehicles**		**Per Unit Distance**		**Persons**	
Network Level of Service (LOS)	LOS F					
Speed Efficiency	0.18					
Travel Time Index	0.90					
Congestion Coefficient	5.53					
Travel Speed (Average)	10.8	km/h			1.9	km/h
Travel Distance (Total)	13387.1	veh-km/h			24751.5	pers-km/h
Travel Time (Total)	1241.6	veh-h/h			12827.9	pers-h/h
Desired Speed (Program)	59.7	km/h				
Demand Flows (Total for all Sites)	62890	veh/h			171847	pers/h
Arrival Flows (Total for all Sites)	58430	veh/h			148809	pers/h
Demand Flows (Entry Total)	9453	veh/h				
Midblock Inflows (Total)	456	veh/h				
Midblock Outflows (Total)	-253	veh/h				
Percent Heavy Vehicles (Demand)	2.1	%				
Percent Heavy Vehicles (Arrival)	2.3	%				
Degree of Saturation	5.264					
Control Delay (Total)	1001.38	veh-h/h			12266.10	pers-h/h
Control Delay (Average)	61.7	sec			296.7	sec
Control Delay (Worst Lane)	3874.2	sec				
Control Delay (Worst Movement)	3907.8	sec			3907.8	sec
Geometric Delay (Average)	0.9	sec				
Stop-Line Delay (Average)	60.8	sec				
Ave. Queue Storage Ratio (Worst Lane)	91.45					
Total Effective Stops	26132	veh/h			360279	pers/h
Effective Stop Rate	0.45		1.95	per km	2.42	
Proportion Queued	0.28				0.43	
Performance Index	3244.5				3244.5	
Cost (Total)	358181.80	$/h	26.76	$/km	358181.80	$/h
Fuel Consumption (Total)	2720.9	L/h	203.2	mL/km		
Fuel Economy	20.3	L/100km				
Carbon Dioxide (Total)	6415.3	kg/h	479.2	g/km		
Hydrocarbons (Total)	0.708	kg/h	0.053	g/km		
Carbon Monoxide (Total)	5.649	kg/h	0.422	g/km		
NOx (Total)	5.577	kg/h	0.417	g/km		

Network Model Variability Index (Iterations 3 to N): 31.4 %
Number of Iterations: 10 (Maximum: 10)
Largest change in Lane Degrees of Saturation or Queue Storage Ratios for the last three Network Iterations: 8.3% 5.9% 4.5%
Network Level of Service (LOS) Method: SIDRA Speed Efficiency.
Software Setup used: Standard Left.

Network Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total for all Sites)	30,187,200	veh/y	82,486,660	pers/y
Delay	480,662	veh-h/y	5,887,729	pers-h/y
Effective Stops	12,543,320	veh/y	172,933,700	pers/y
Travel Distance	6,425,829	veh-km/y	11,880,740	pers-km/y
Travel Time	595,962	veh-h/y	6,157,413	pers-h/y
Cost	171,927,200	$/y	171,927,200	$/y

Fuel Consumption	1,306,047	L/y
Carbon Dioxide	3,079,337	kg/y
Hydrocarbons	340	kg/y
Carbon Monoxide	2,712	kg/y
NOx	2,677	kg/y

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MOVEMENT SUMMARY

Site: 106 [GEH Stoneham Belgravia PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Belgravia St														
1	L2	221	0.5	221	0.5	0.964	95.6	LOS F	20.1	142.1	1.00	1.11	1.42	9.0
2	T1	480	1.5	480	1.5	* 0.964	90.0	LOS F	20.1	142.1	1.00	1.15	1.45	9.4
3	R2	300	1.0	300	1.0	0.884	74.5	LOS E	13.5	96.2	1.00	0.97	1.25	10.9
Approach		1001	1.1	1001	1.1	0.964	86.6	LOS F	20.1	142.1	1.00	1.08	1.38	9.7
East: Great Eastern Hwy														
4	L2	128	3.1	119	3.4	0.229	34.8	LOS C	4.0	33.0	0.70	0.72	0.70	22.2
5	T1	1656	2.8	1621	2.7	0.693	37.1	LOS D	11.3	80.0	0.89	0.80	0.89	8.6
6	R2	82	2.4	82	2.4	0.578	72.7	LOS E	3.9	28.2	1.00	0.78	1.00	4.9
6u	U	13	0.0	13	0.0	0.578	74.4	LOS E	3.9	28.2	1.00	0.78	1.00	4.9
Approach		1879	2.8	1836 N1	2.7	0.693	38.8	LOS D	11.3	80.0	0.89	0.79	0.89	9.3
North: Stoneham St														
7	L2	10	0.0	9	0.0	0.046	66.9	LOS E	0.3	2.3	0.93	0.67	0.93	7.4
8	T1	284	0.0	236	0.0	1.199	252.8	LOS F	20.0	140.0	1.00	1.59	2.41	5.3
9	R2	625	1.0	481	1.2	* 1.303	344.6	LOS F	19.7	140.0	1.00	1.70	2.76	1.6
Approach		919	0.7	725 N1	0.8	1.303	311.5	LOS F	20.0	140.0	1.00	1.65	2.62	2.7
West: Great Eastern Hwy														
10	L2	920	1.2	920	1.2	0.778	15.9	LOS B	14.1	100.0	0.68	0.79	0.68	19.0
11	T1	2288	3.1	2288	3.1	* 0.901	48.0	LOS D	13.9	100.0	0.94	0.94	1.07	8.0
12	R2	92	0.0	92	0.0	* 0.608	73.4	LOS E	4.3	30.0	1.00	0.79	1.02	13.9
12u	U	11	0.0	11	0.0	0.608	75.1	LOS E	4.3	30.0	1.00	0.79	1.02	5.5
Approach		3311	2.4	3311	2.4	0.901	39.9	LOS D	14.1	100.0	0.87	0.90	0.96	9.8
All Vehicles		7110	2.1	6873 N1	2.2	1.303	75.0	LOS E	20.1	142.1	0.91	0.98	1.18	6.8

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 96 [GEH Resolution Hardey PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hardey Rd														
1	L2	125	0.0	125	0.0	0.560	67.2	LOS E	5.7	39.7	0.98	0.80	0.98	15.6
2	T1	212	2.4	212	2.4	* 0.740	64.9	LOS E	8.1	57.9	1.00	0.86	1.07	16.3
3	R2	161	2.5	161	2.5	0.650	68.5	LOS E	6.5	46.9	1.00	0.82	1.01	15.5
Approach		498	1.8	498	1.8	0.740	66.6	LOS E	8.1	57.9	1.00	0.83	1.03	15.9
East: Great Eastern Hwy														
4	L2	145	0.0	145	0.0	0.105	10.1	LOS B	1.4	9.9	0.30	0.63	0.30	44.4
5	T1	1636	2.9	1636	2.9	0.500	28.1	LOS C	12.6	90.0	0.75	0.66	0.75	12.5
6	R2	583	0.2	583	0.2	* 2.247	1174.9	LOS F	14.3	100.0	1.00	2.66	4.70	0.4
6u	U	17	0.0	17	0.0	2.247	1176.5	LOS F	14.3	100.0	1.00	2.66	4.70	0.4
Approach		2381	2.0	2381	2.0	2.247	316.0	LOS F	14.3	100.0	0.79	1.16	1.72	1.6
North: Resolution Dr														
7	L2	373	1.6	235	2.5	0.444	41.1	LOS D	7.3	52.4	0.85	0.80	0.85	10.4
8	T1	188	2.7	159	1.9	* 0.793	74.2	LOS E	4.5	31.2	1.00	0.83	1.14	18.0
9	R2	106	7.5	60	8.1	0.530	77.2	LOS E	2.5	19.1	1.00	0.76	1.00	6.1
Approach		667	2.8	455 N1	3.1	0.793	57.5	LOS E	7.3	52.4	0.92	0.81	0.97	13.5
West: Great Eastern Hwy														
10	L2	88	0.0	88	0.0	0.141	29.9	LOS C	2.6	20.9	0.62	0.69	0.62	16.5
11	T1	2564	2.7	2563	2.7	* 1.002	78.4	LOS E	22.3	160.0	1.00	1.20	1.35	7.4
12	R2	204	1.5	204	1.5	0.825	74.7	LOS E	9.4	66.2	1.00	0.91	1.18	18.3
12u	U	11	0.0	11	0.0	0.825	76.3	LOS E	9.4	66.2	1.00	0.91	1.18	7.7
Approach		2867	2.5	2866 N1	2.5	1.002	76.7	LOS E	22.3	160.0	0.99	1.16	1.32	8.4
All Vehicles		6413	2.3	6200 N1	2.4	2.247	166.4	LOS F	22.3	160.0	0.90	1.11	1.42	4.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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MOVEMENT SUMMARY

Site: 007 [Stoneham Grandstand Resolution PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Resolution Dr														
4a	L1	453	0.2	281	0.3	0.846	13.6	LOS B	5.1	36.1	0.96	1.20	1.55	23.2
6a	R1	79	0.0	54	0.0	0.846	18.9	LOS B	5.1	36.1	0.96	1.20	1.55	34.3
6	R2	587	3.1	432	3.2	0.846	20.3	LOS C	5.1	36.1	0.96	1.20	1.55	23.2
Approach		1119	1.7	768 N1	1.9	0.846	17.7	LOS B	5.1	36.1	0.96	1.20	1.55	24.2
North: Grandstand Rd														
7	L2	318	2.5	318	2.5	0.301	4.2	LOS A	0.7	5.2	0.40	0.53	0.40	33.4
9a	R1	440	0.2	440	0.2	0.301	9.0	LOS A	0.7	5.2	0.41	0.61	0.41	30.3
9b	R3	9	0.0	9	0.0	0.301	11.5	LOS B	0.7	5.0	0.42	0.63	0.42	46.0
9u	U	4	0.0	4	0.0	0.301	12.8	LOS B	0.7	5.0	0.42	0.63	0.42	29.7
Approach		771	1.2	771	1.2	0.301	7.1	LOS A	0.7	5.2	0.41	0.58	0.41	31.6
NorthWest: Resolution Dr														
27b	L3	14	0.0	14	0.0	0.359	11.3	LOS B	0.8	5.9	0.91	0.98	0.99	27.3
27a	L1	46	2.2	46	2.2	0.359	10.5	LOS B	0.8	5.9	0.91	0.98	0.99	27.3
29	R2	67	1.5	67	1.5	0.359	16.5	LOS B	0.8	5.9	0.91	0.98	0.99	27.3
Approach		127	1.6	127	1.6	0.359	13.8	LOS B	0.8	5.9	0.91	0.98	0.99	27.3
SouthWest: Stoneham St														
30	L2	79	0.0	71	0.0	0.824	11.8	LOS B	5.4	38.7	1.00	1.08	1.43	34.9
30a	L1	1609	1.0	1395	1.1	0.824	12.0	LOS B	5.4	38.7	1.00	1.11	1.45	22.1
32a	R1	90	1.1	88	1.1	0.824	18.0	LOS B	5.1	36.2	1.00	1.14	1.48	21.2
32u	U	6	0.0	5	0.0	0.824	21.6	LOS C	5.1	36.2	1.00	1.14	1.48	21.2
Approach		1784	1.0	1559 N1	1.1	0.824	12.4	LOS B	5.4	38.7	1.00	1.11	1.45	22.9
All Vehicles		3801	1.2	3225 N1	1.5	0.846	12.4	LOS B	5.4	38.7	0.84	1.00	1.21	25.2

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

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Appendix 8 – Forecast Turning Volumes

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

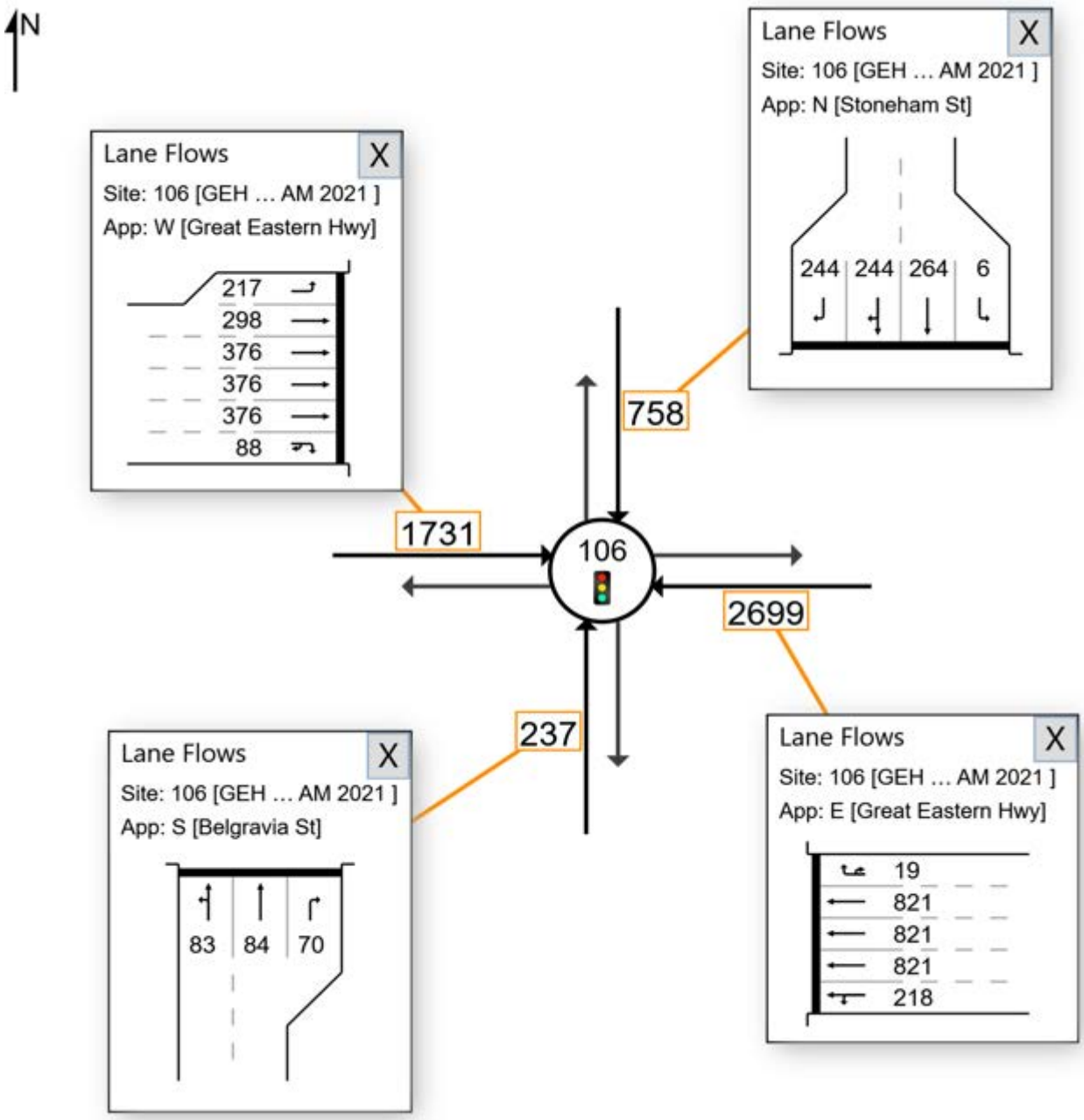
Site: 106 [GEH Stoneham Belgravia AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

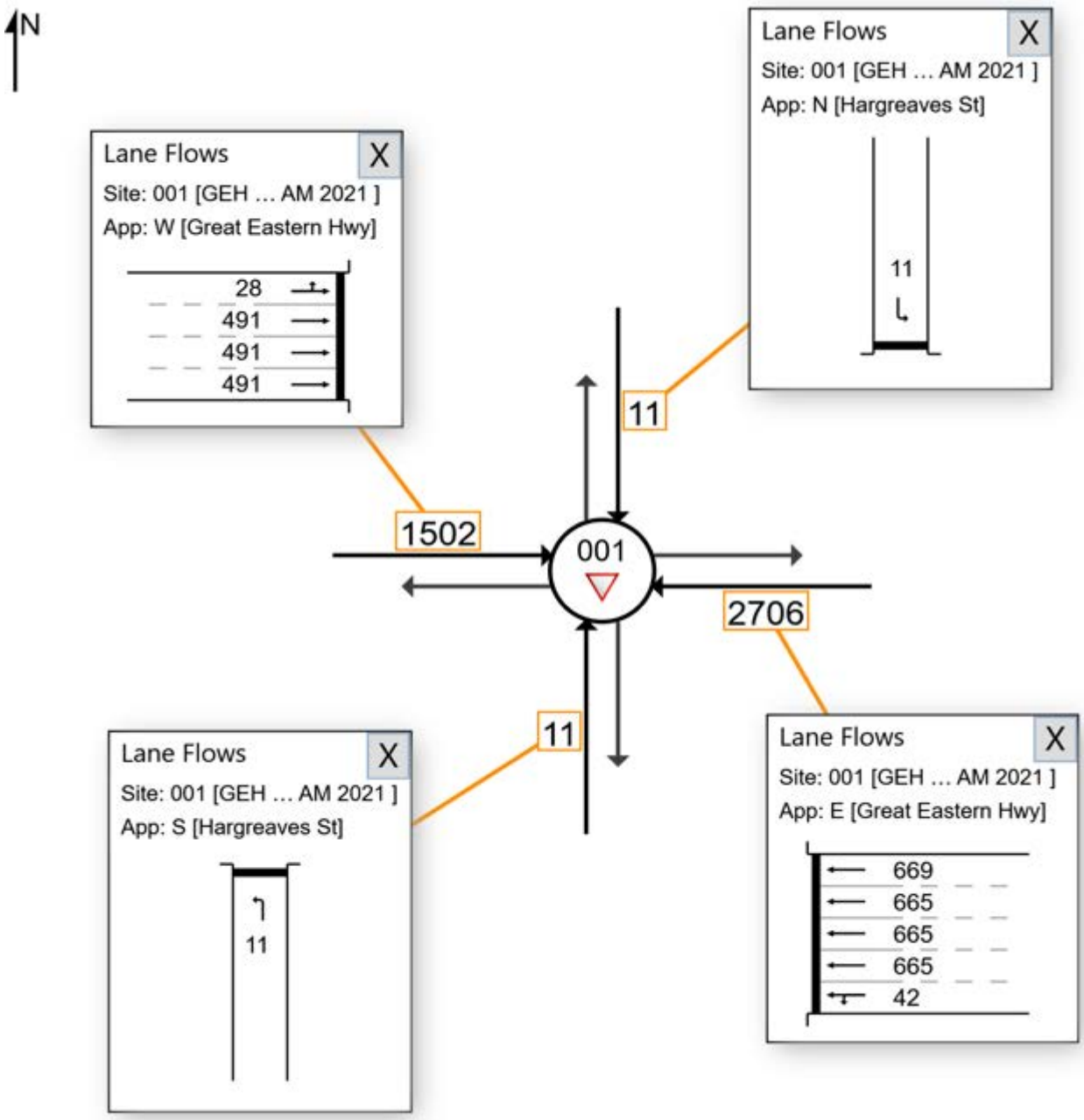
Site: 001 [GEH Hargreaves AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

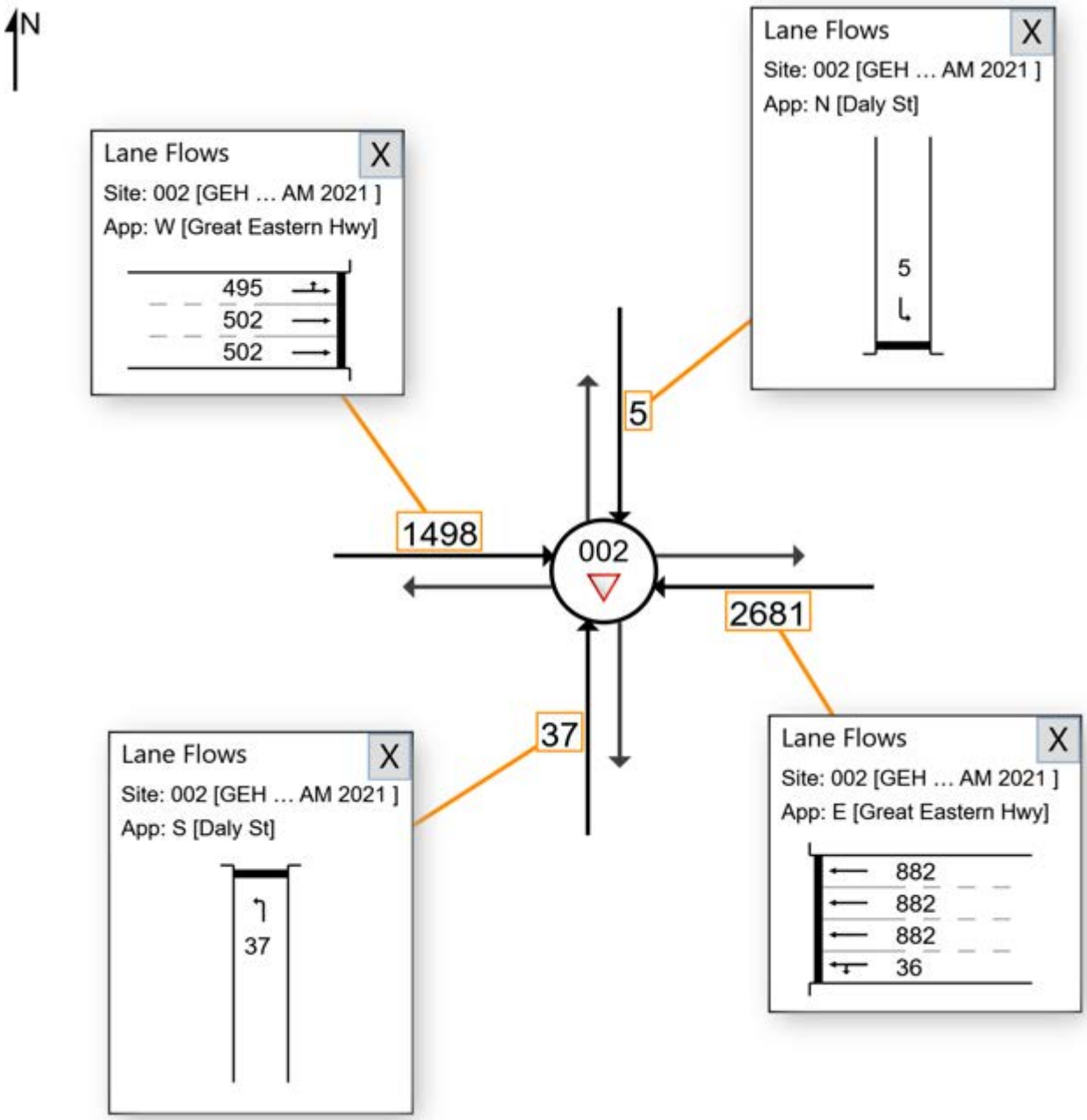
Site: 002 [GEH Daly AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

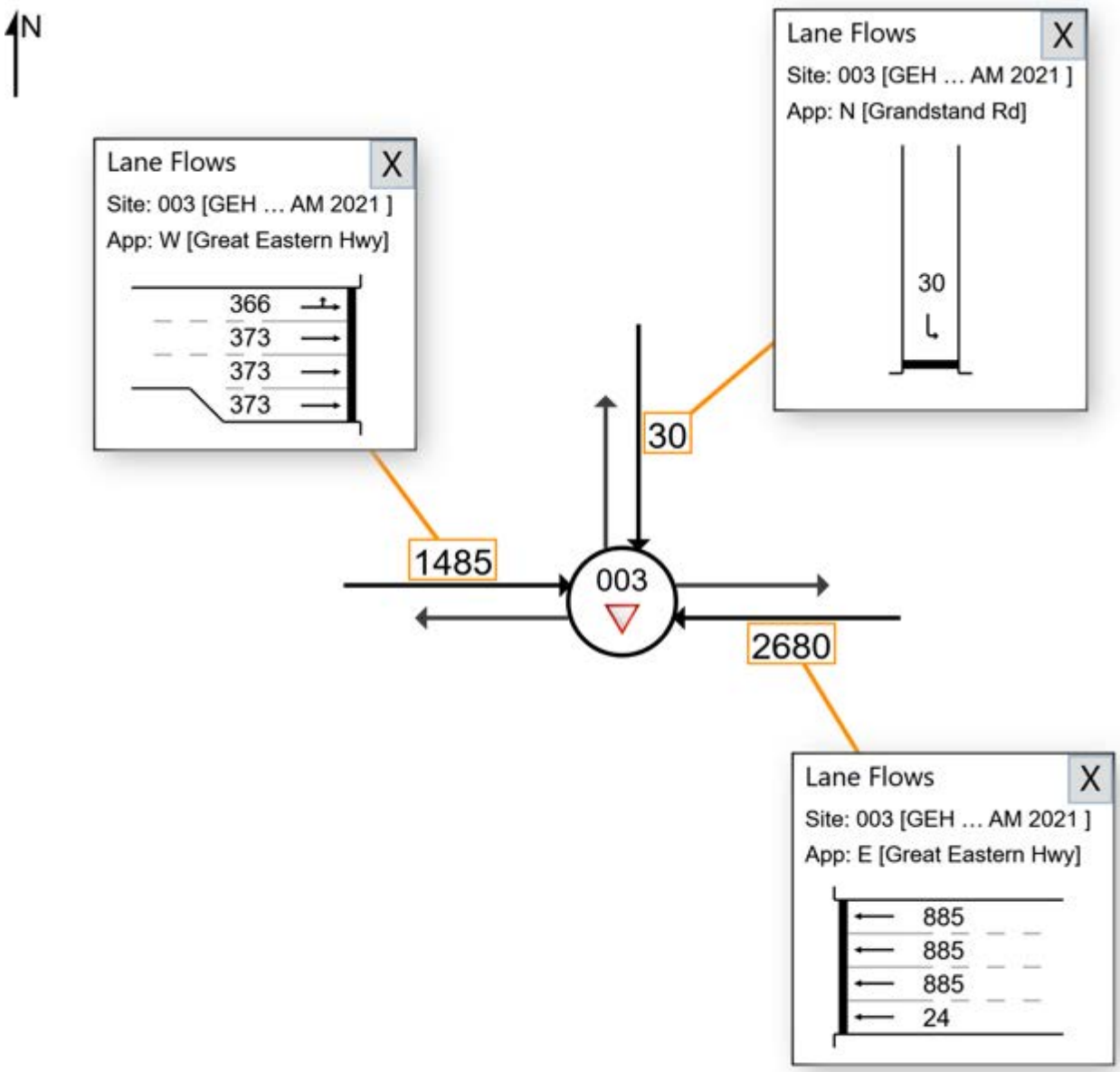
Site: 003 [GEH Grandstand AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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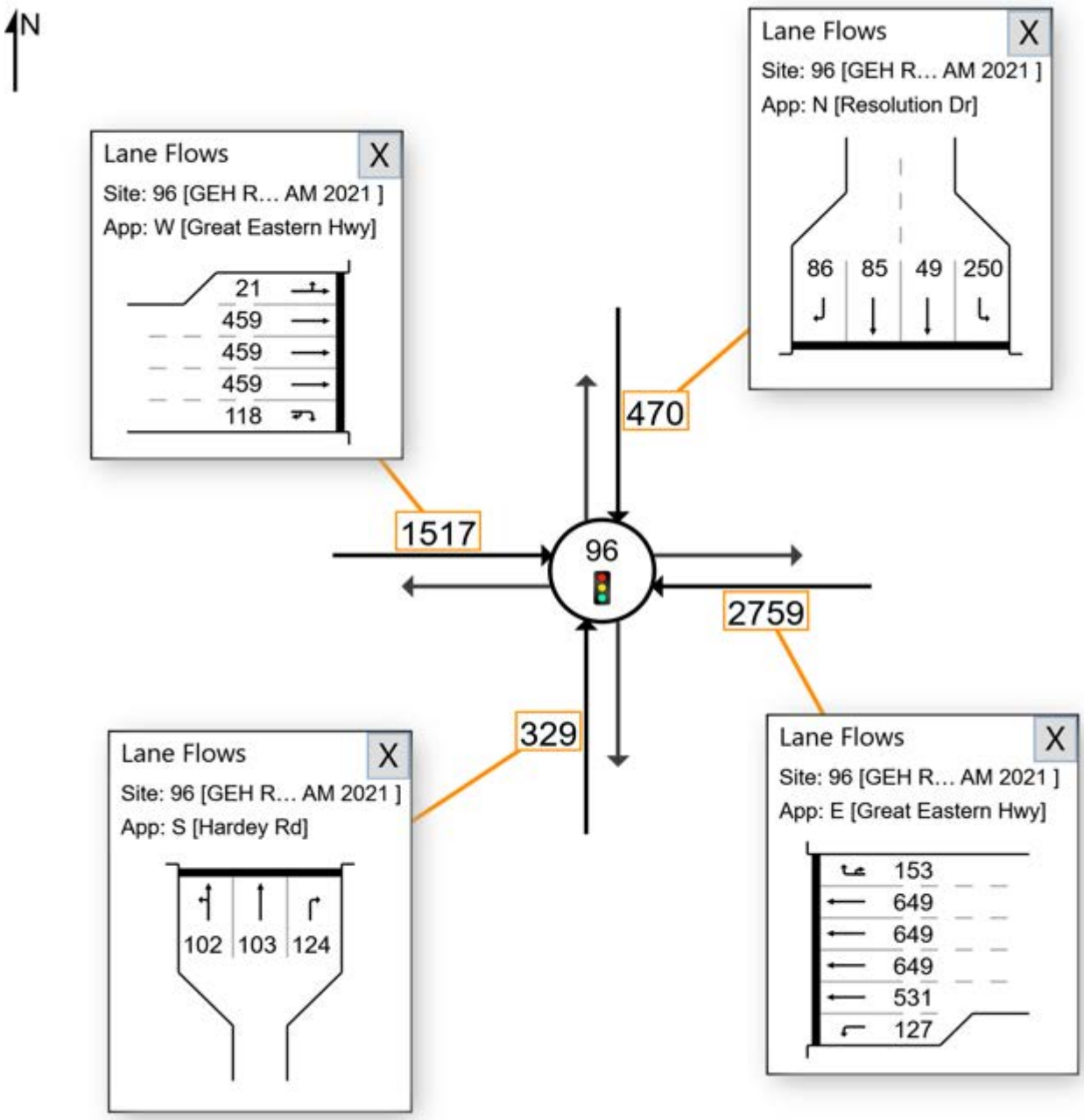


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

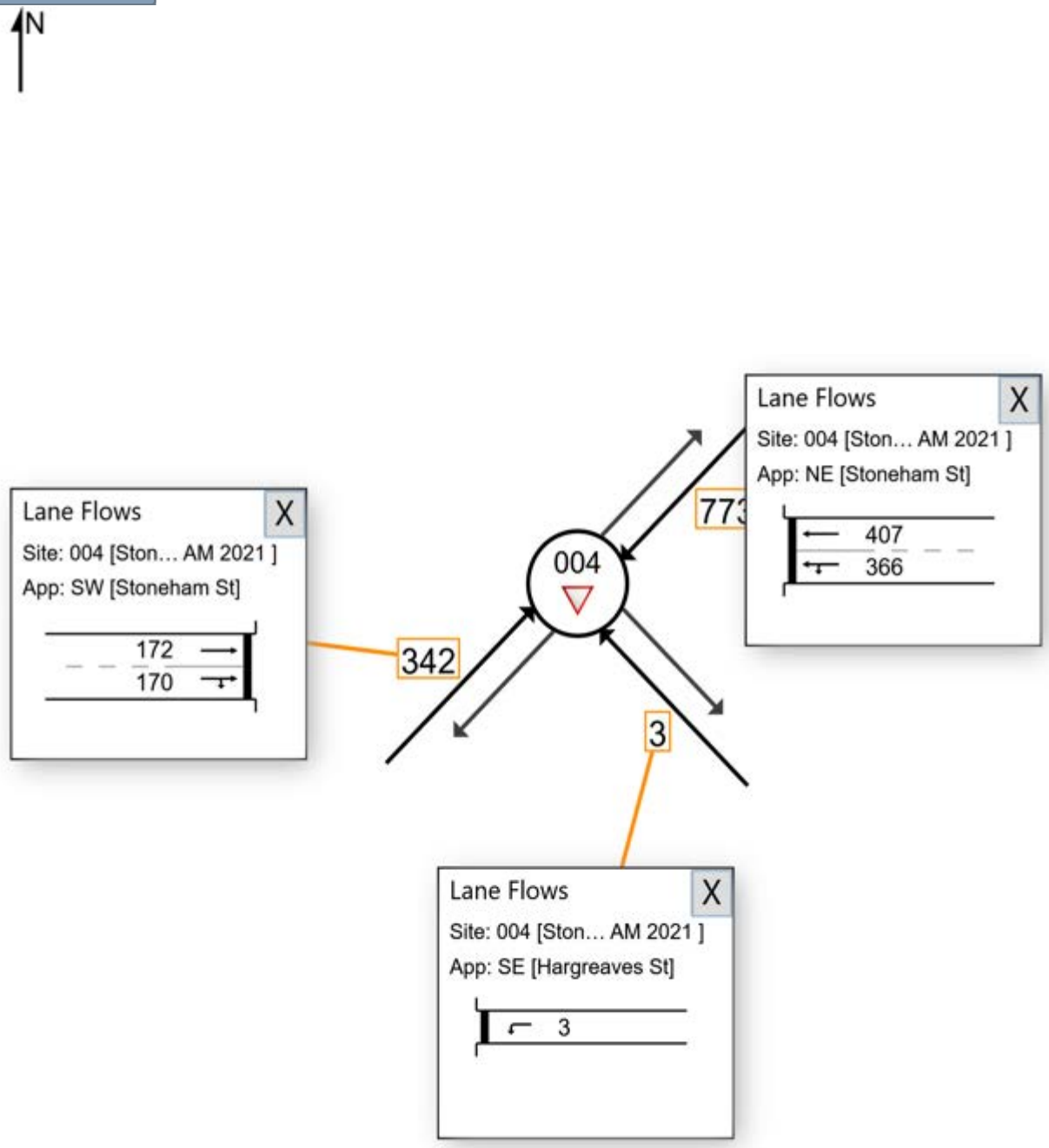
Site: 004 [Stoneham Hargreaves AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

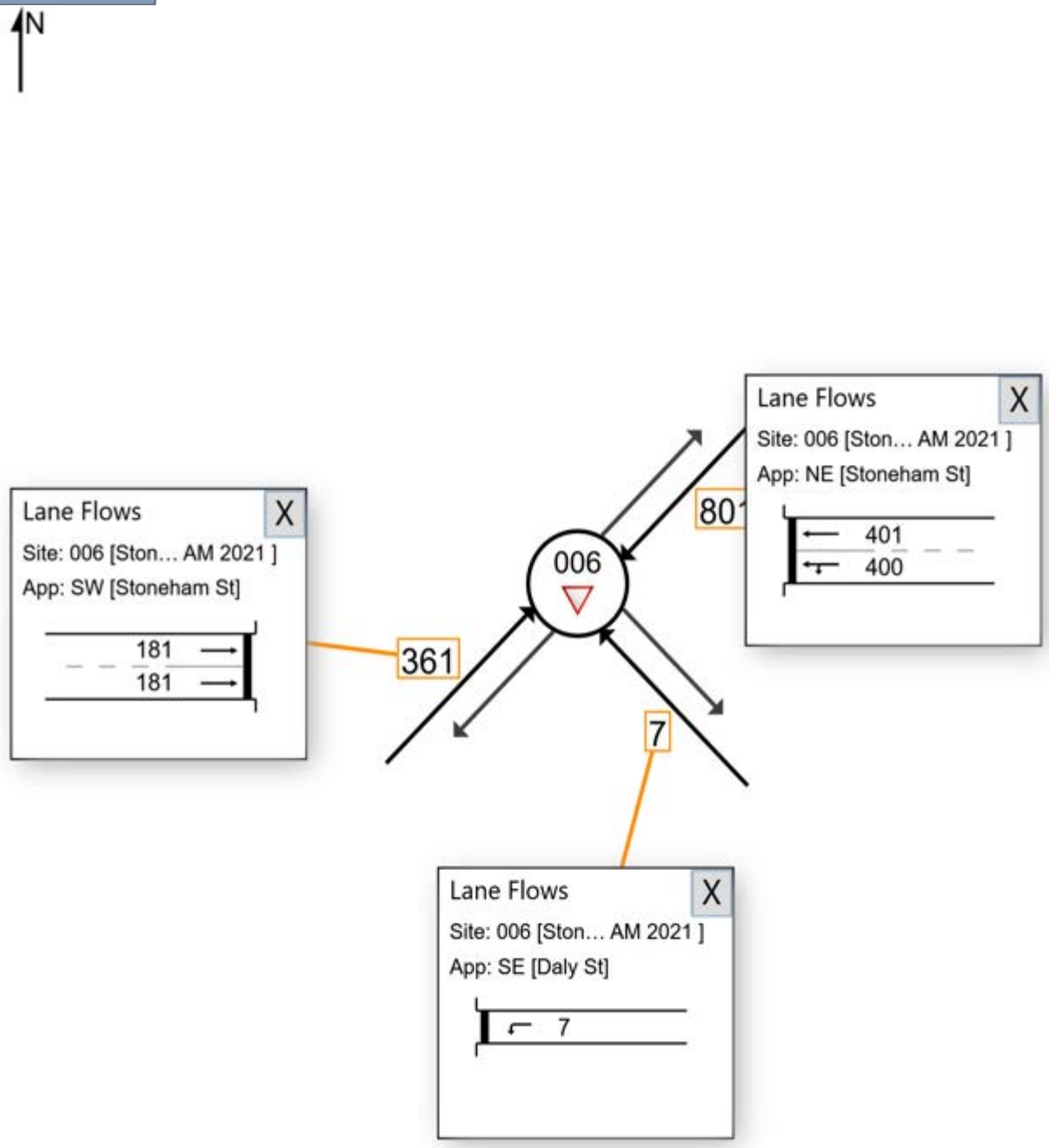
Site: 006 [Stoneham Daly AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

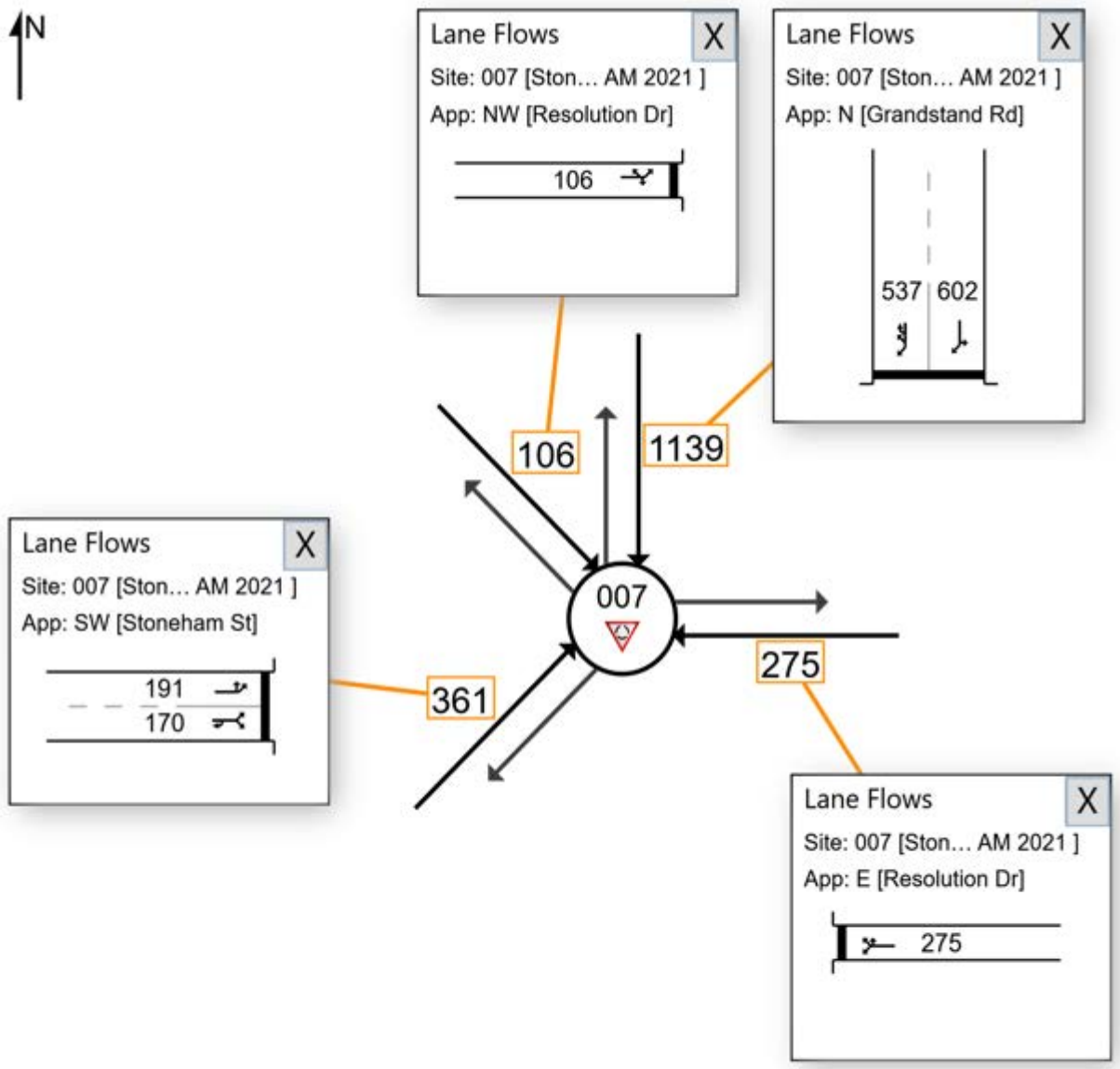
Site: 007 [Stoneham Grandstand Resolution AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 AM Peak
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

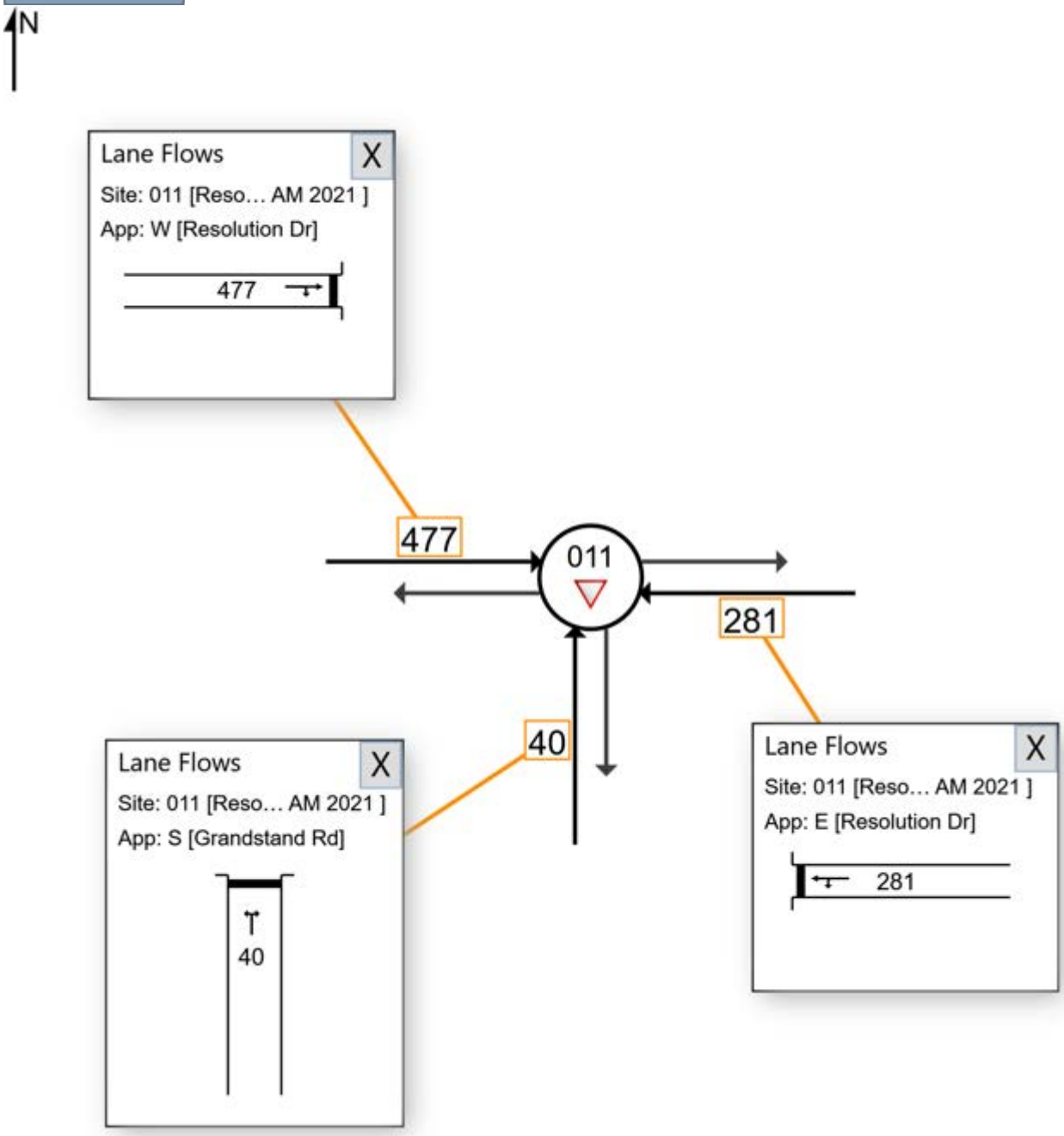
Site: 011 [Resolution Grandstand AM 2021 (Site Folder: 2021 AM Peak)]

Network: N101 [2021 AM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2021 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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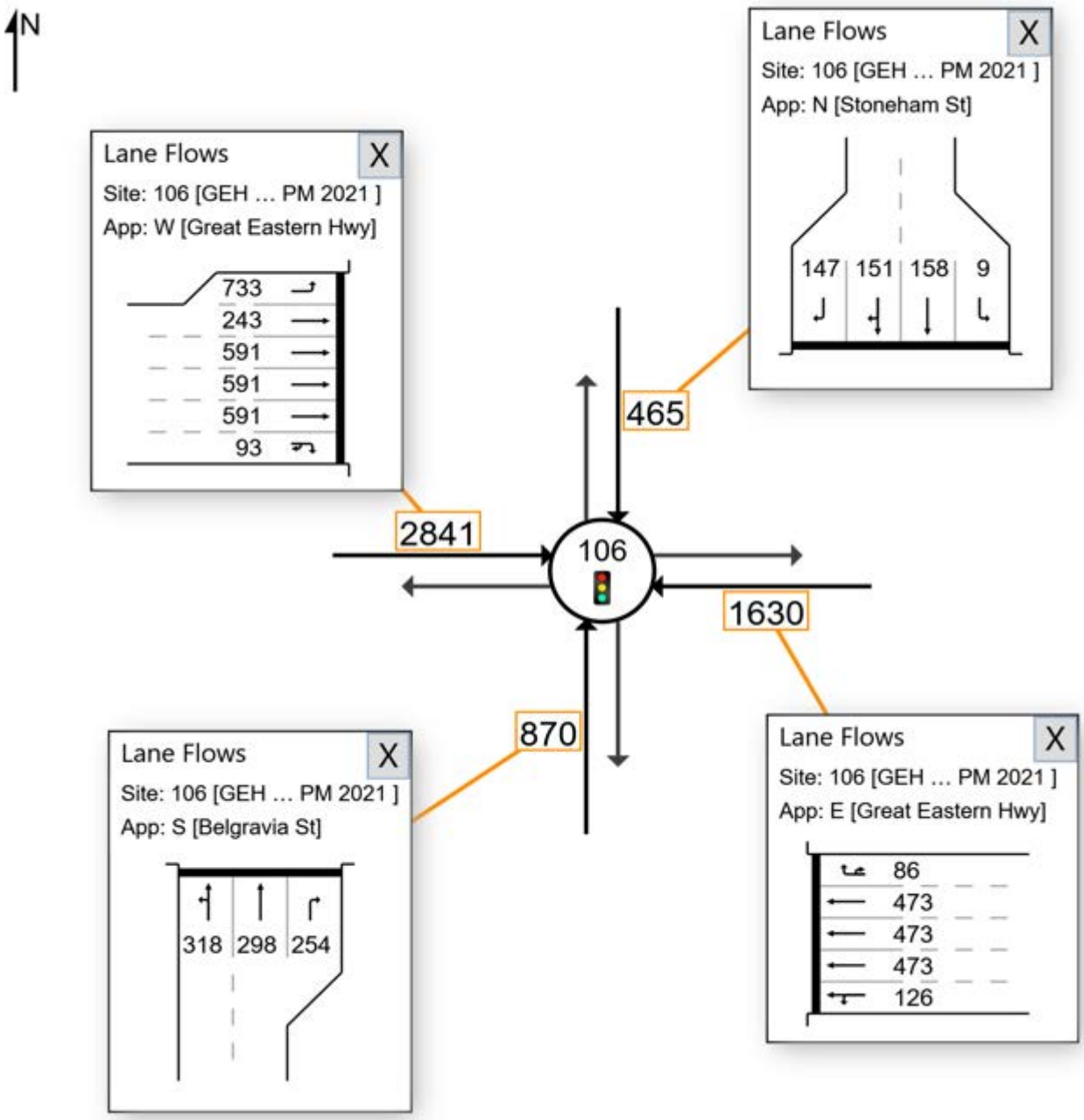


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

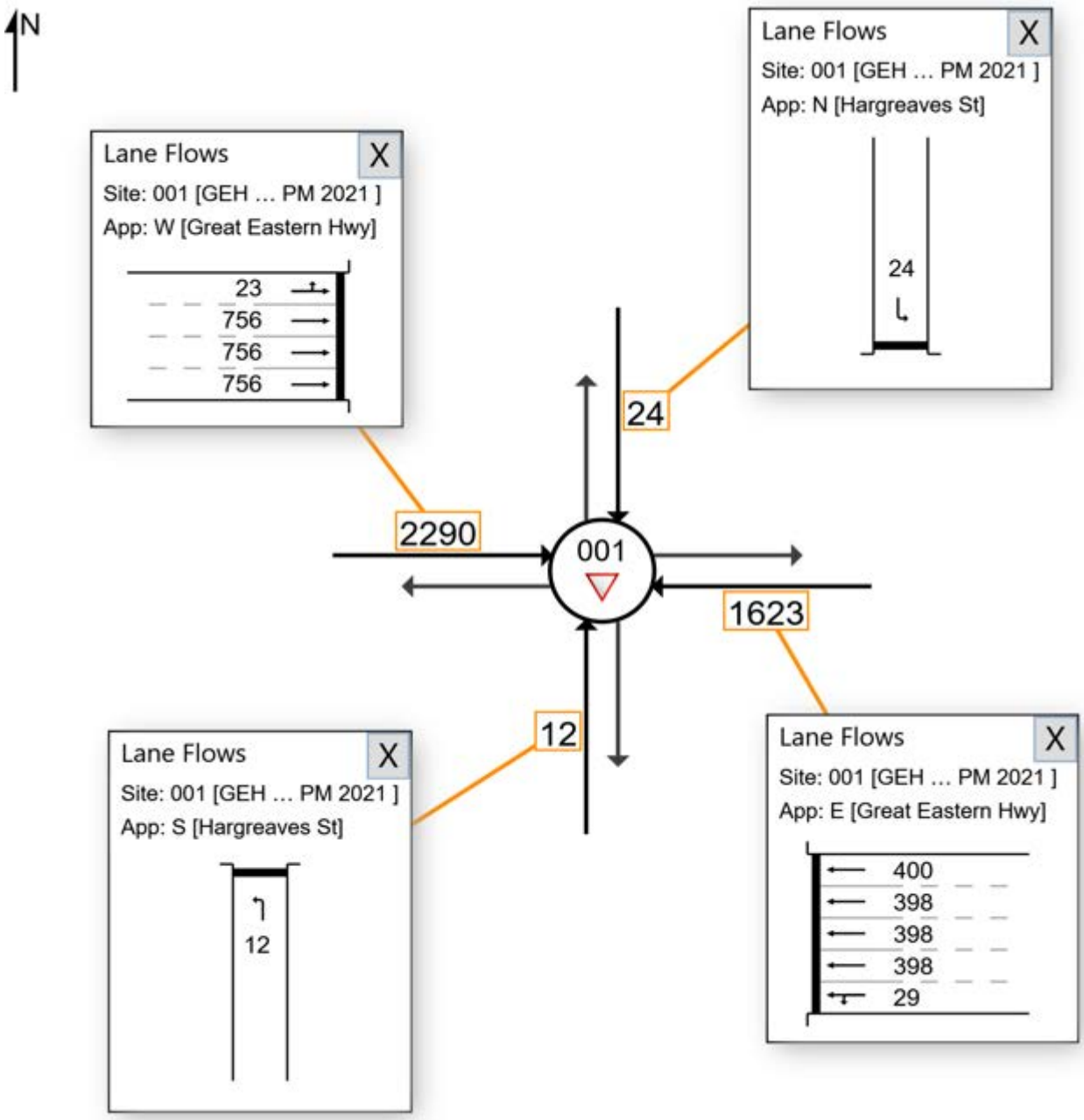
Site: 001 [GEH Hargreaves PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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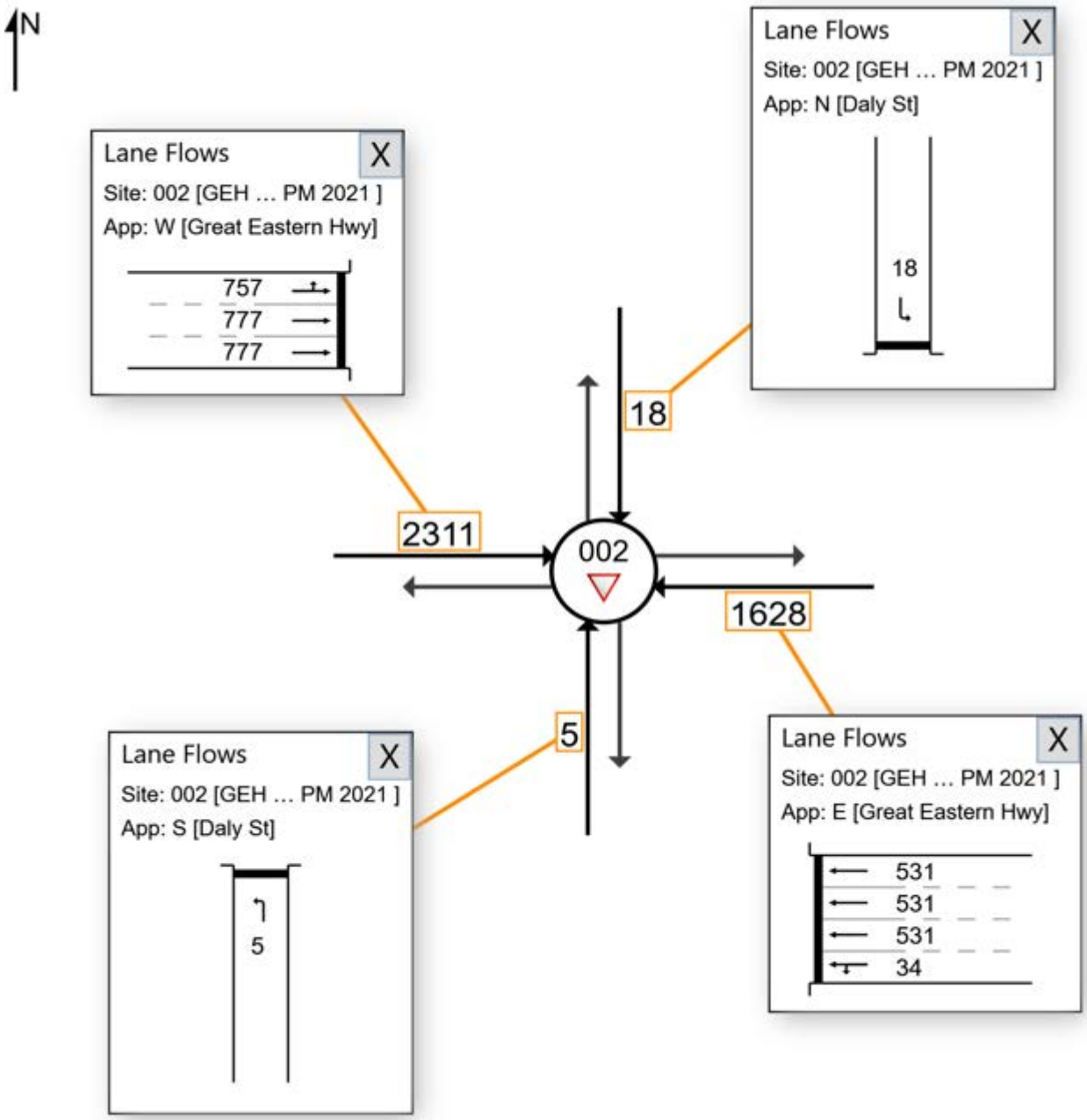


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

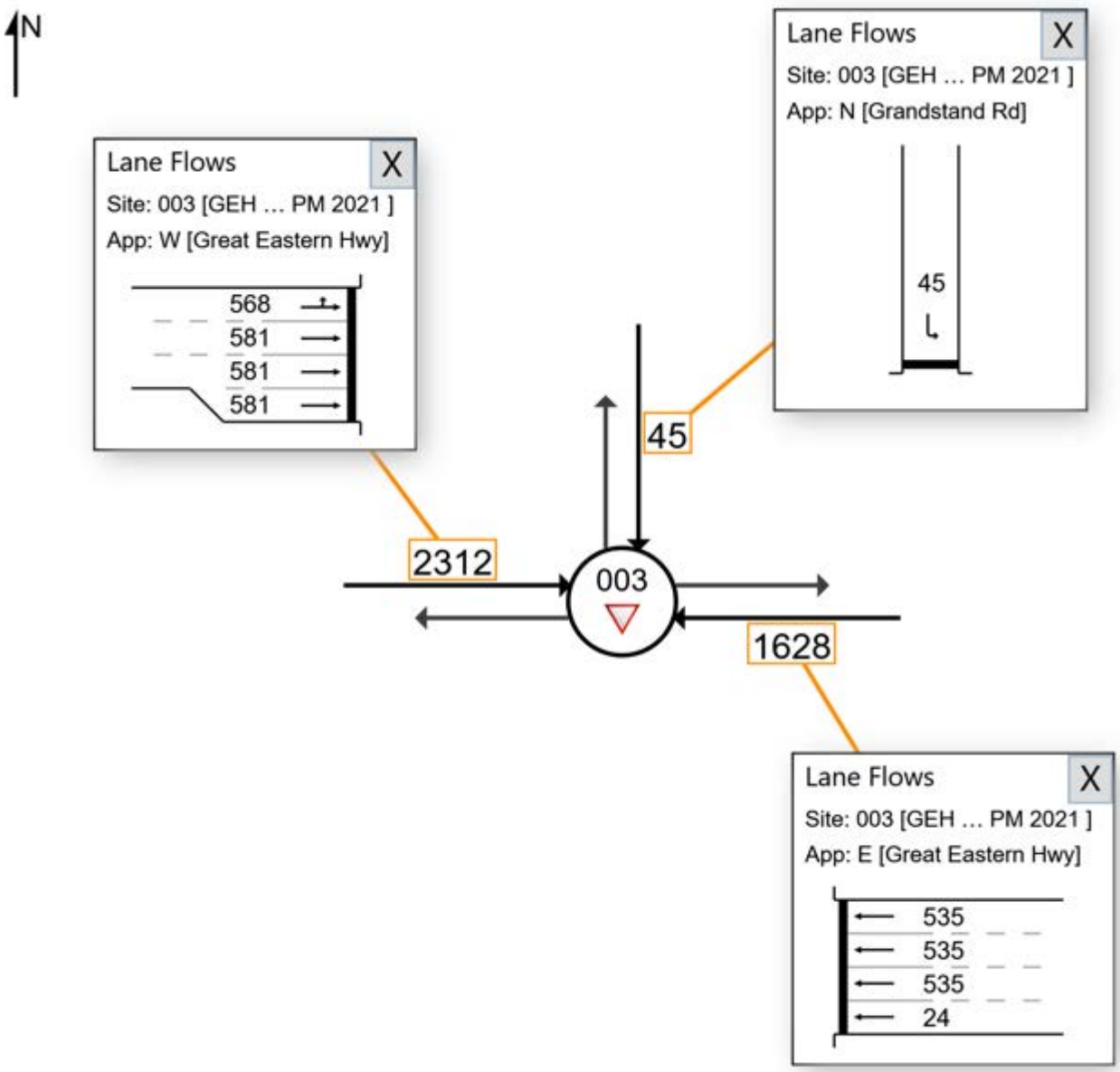
Site: 003 [GEH Grandstand PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

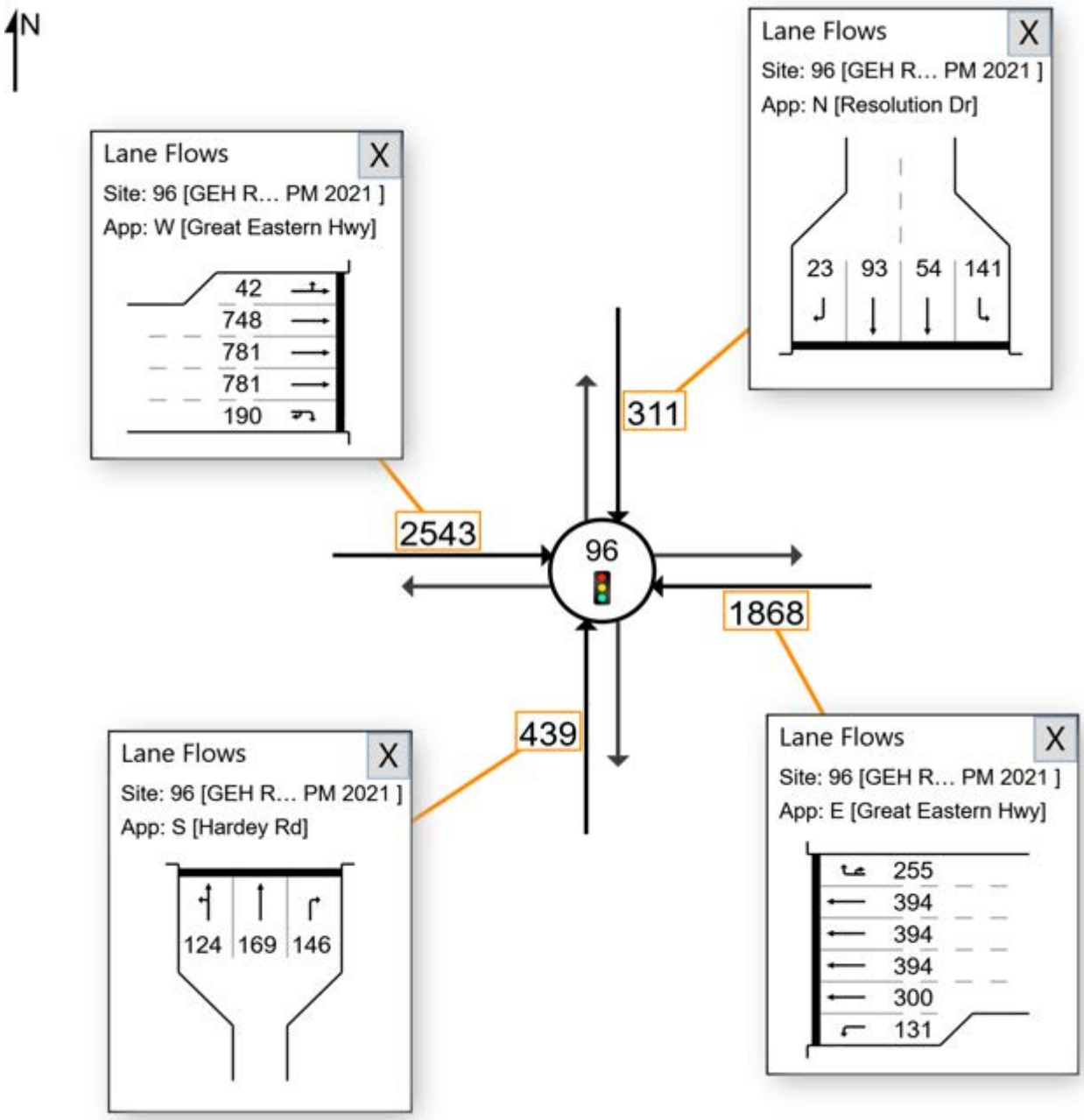
Site: 96 [GEH Resolution Hardey PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

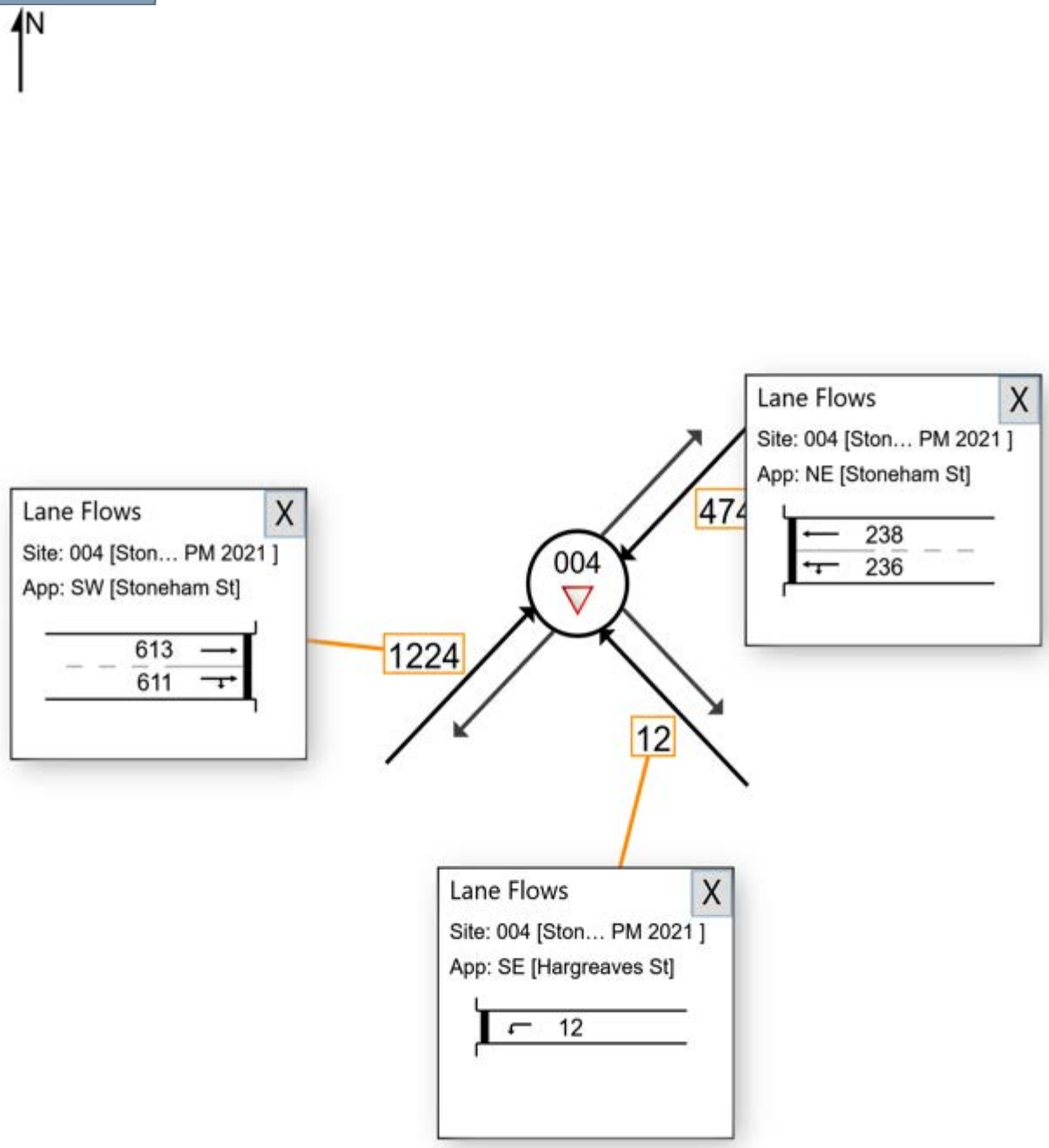
Site: 004 [Stoneham Hargreaves PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

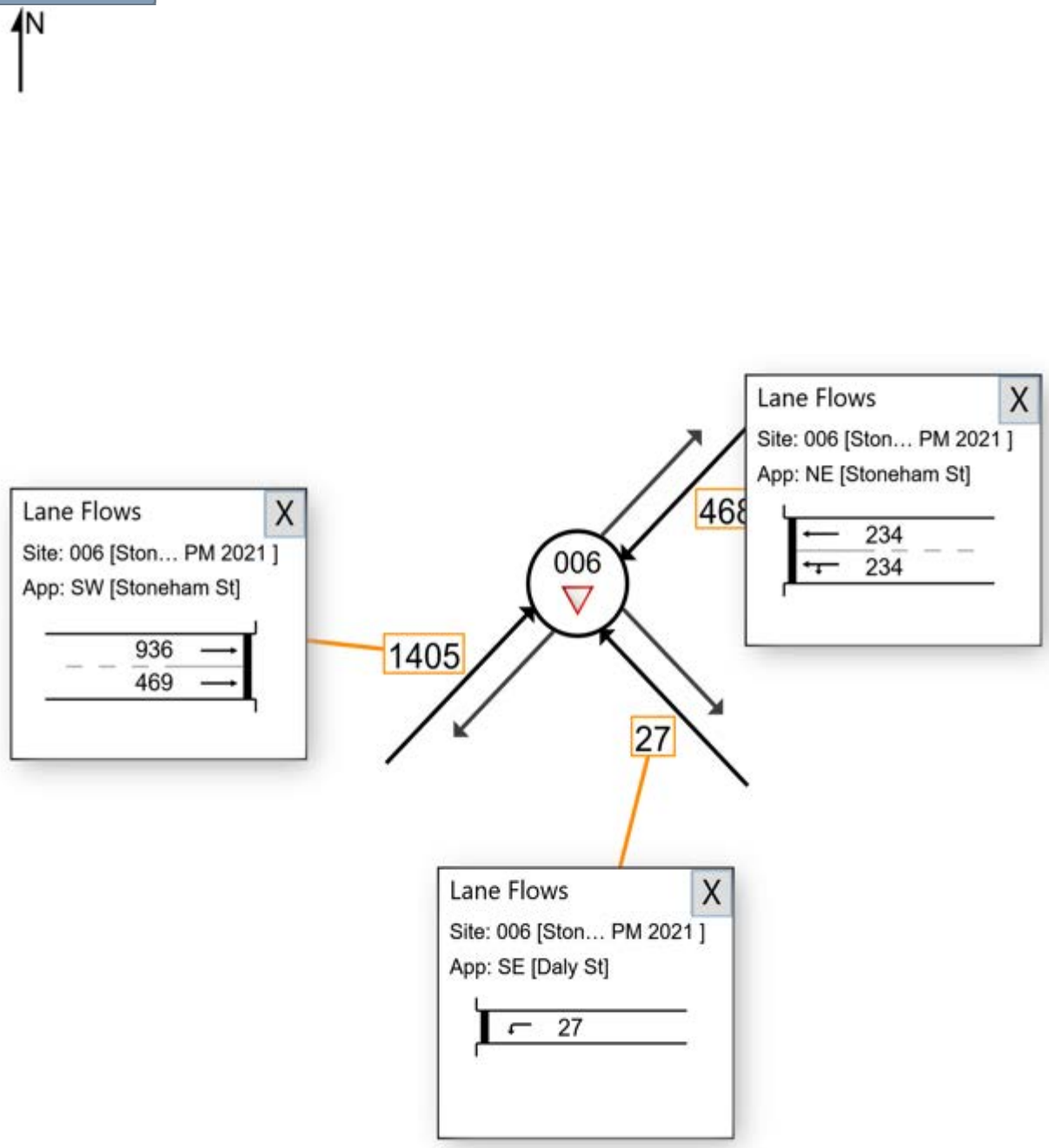
Site: 006 [Stoneham Daly PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

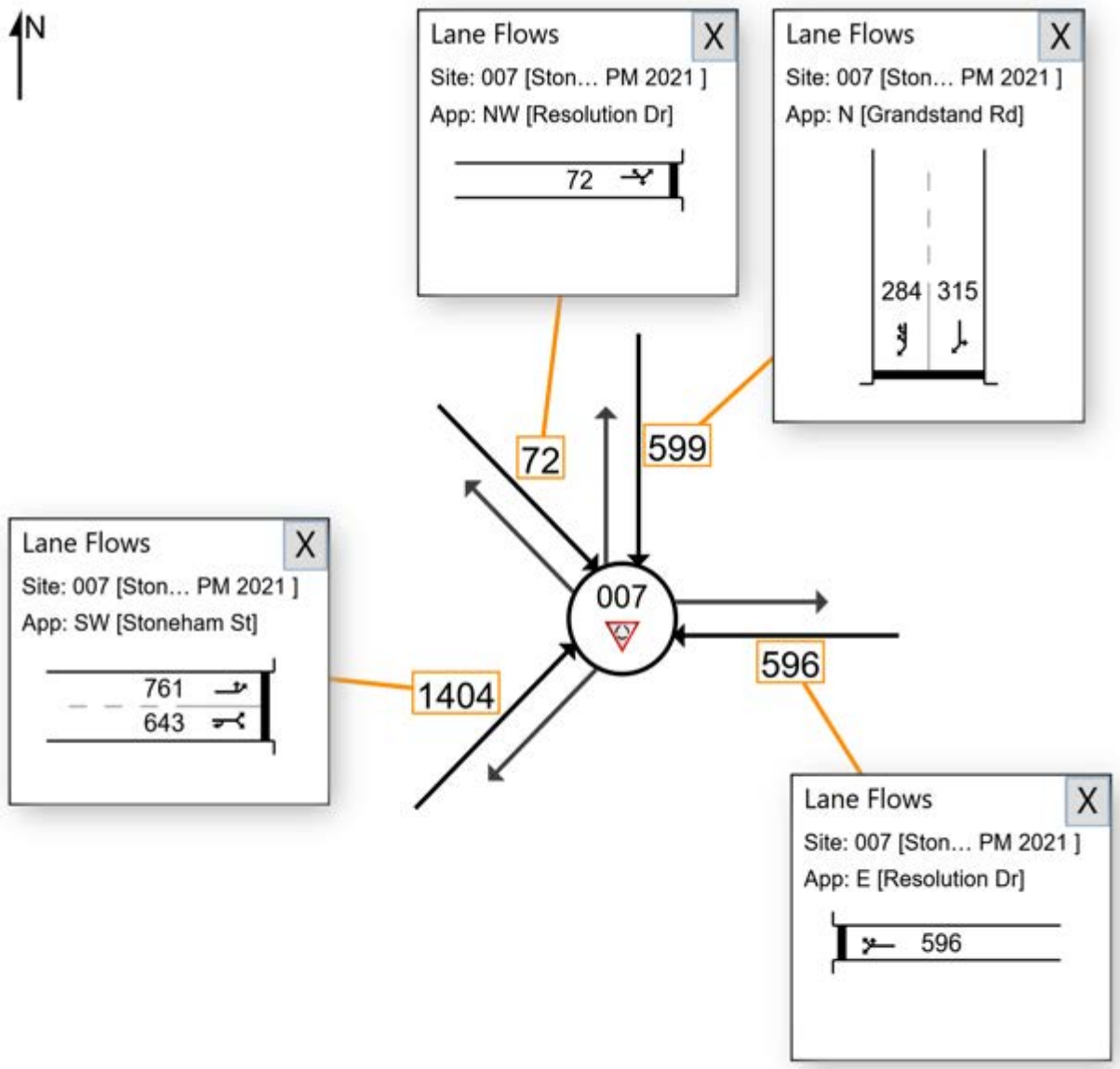
Site: 007 [Stoneham Grandstand Resolution PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

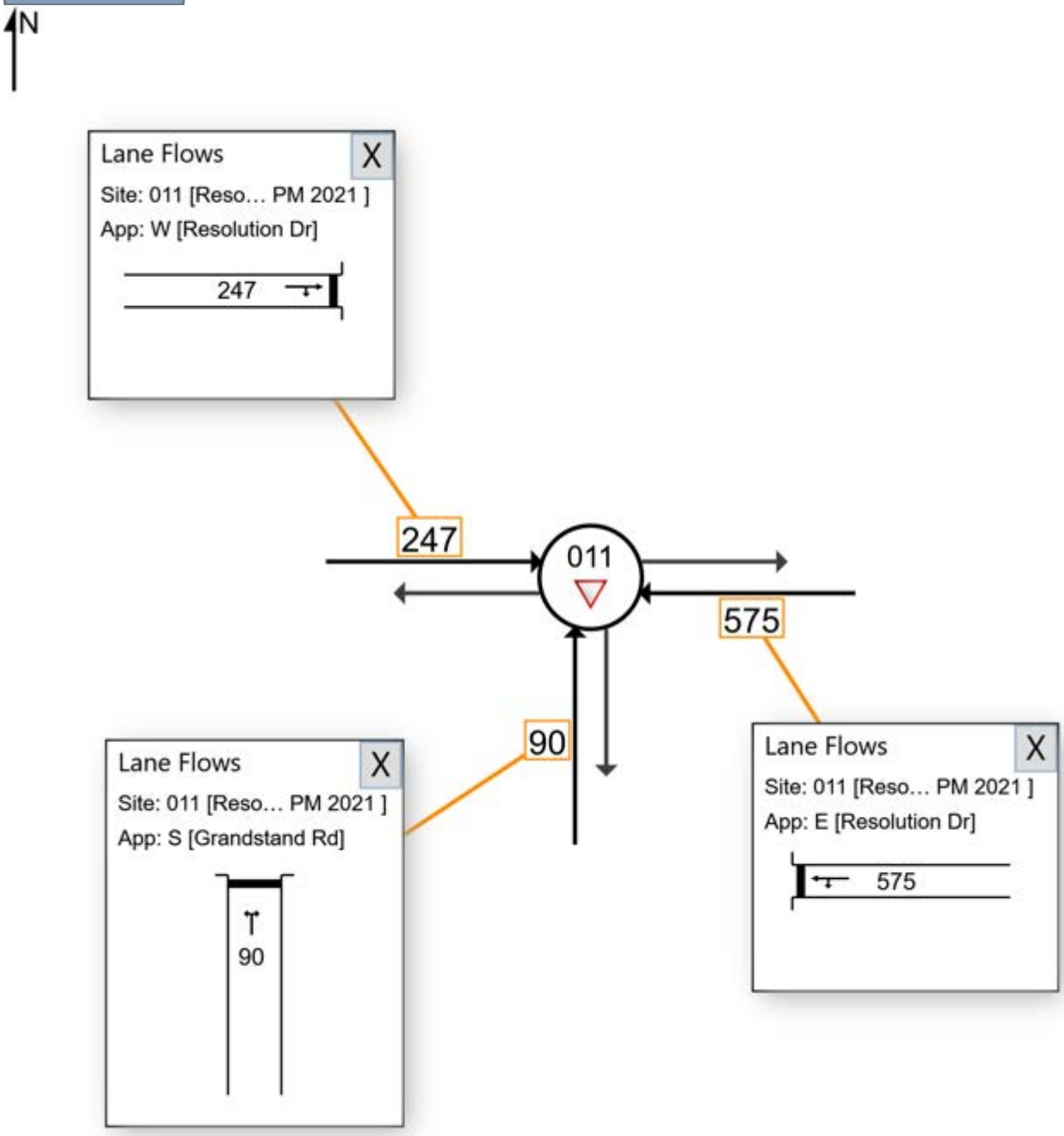
Site: 011 [Resolution Grandstand PM 2021 (Site Folder: 2021 PM Peak)]

Network: N101 [2021 PM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2021 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

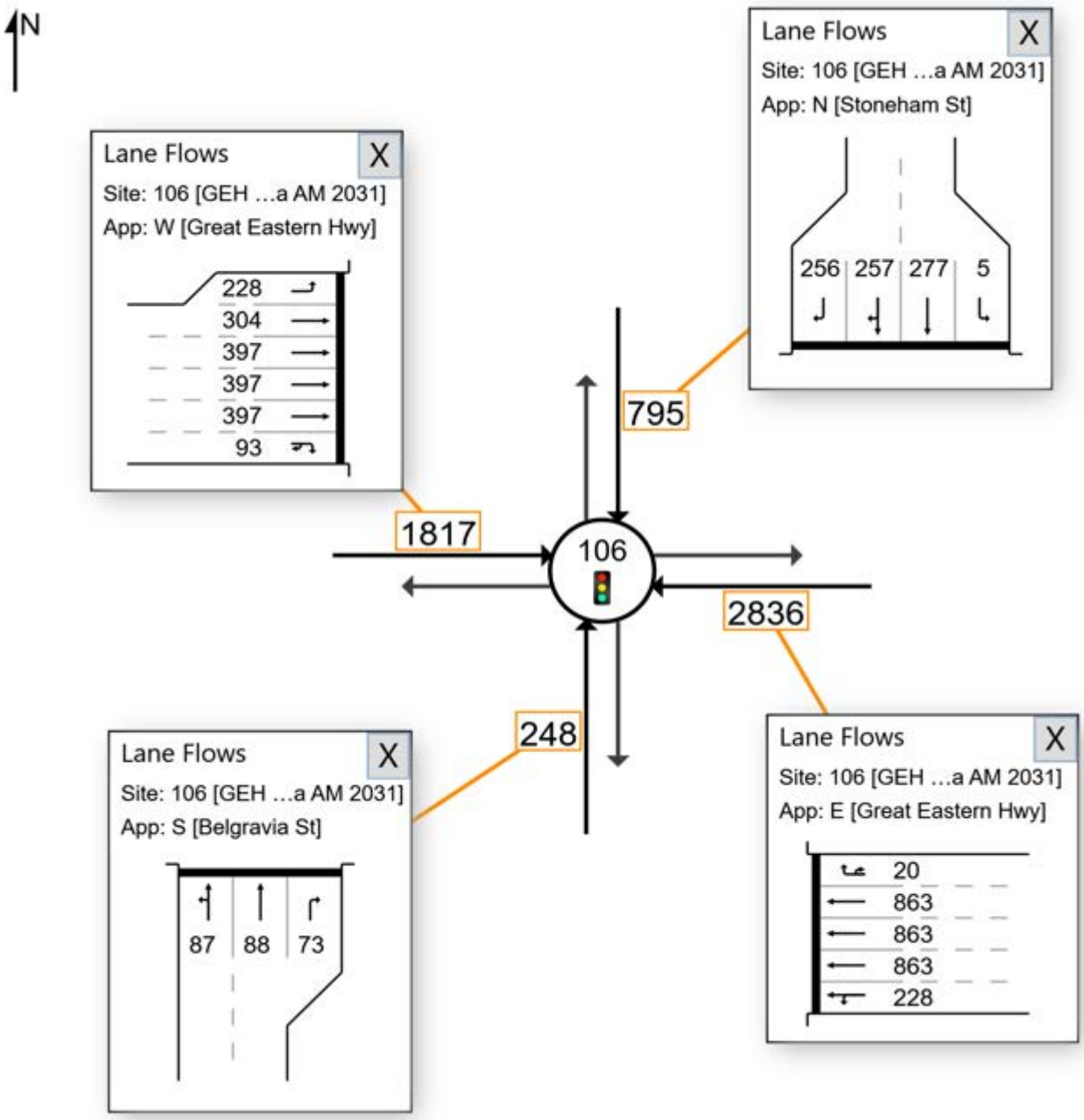
Site: 106 [GEH Stoneham Belgravia AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

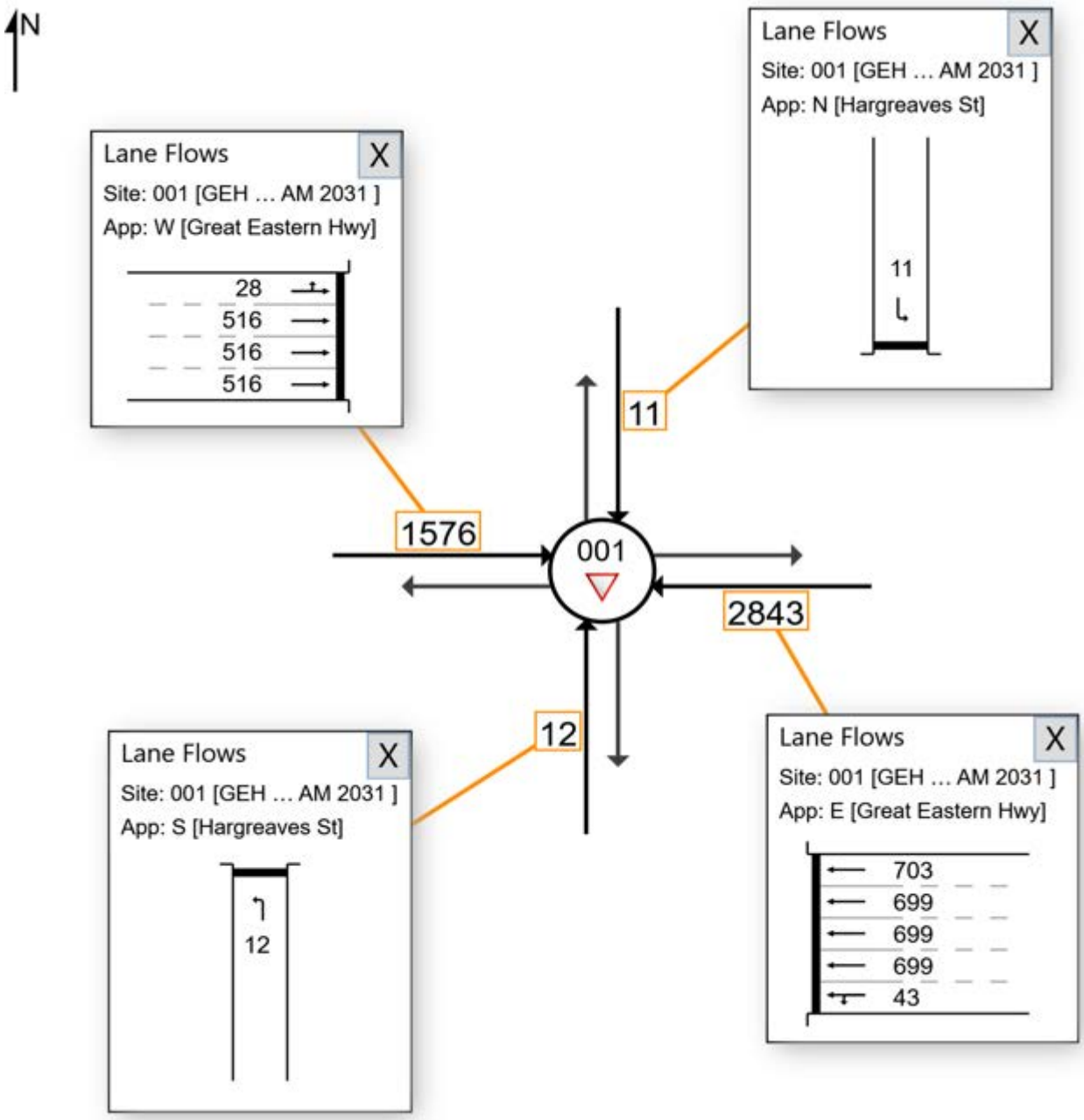
Site: 001 [GEH Hargreaves AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

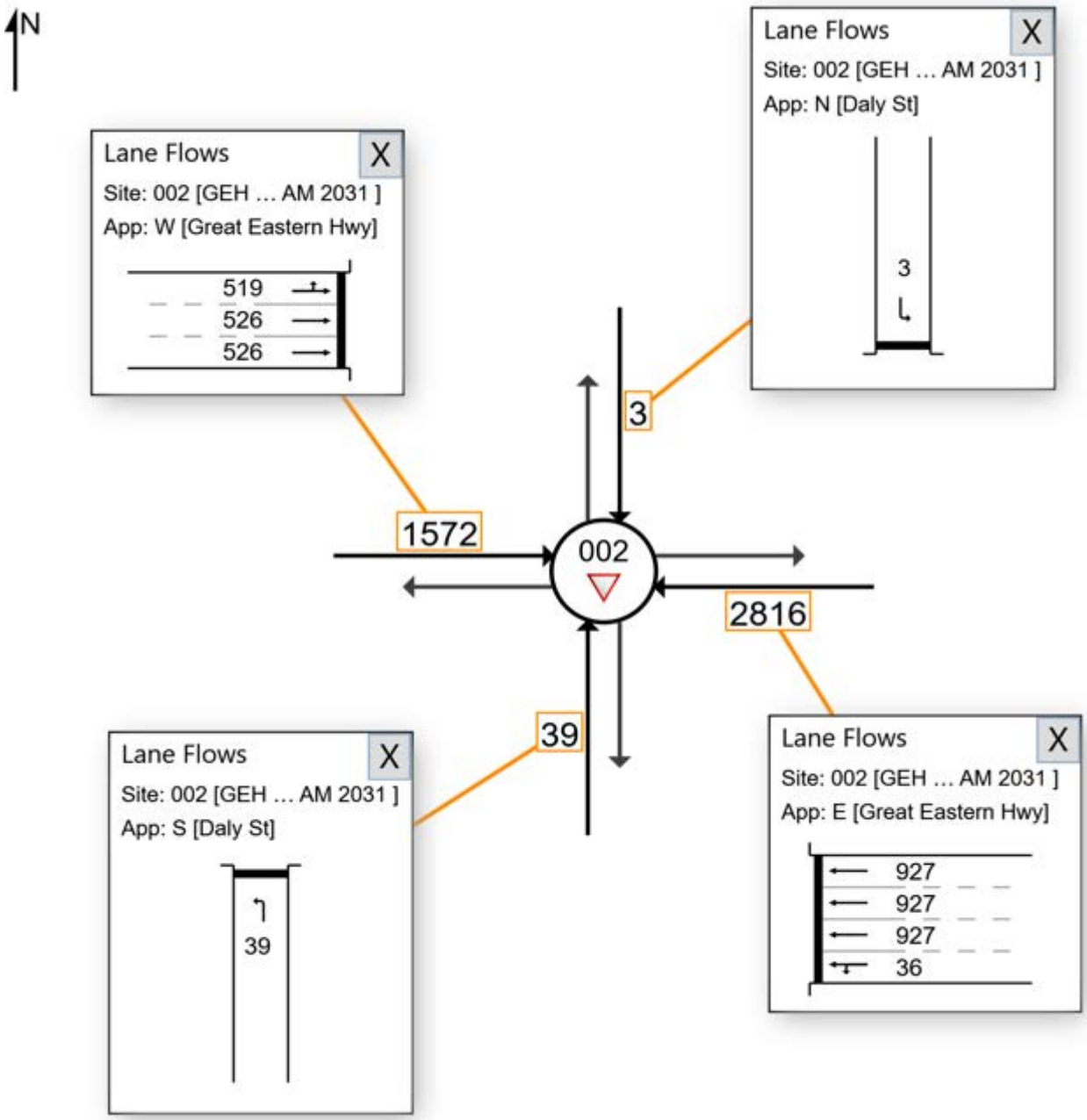
Site: 002 [GEH Daly AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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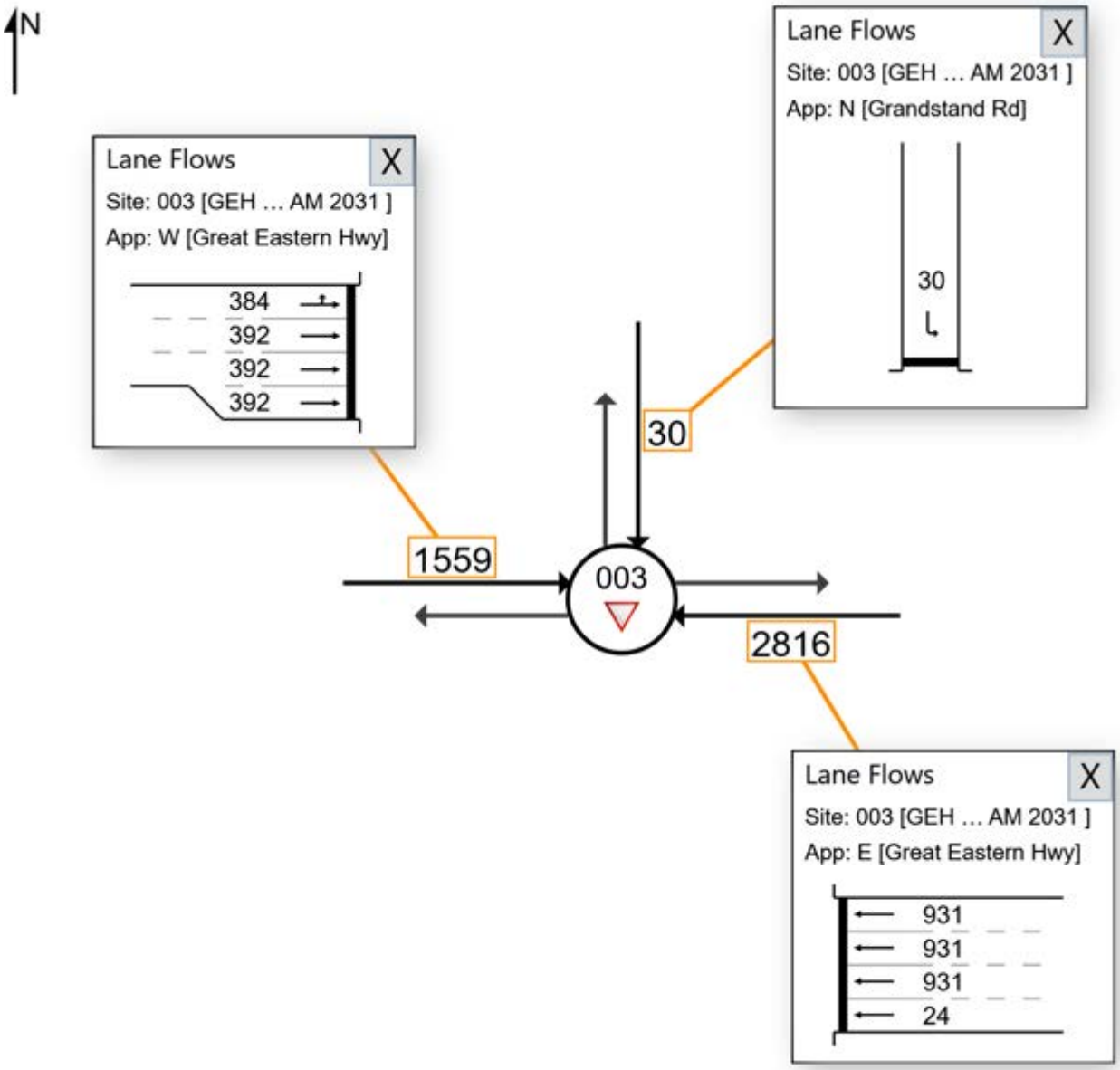

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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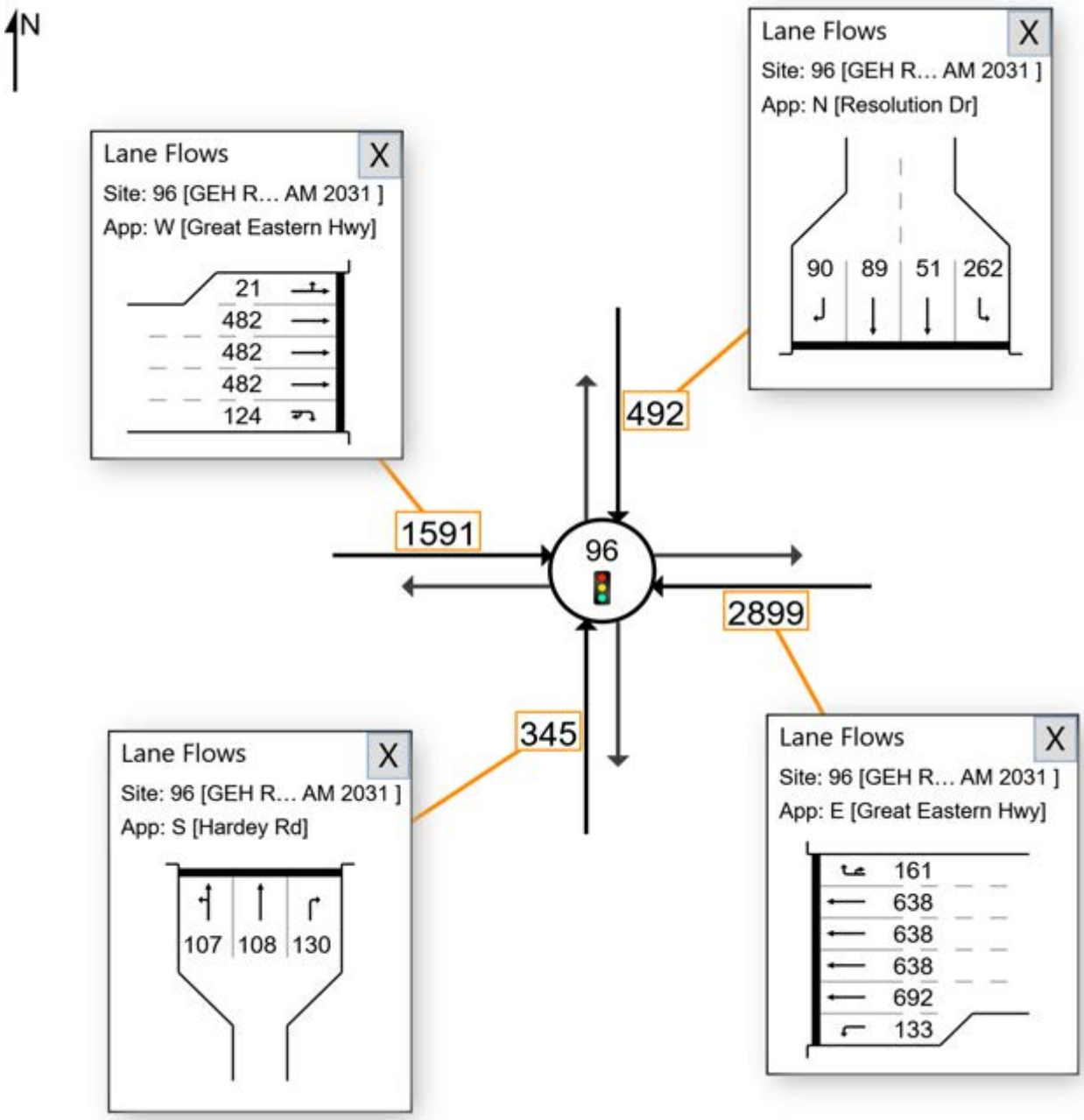

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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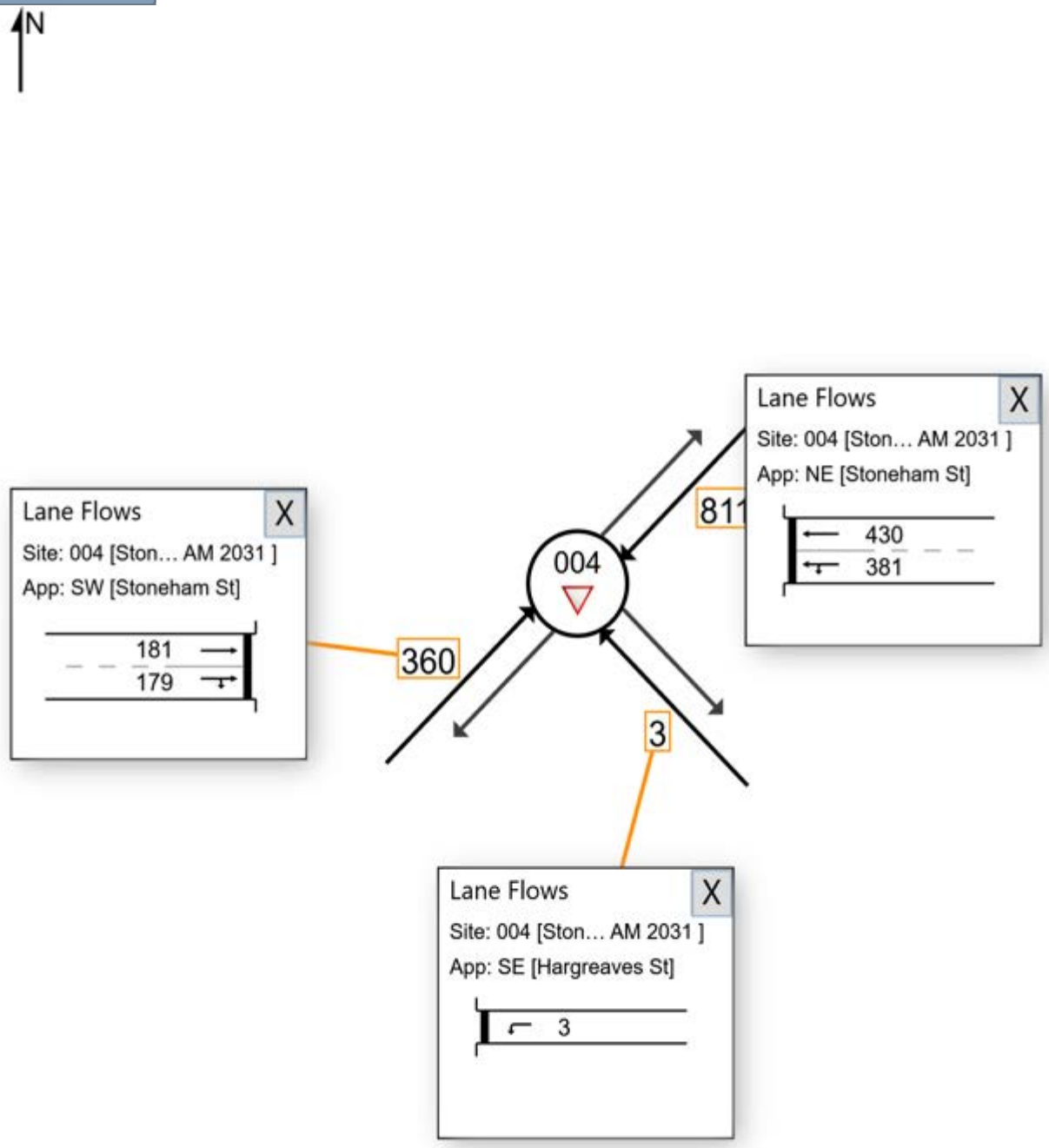


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

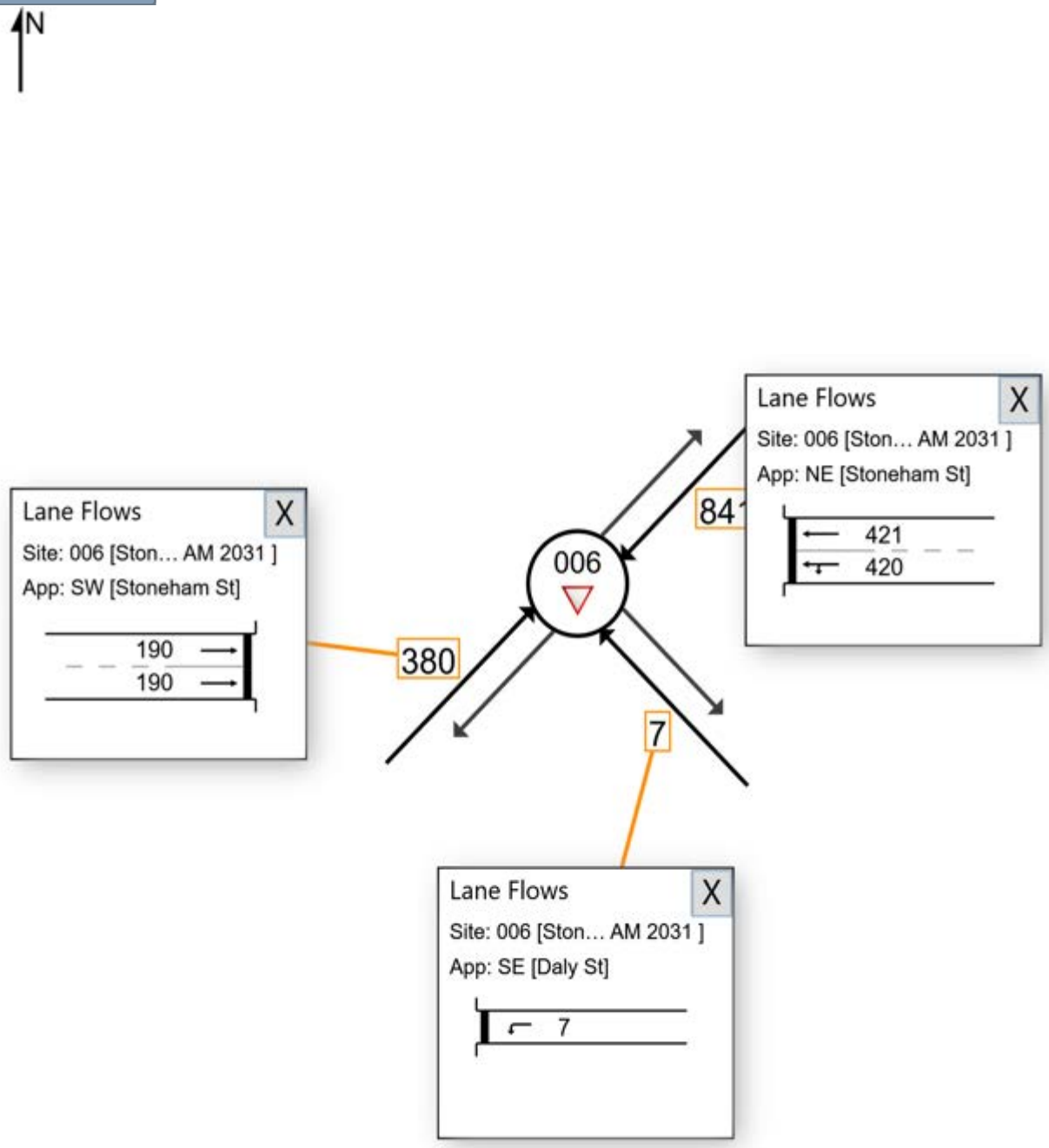
Site: 006 [Stoneham Daly AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 AM Peak
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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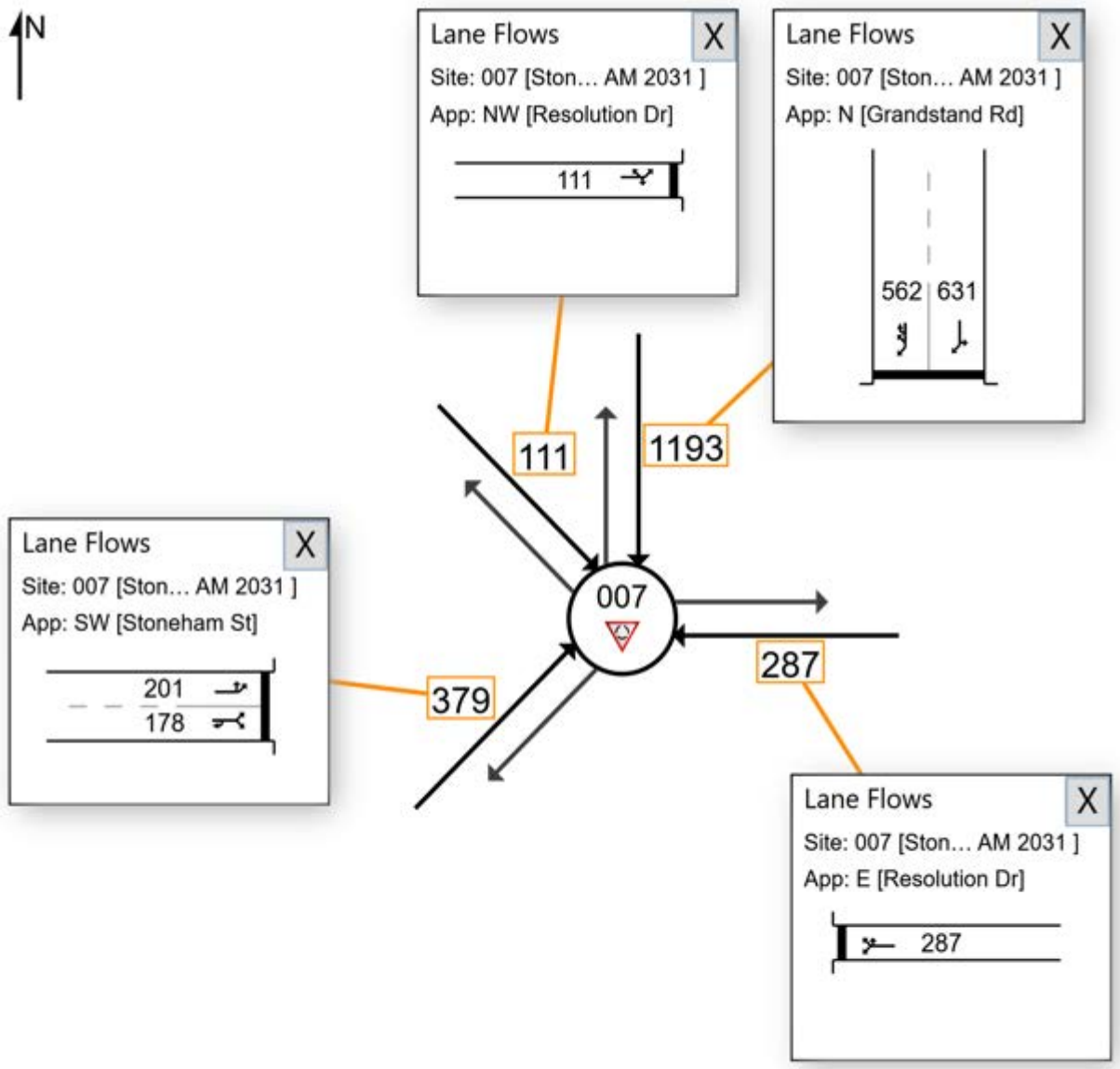

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand AM 2031 (Site Folder: 2031 AM Peak)]

Network: N101 [2031 AM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2031 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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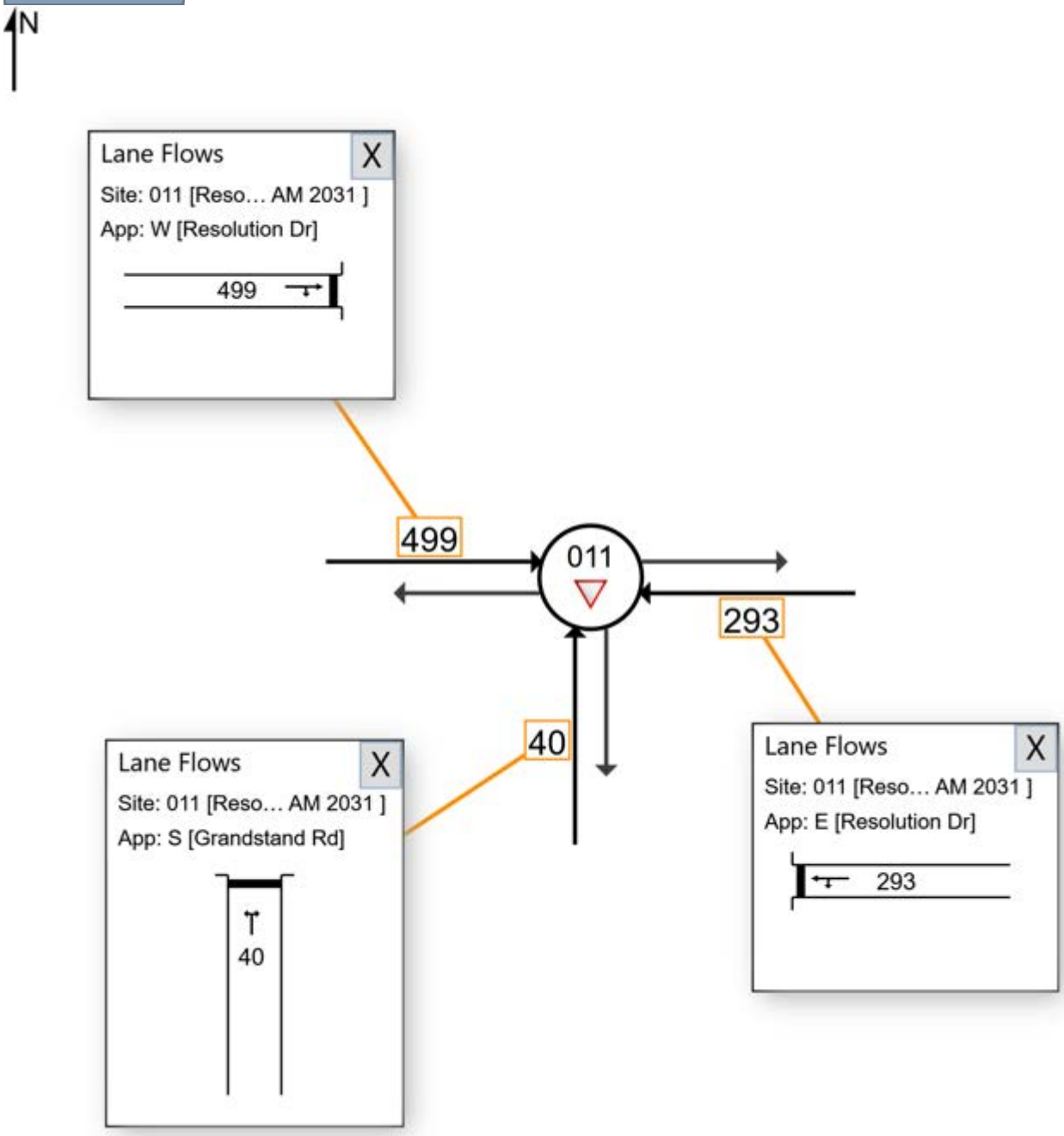

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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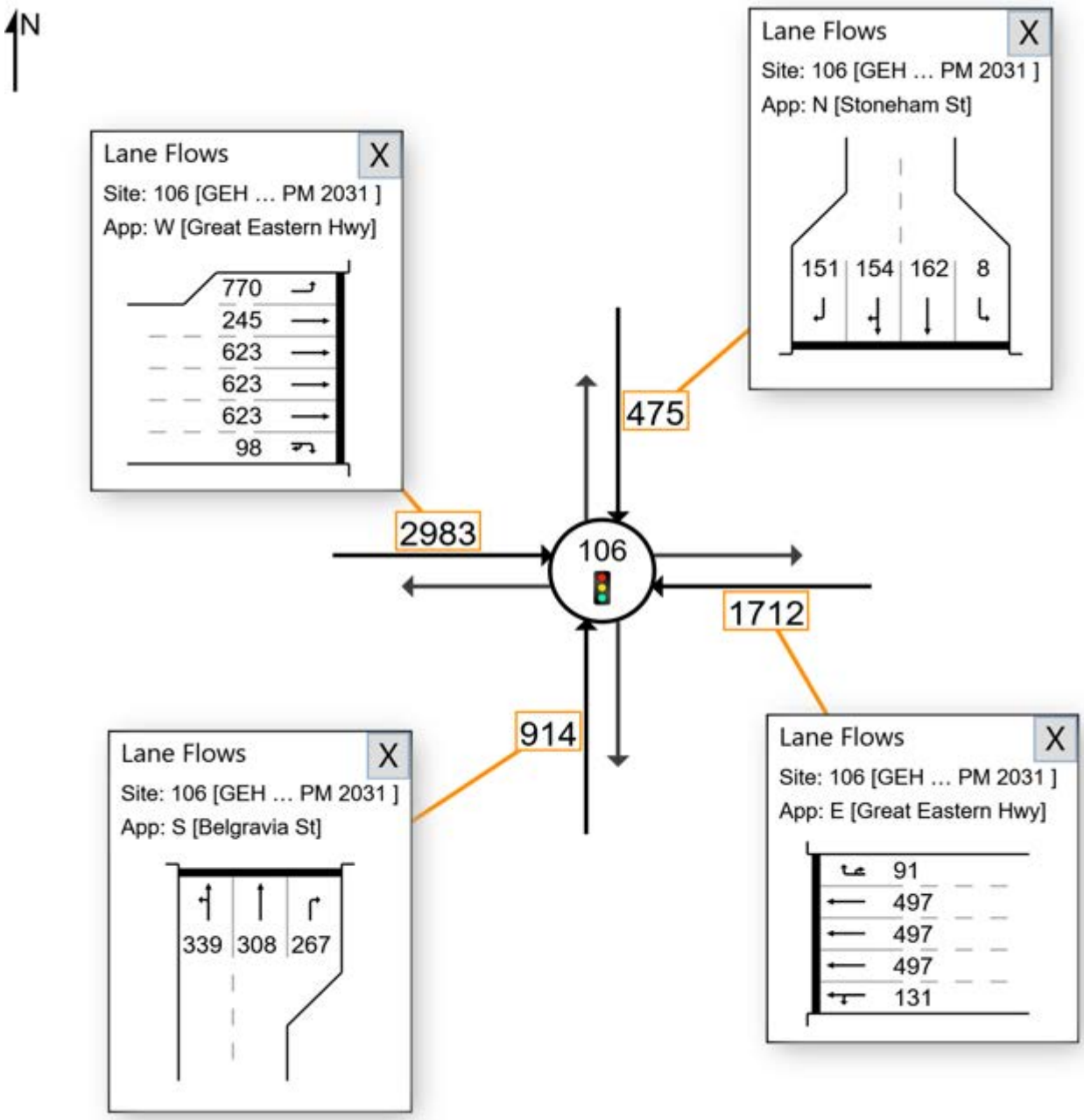

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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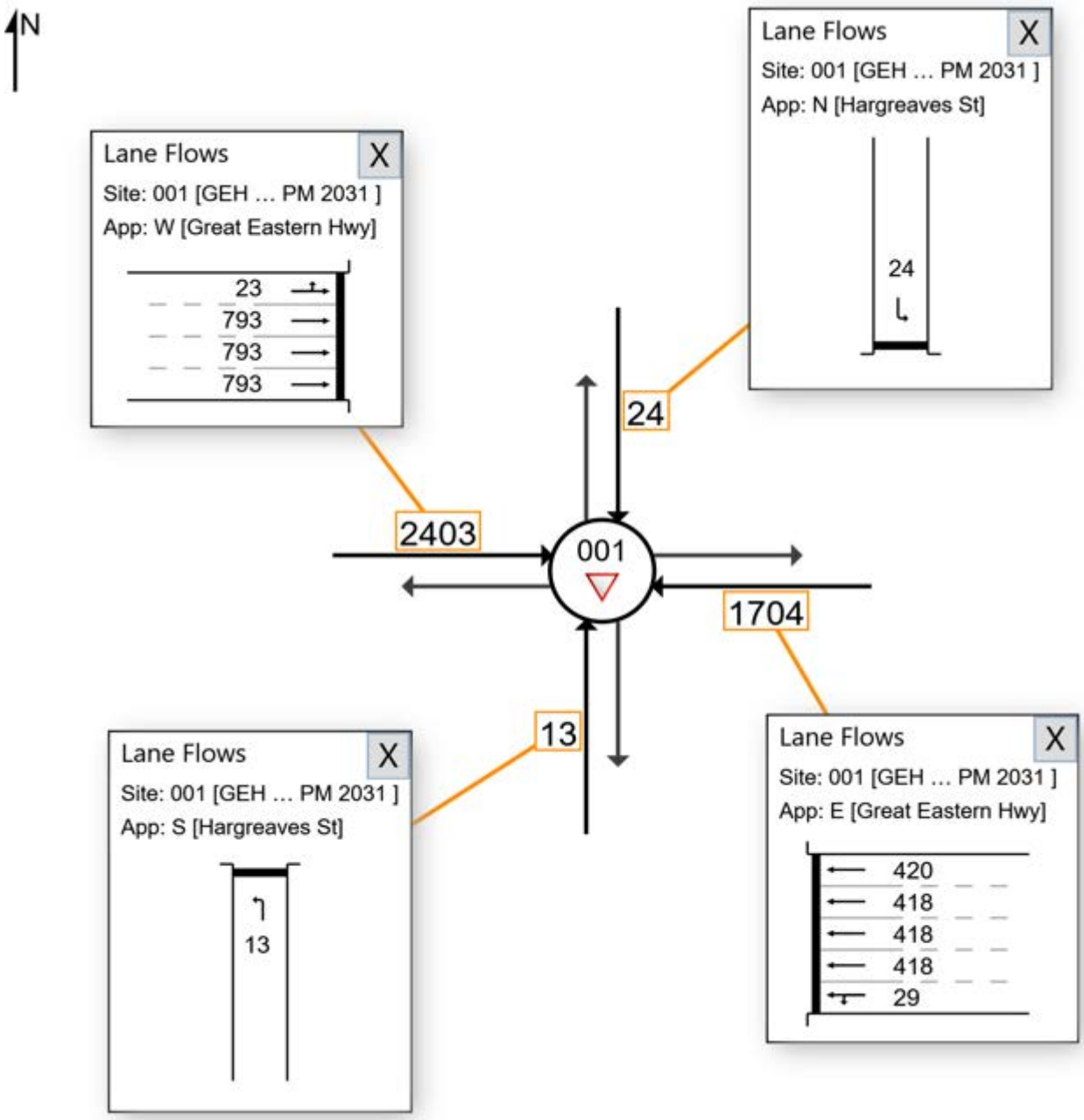

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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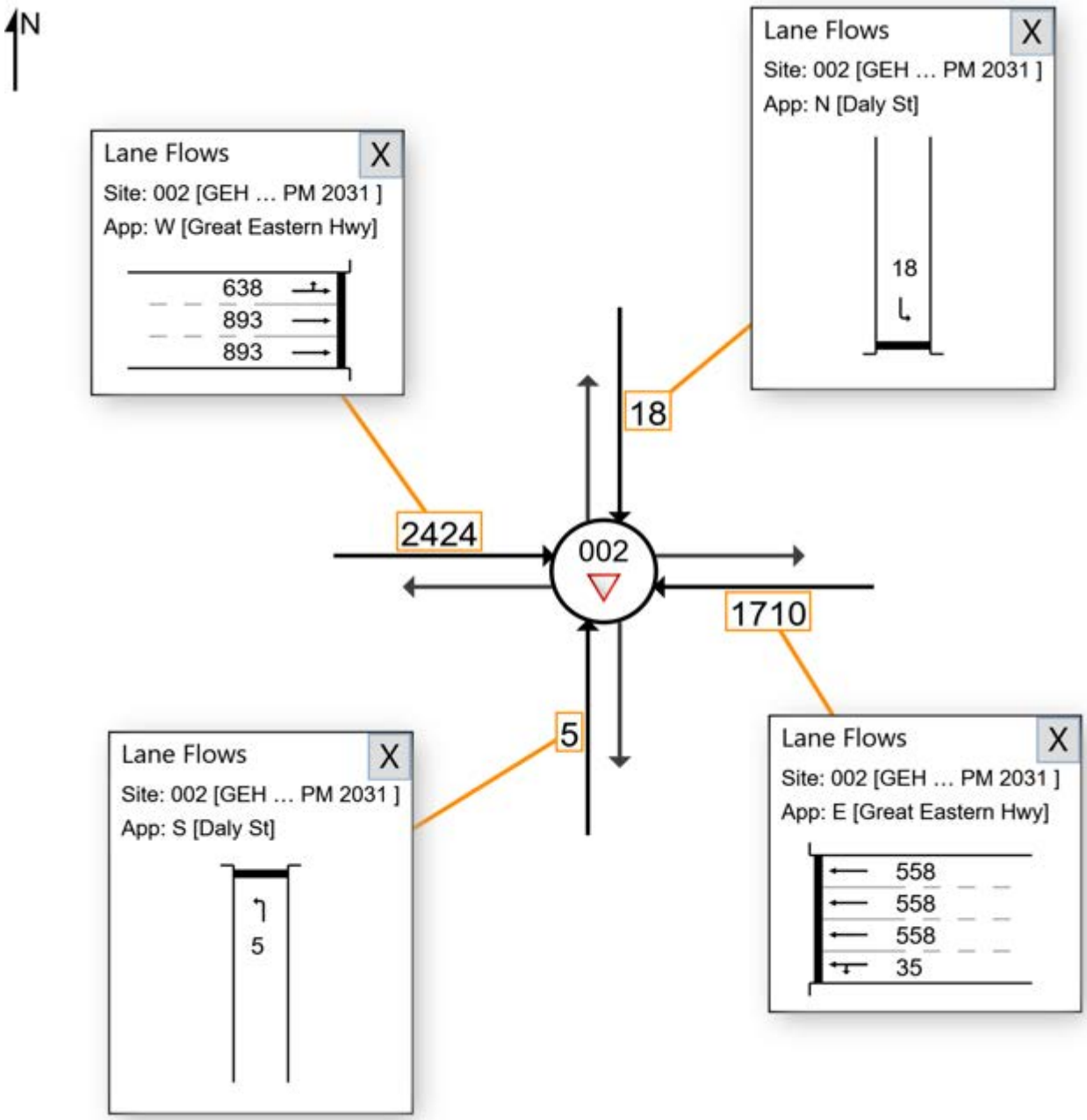

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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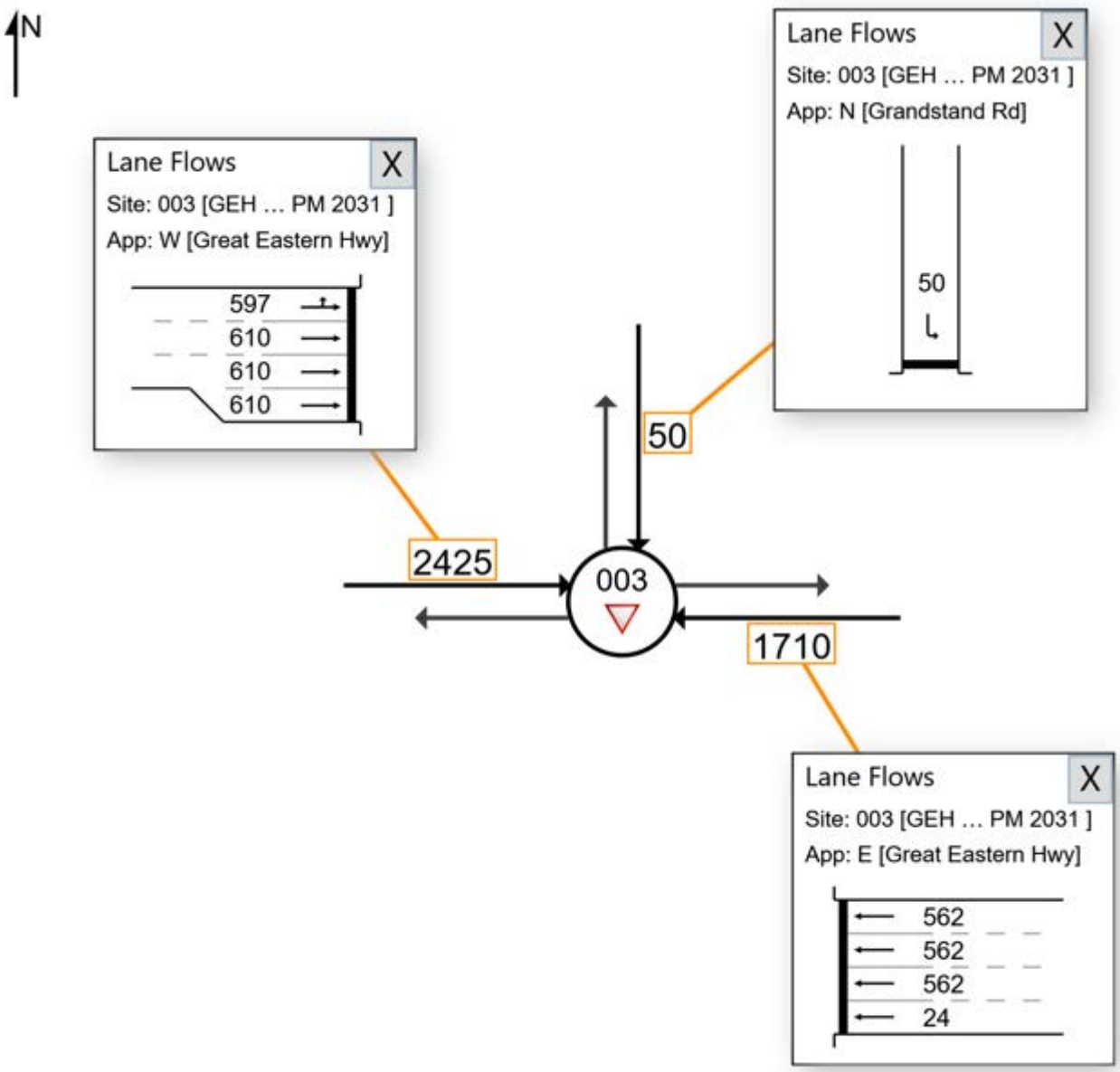
Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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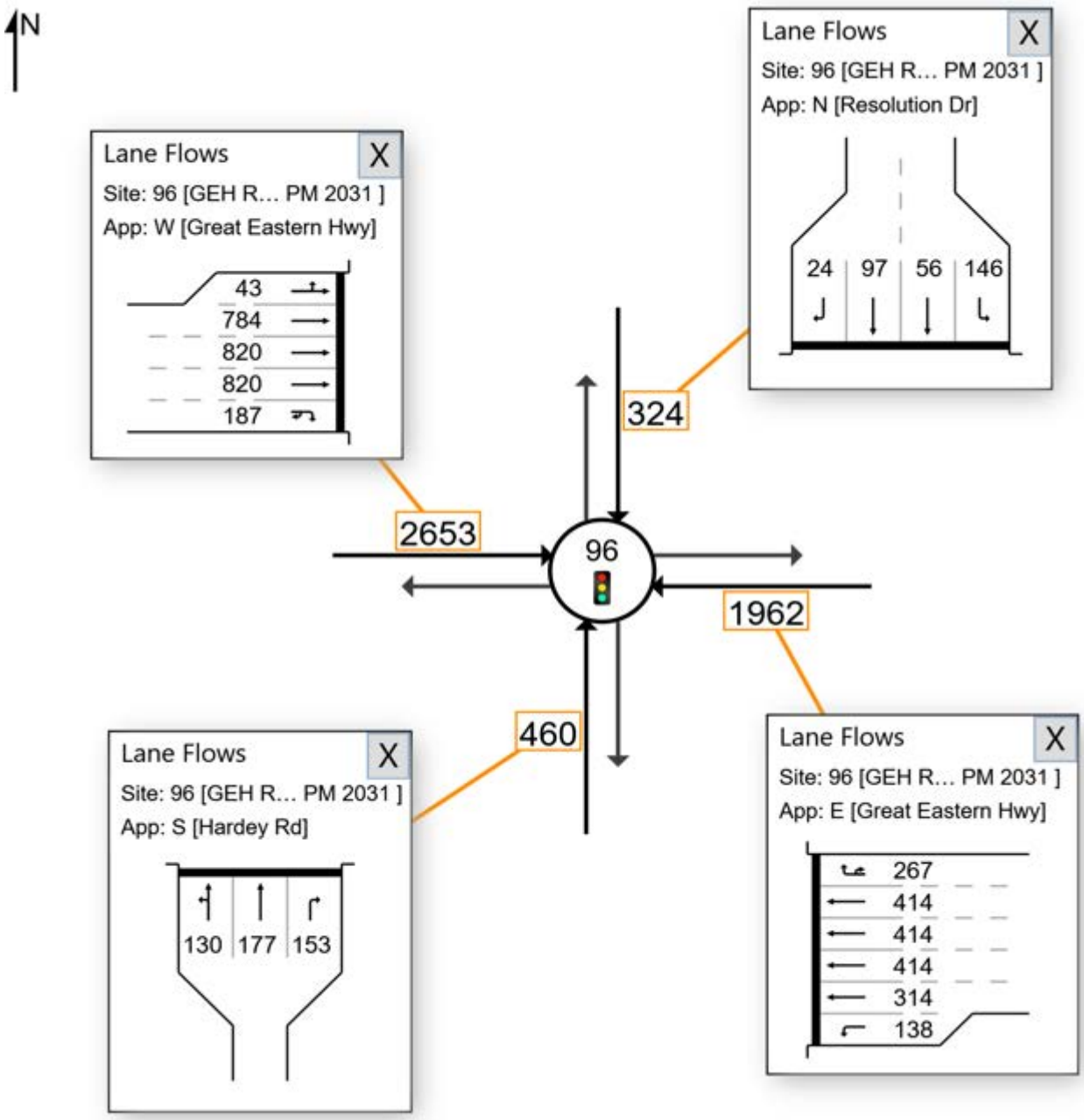

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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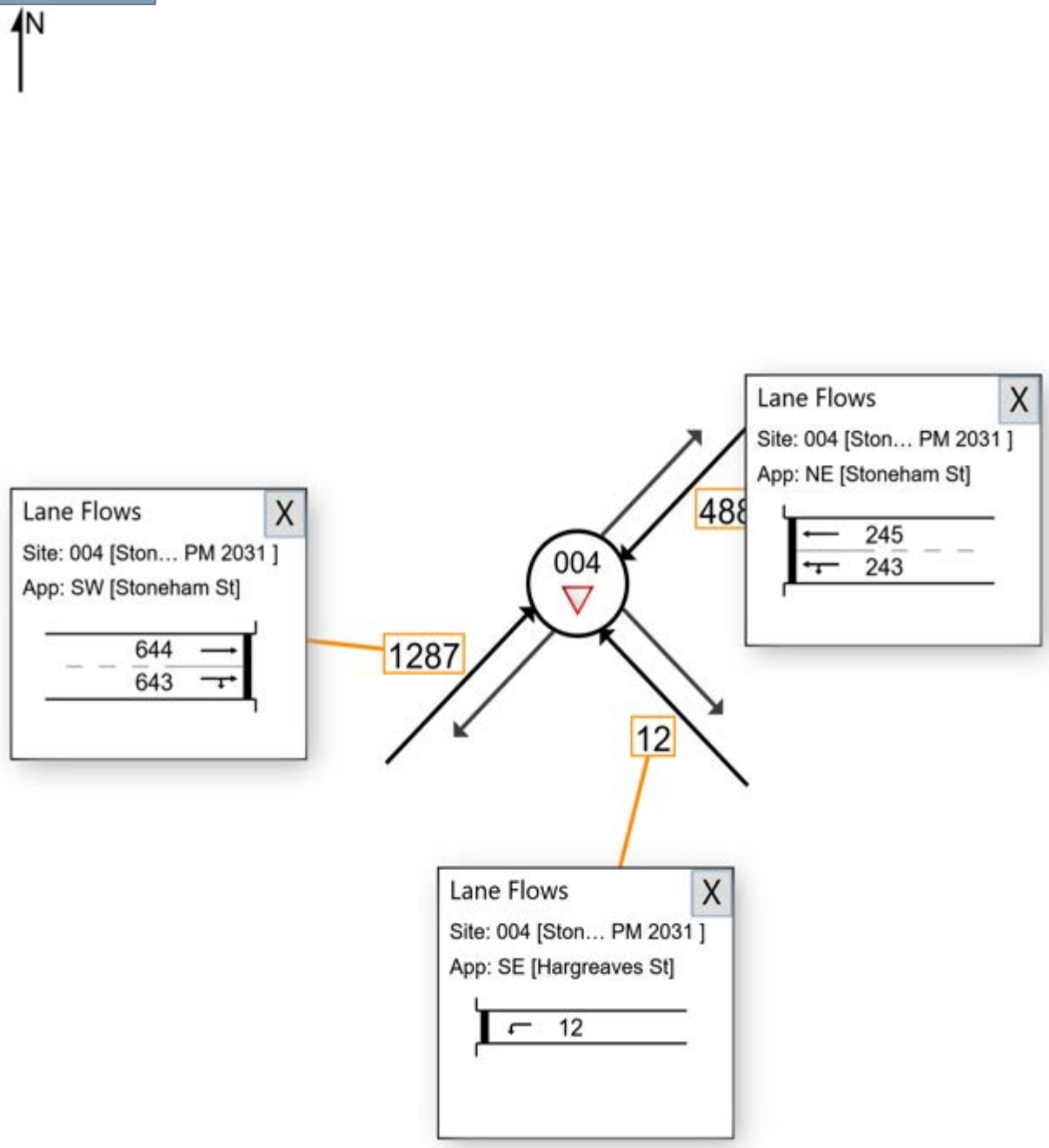

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 006 [Stoneham Daly PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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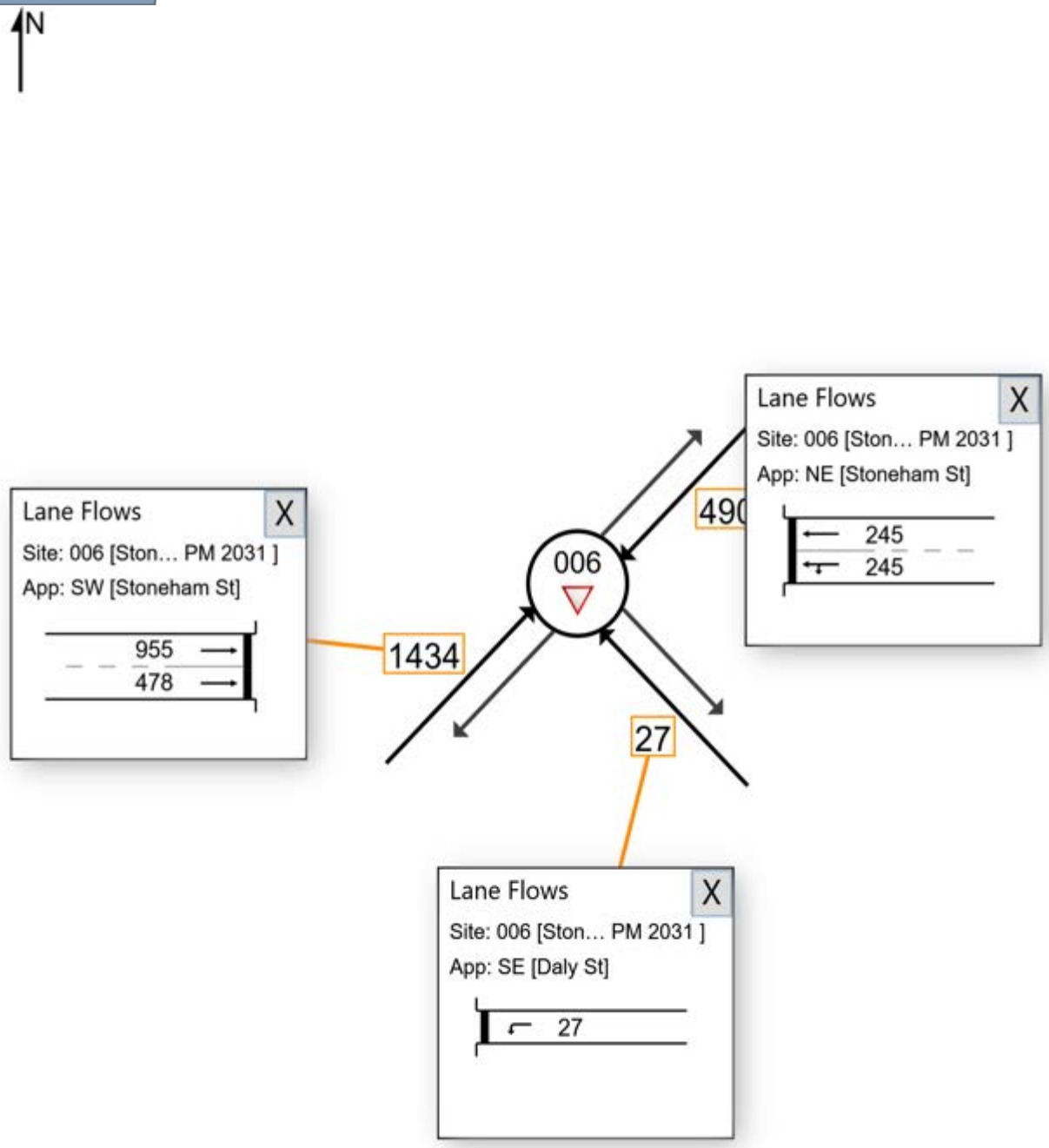

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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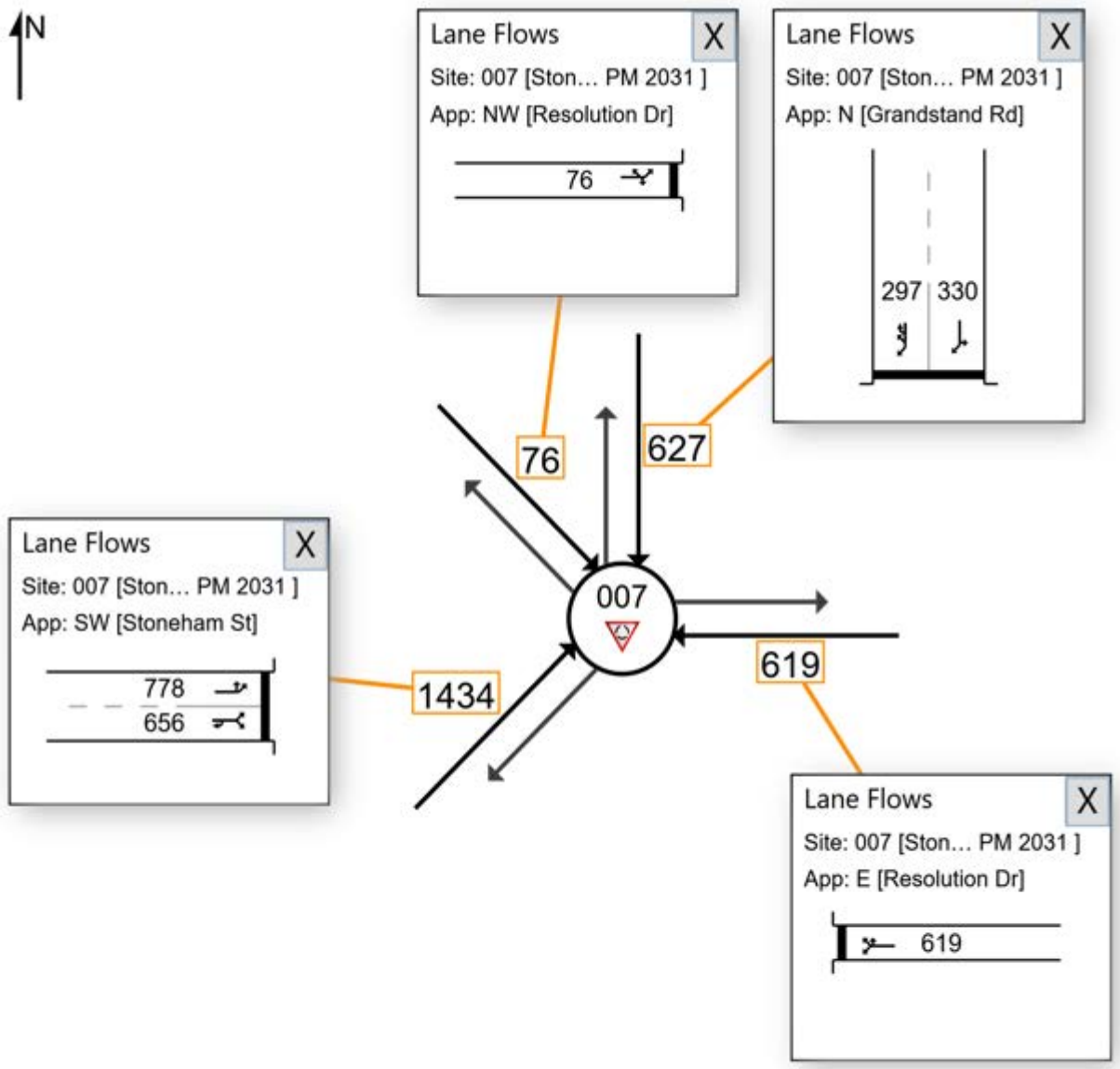

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2031 (Site Folder: 2031 PM Peak)]

Network: N101 [2031 PM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2031 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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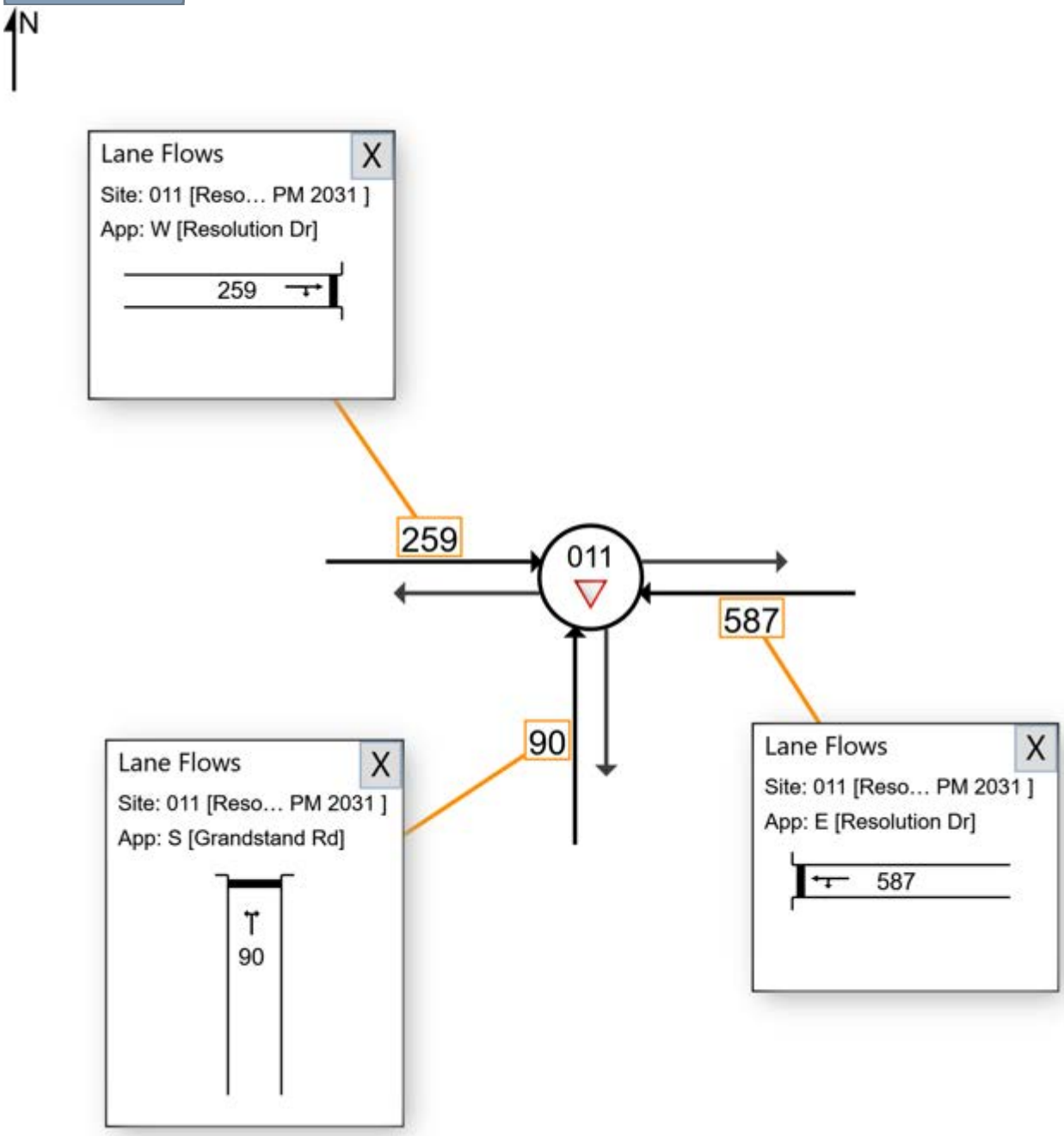

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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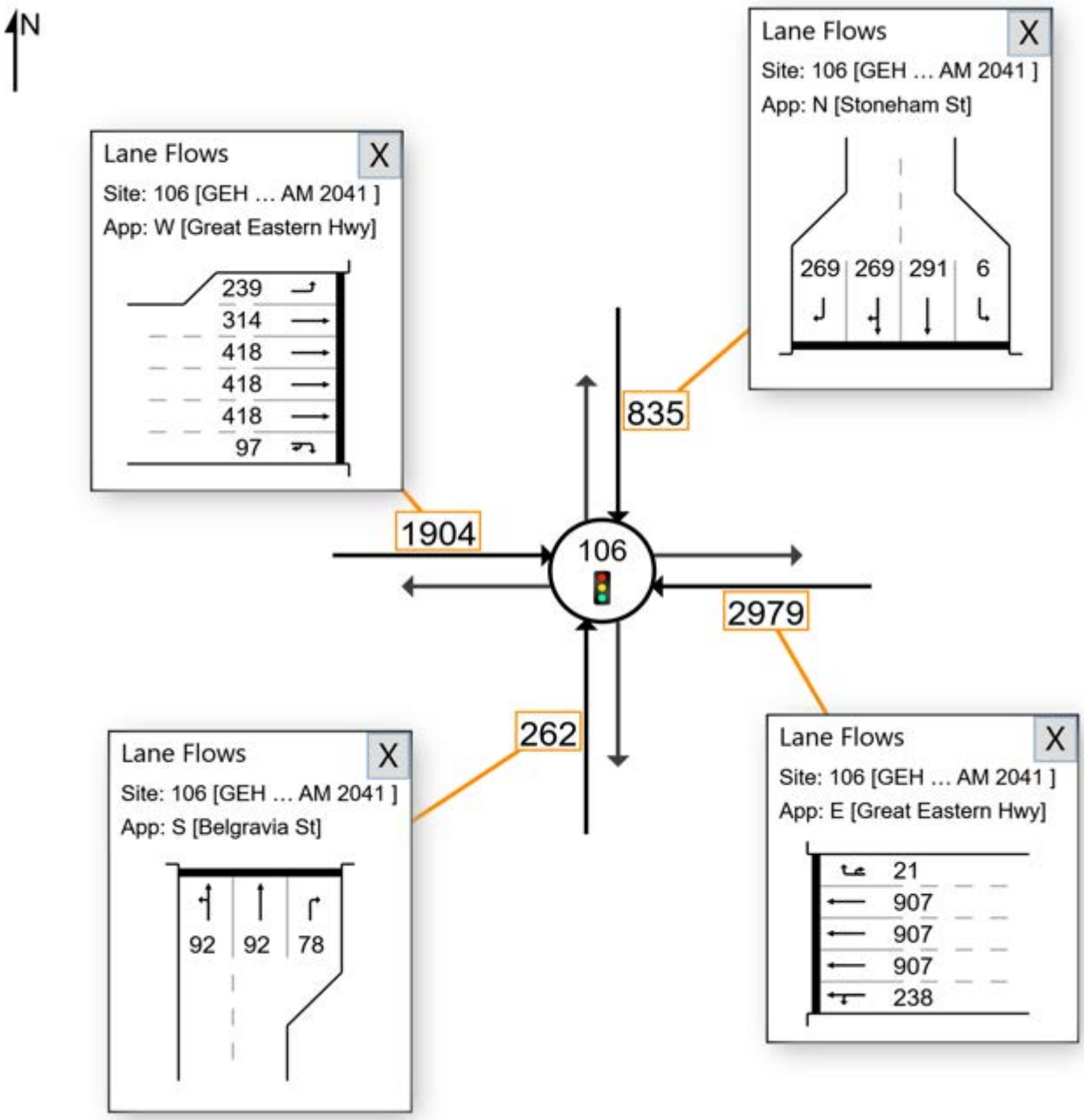

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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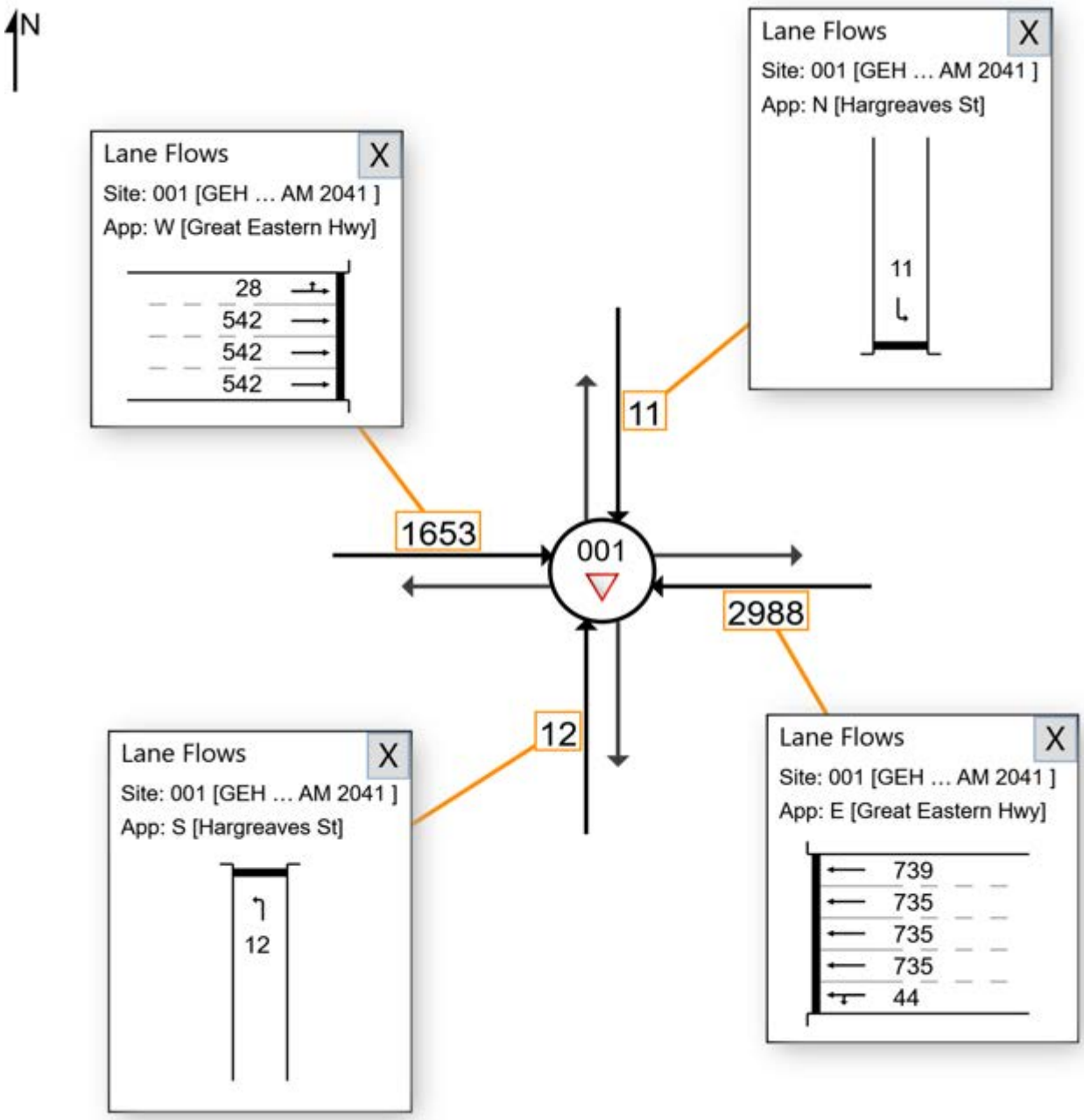
Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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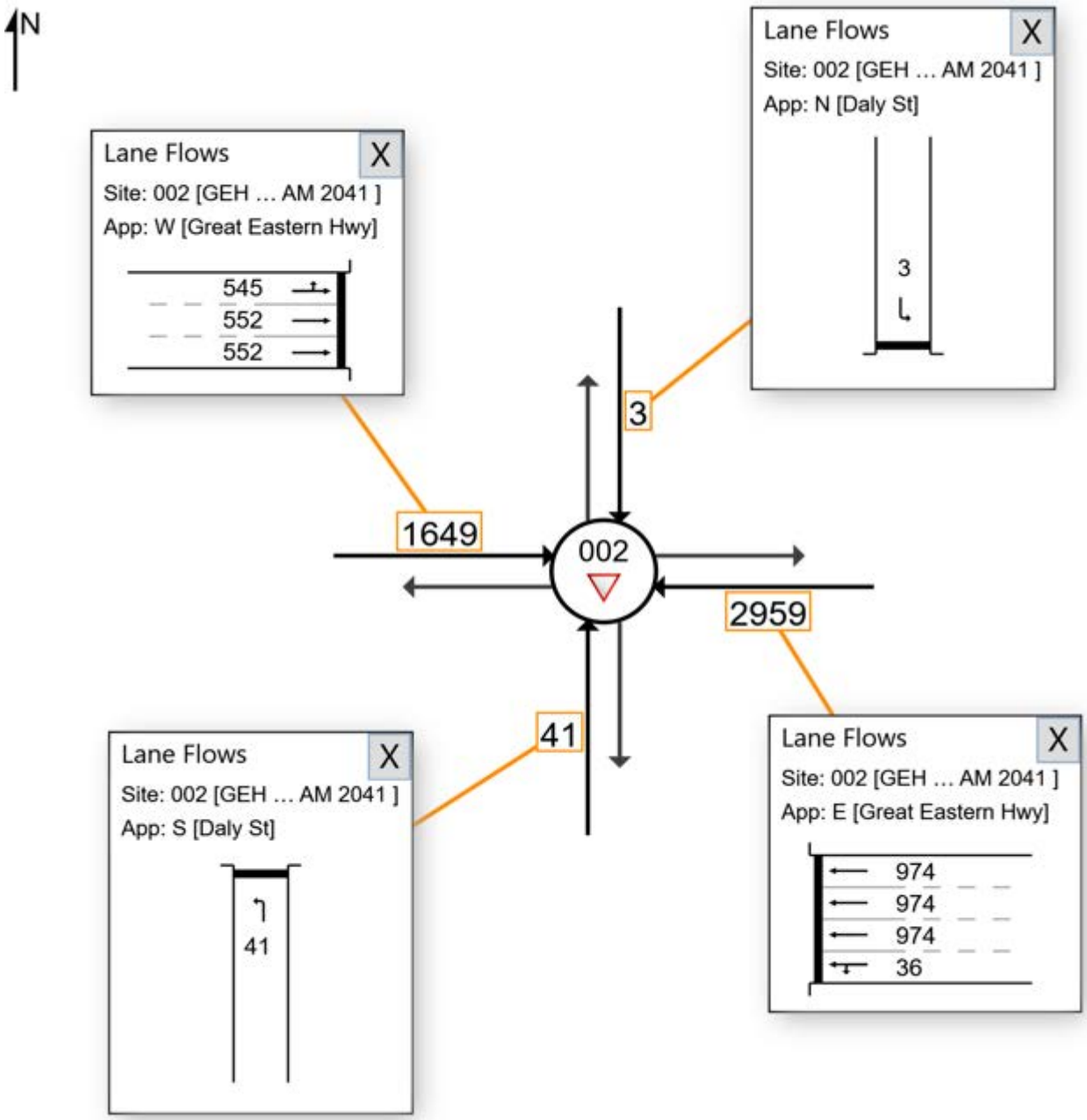

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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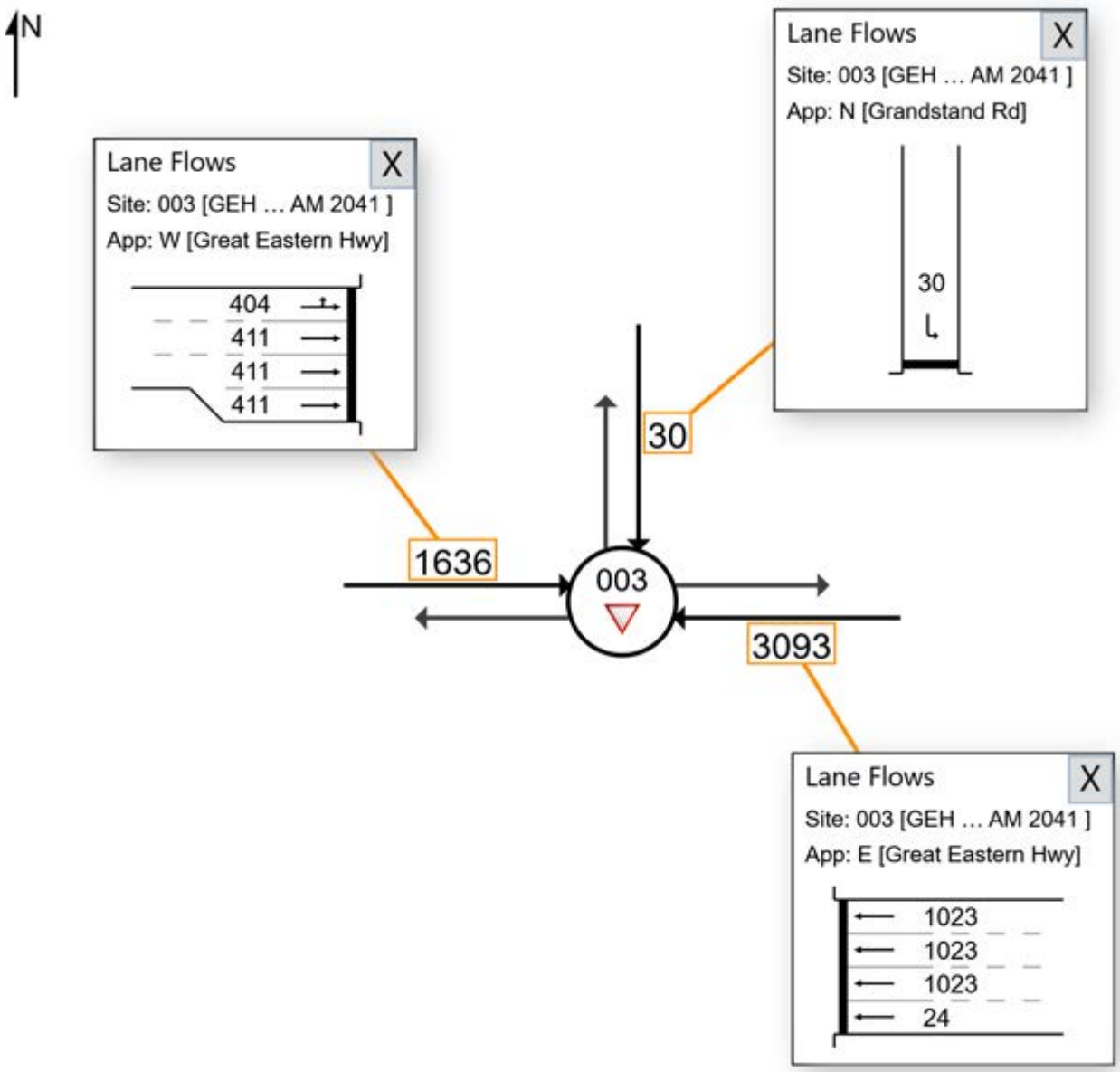

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 AM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

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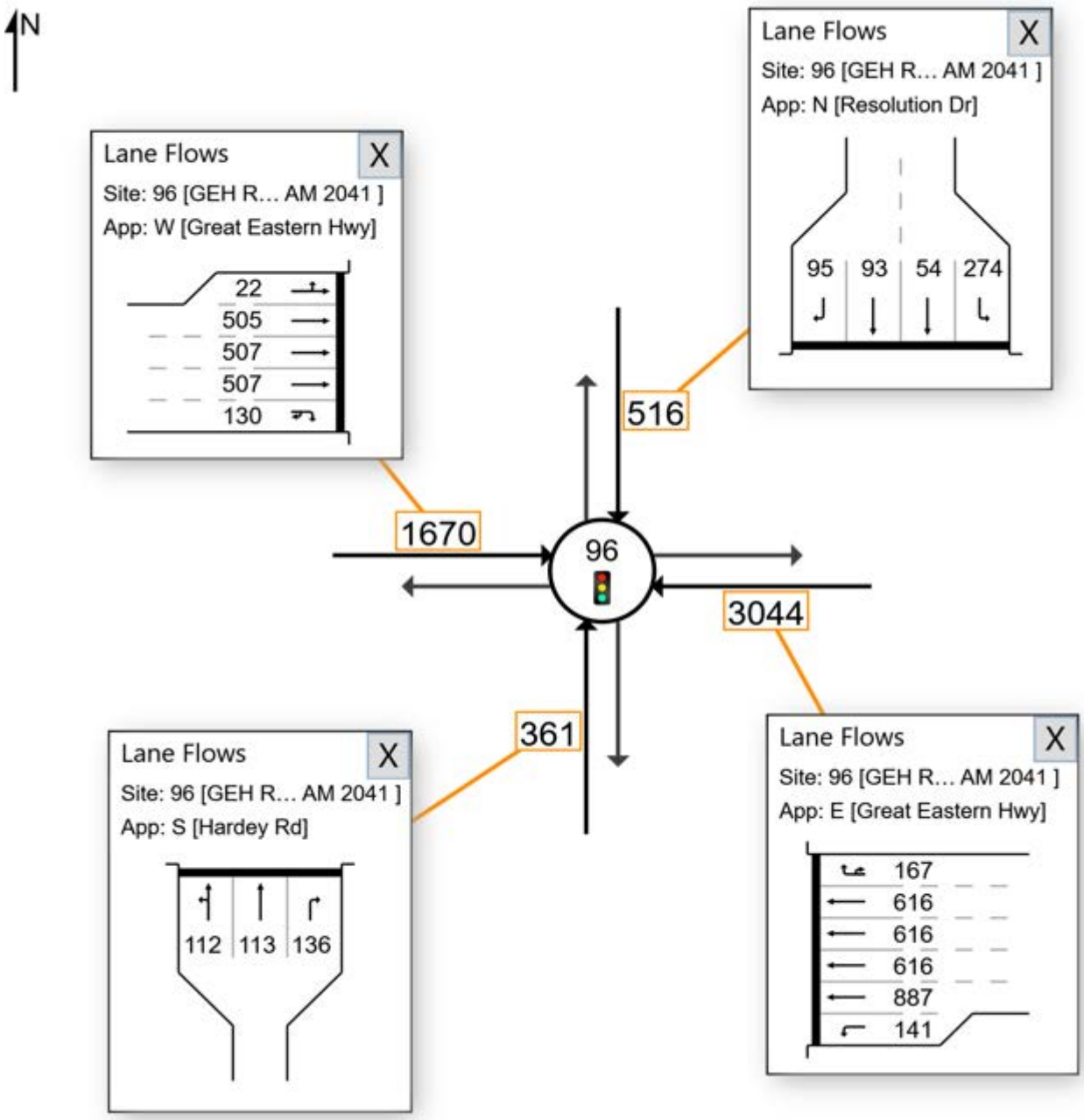

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

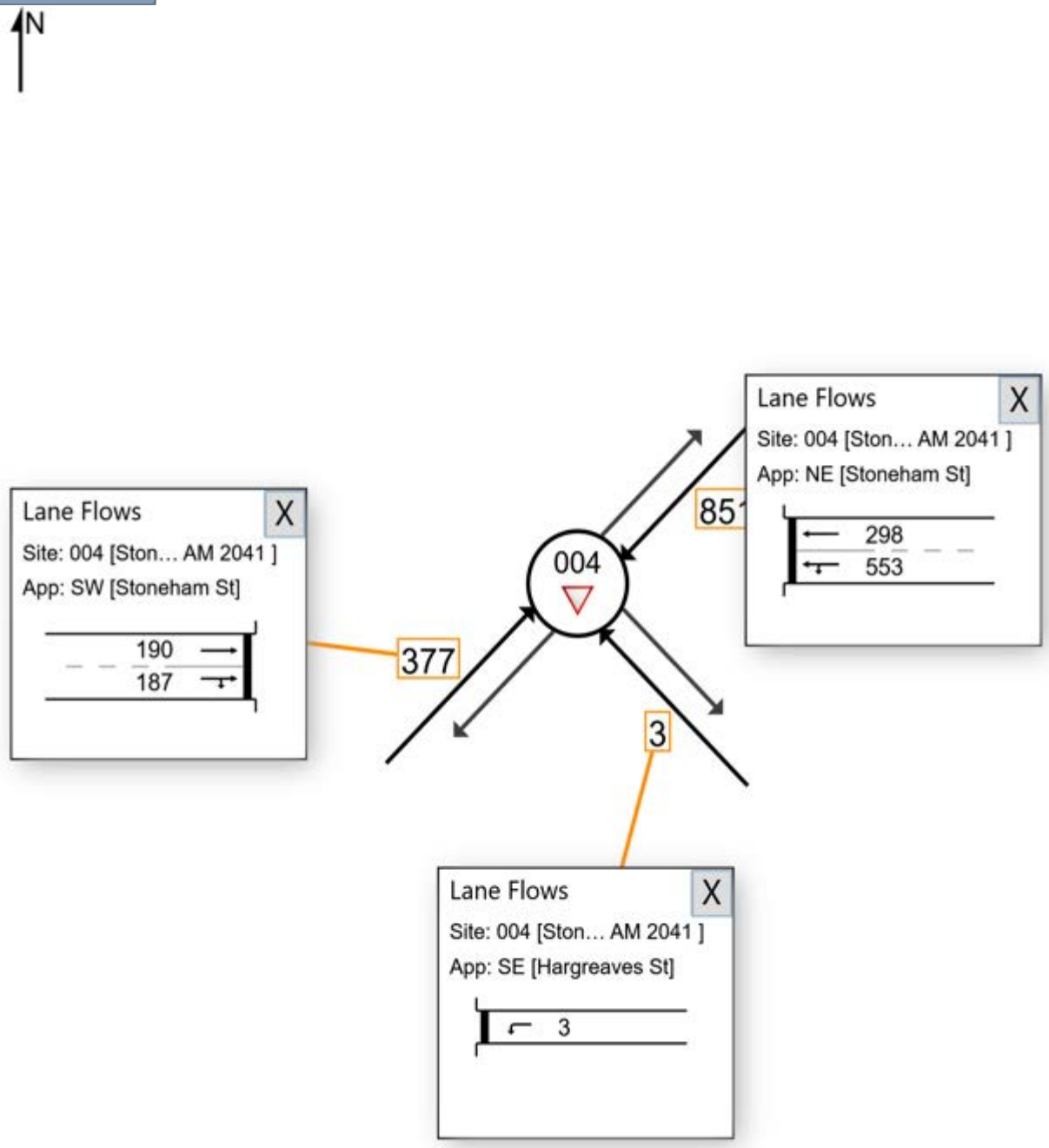
Site: 004 [Stoneham Hargreaves AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 006 [Stoneham Daly AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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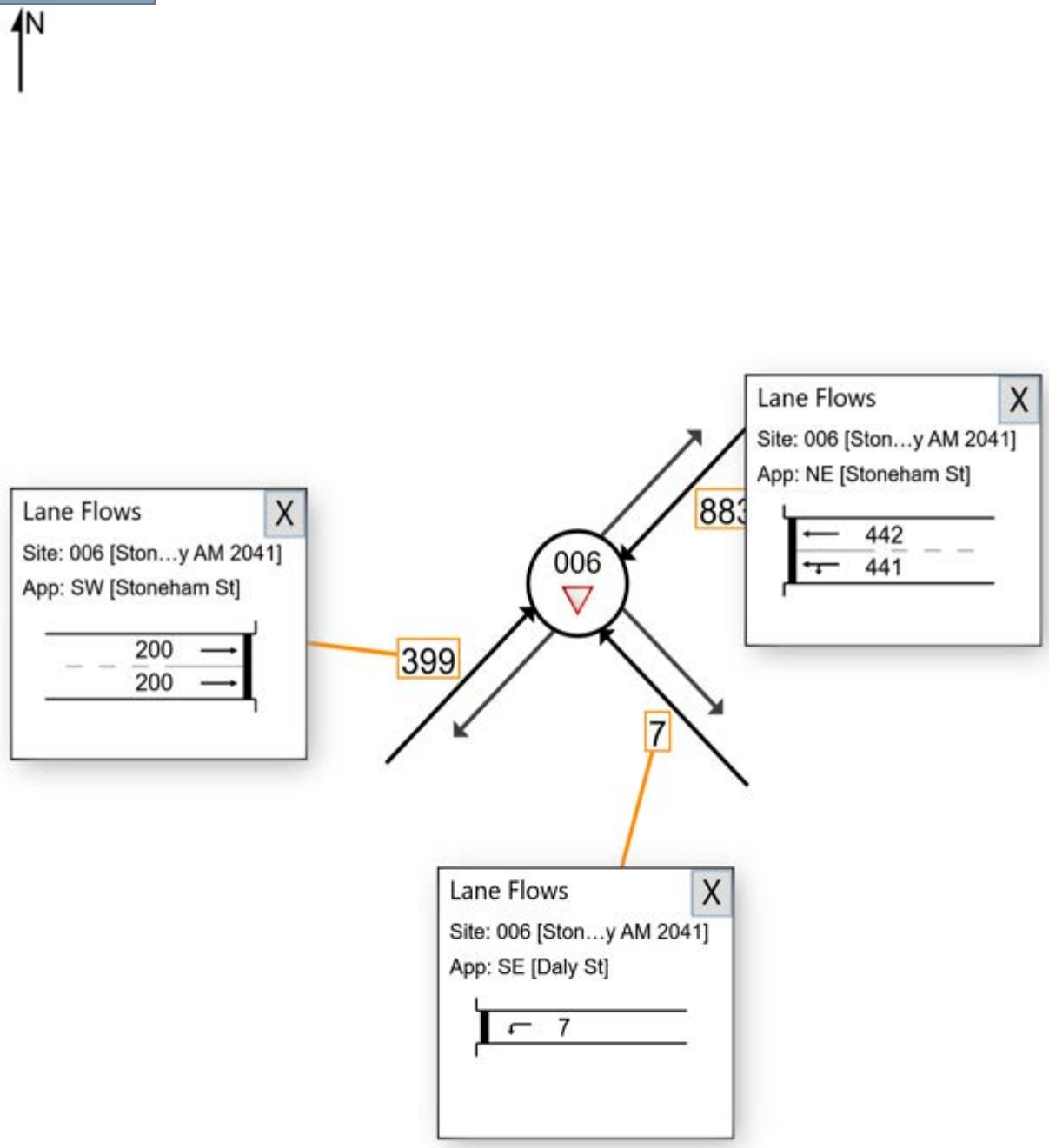


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

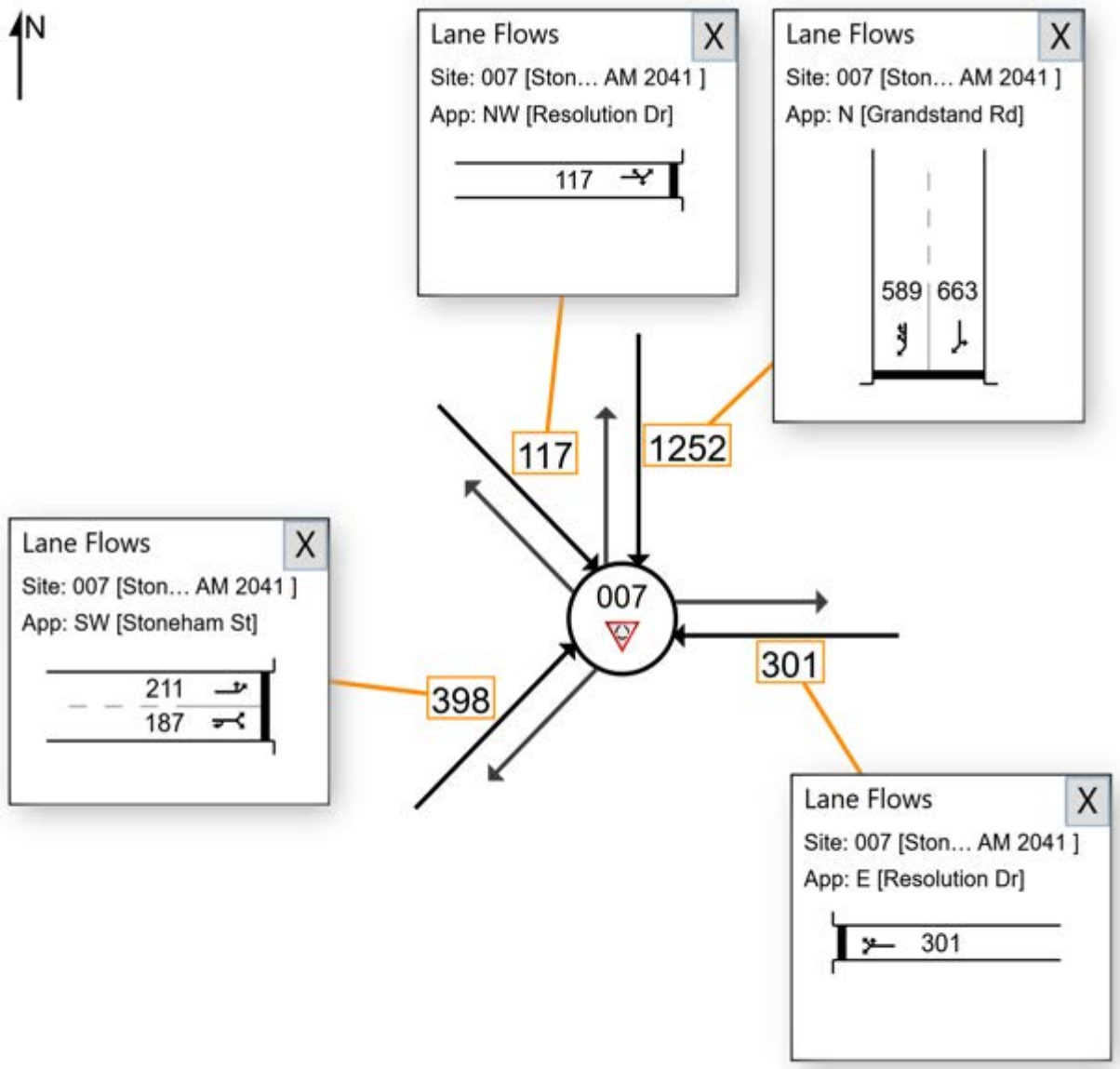
Site: 007 [Stoneham Grandstand Resolution AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 AM Peak
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand AM 2041 (Site Folder: 2041 AM Peak)]

Network: N101 [2041 AM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2041 AM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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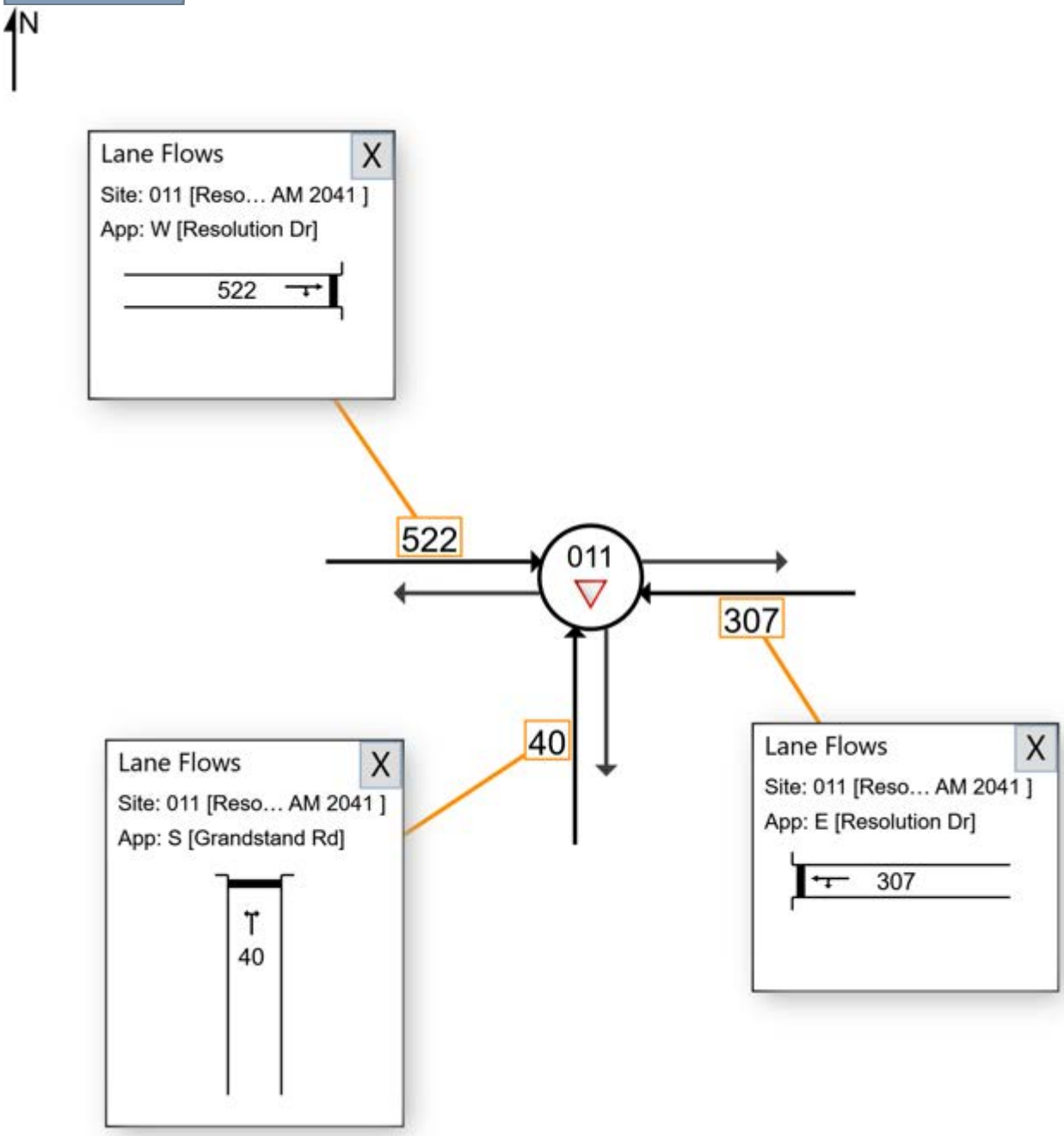

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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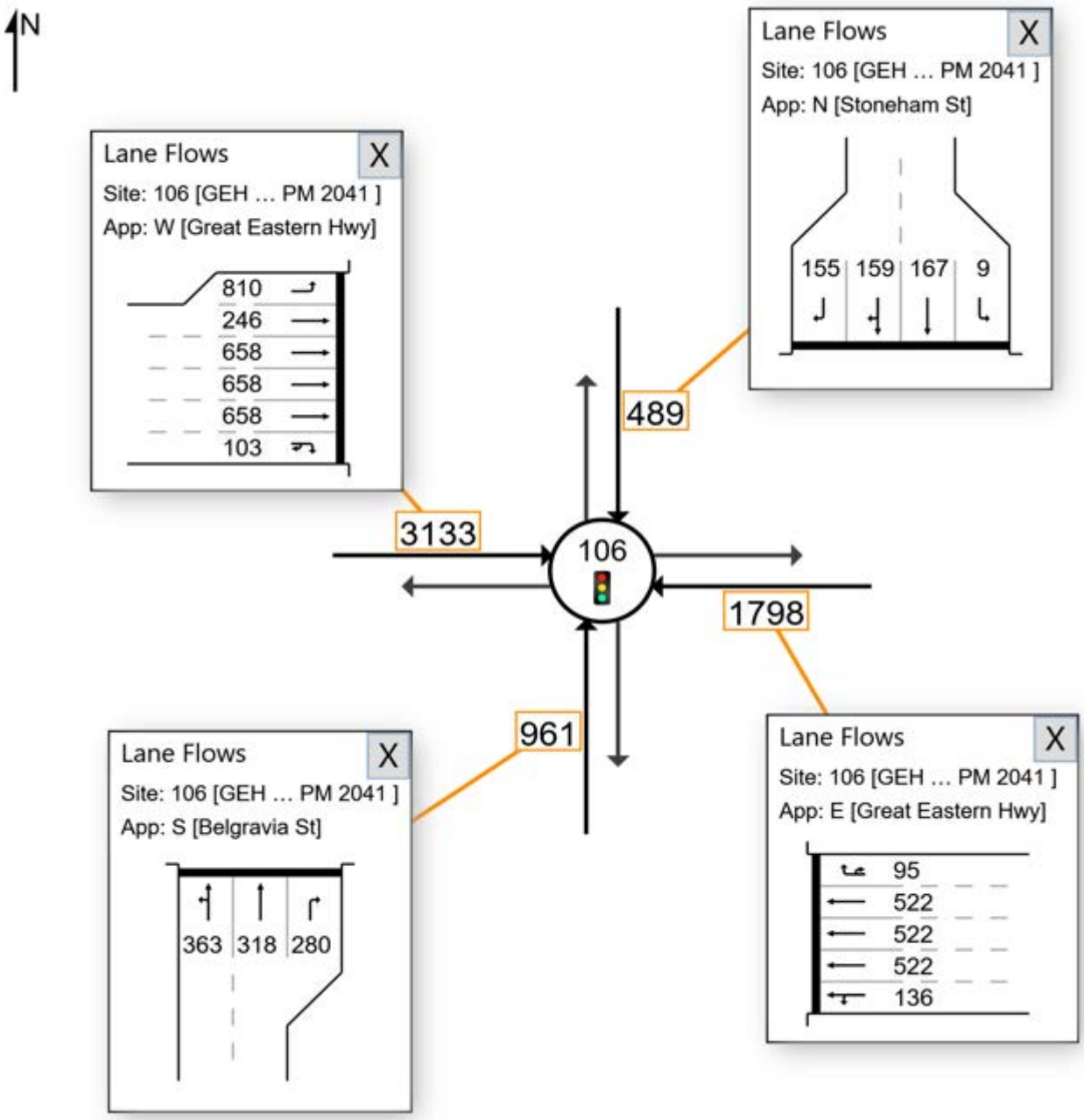

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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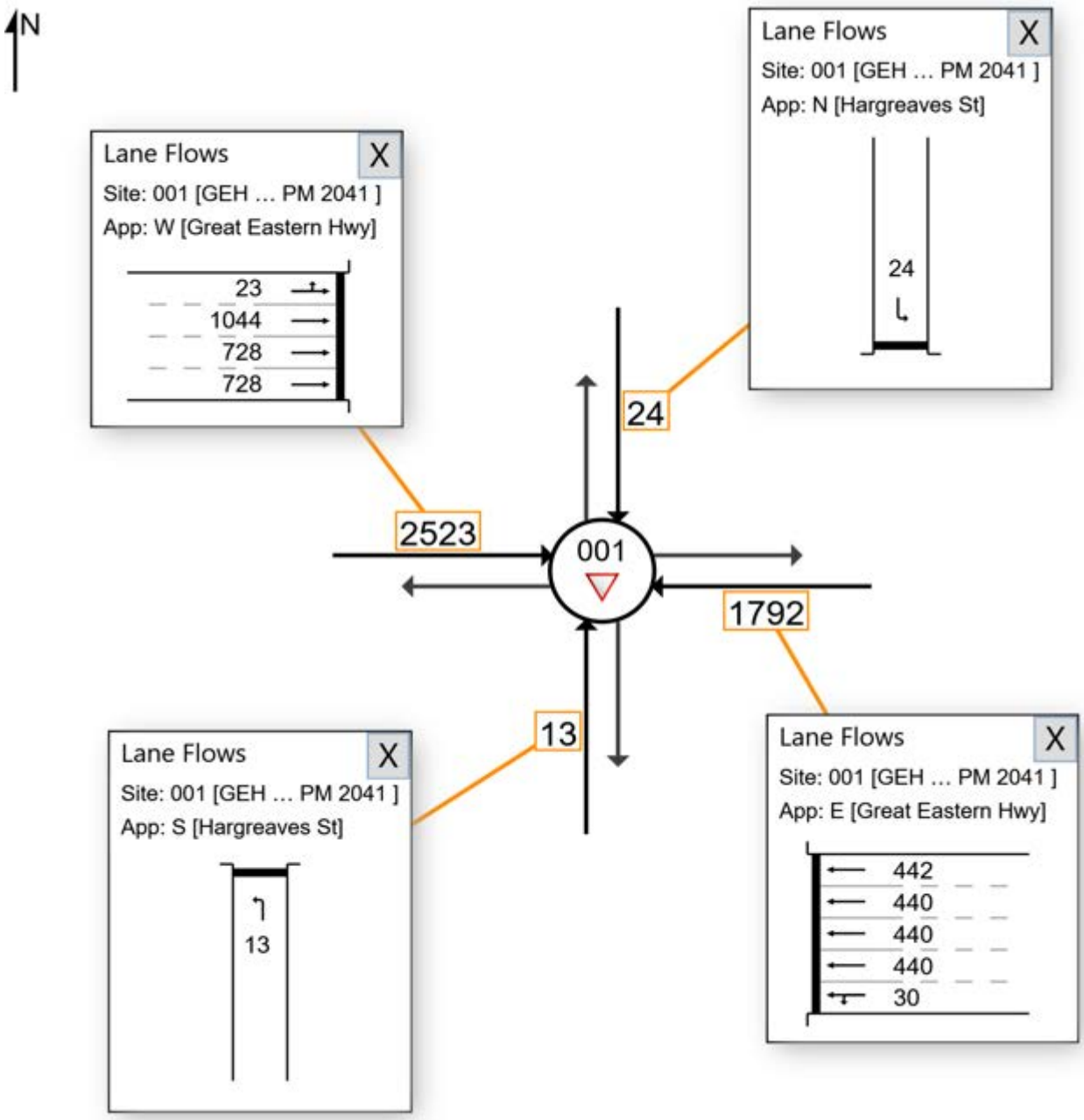

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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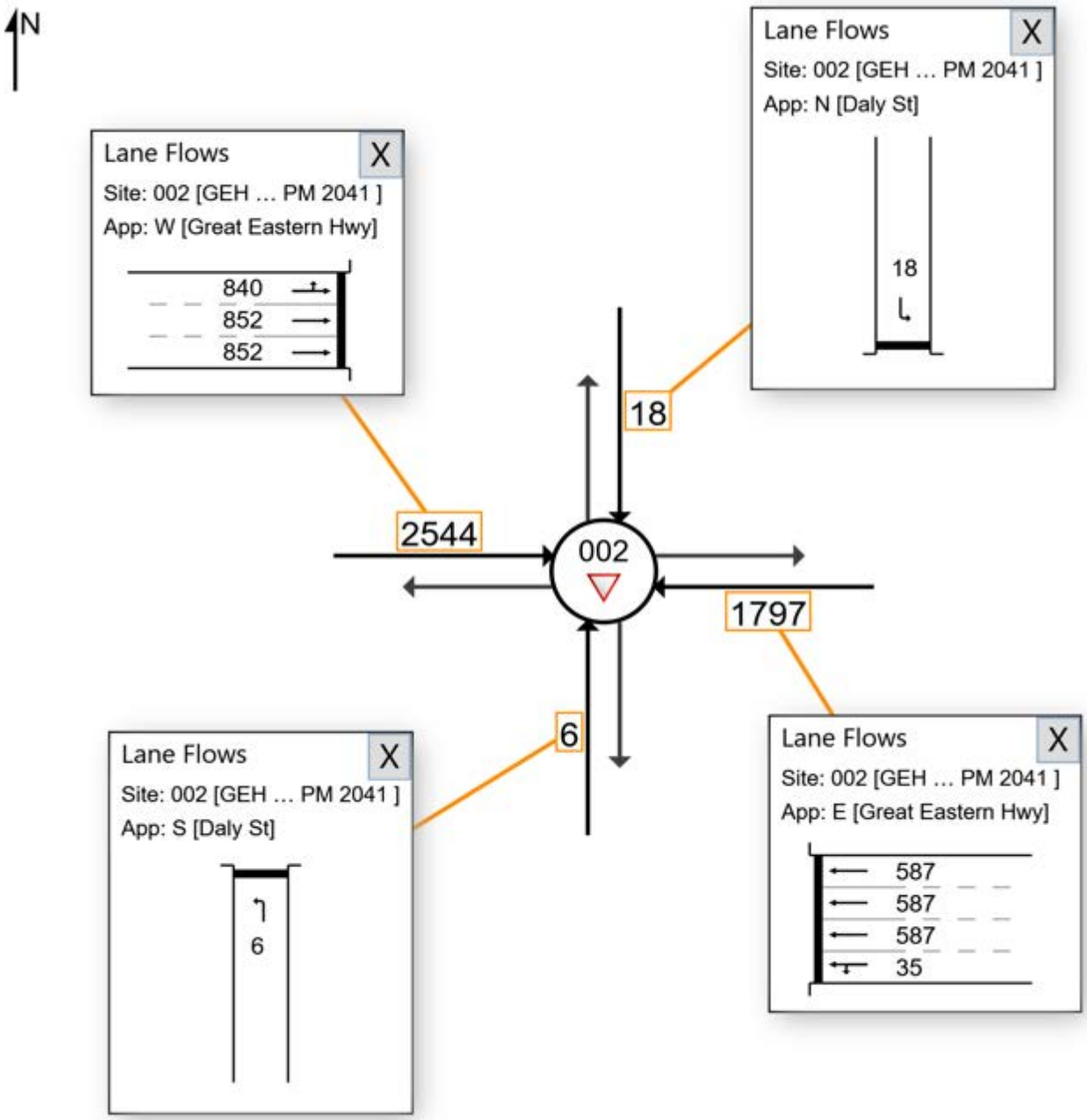

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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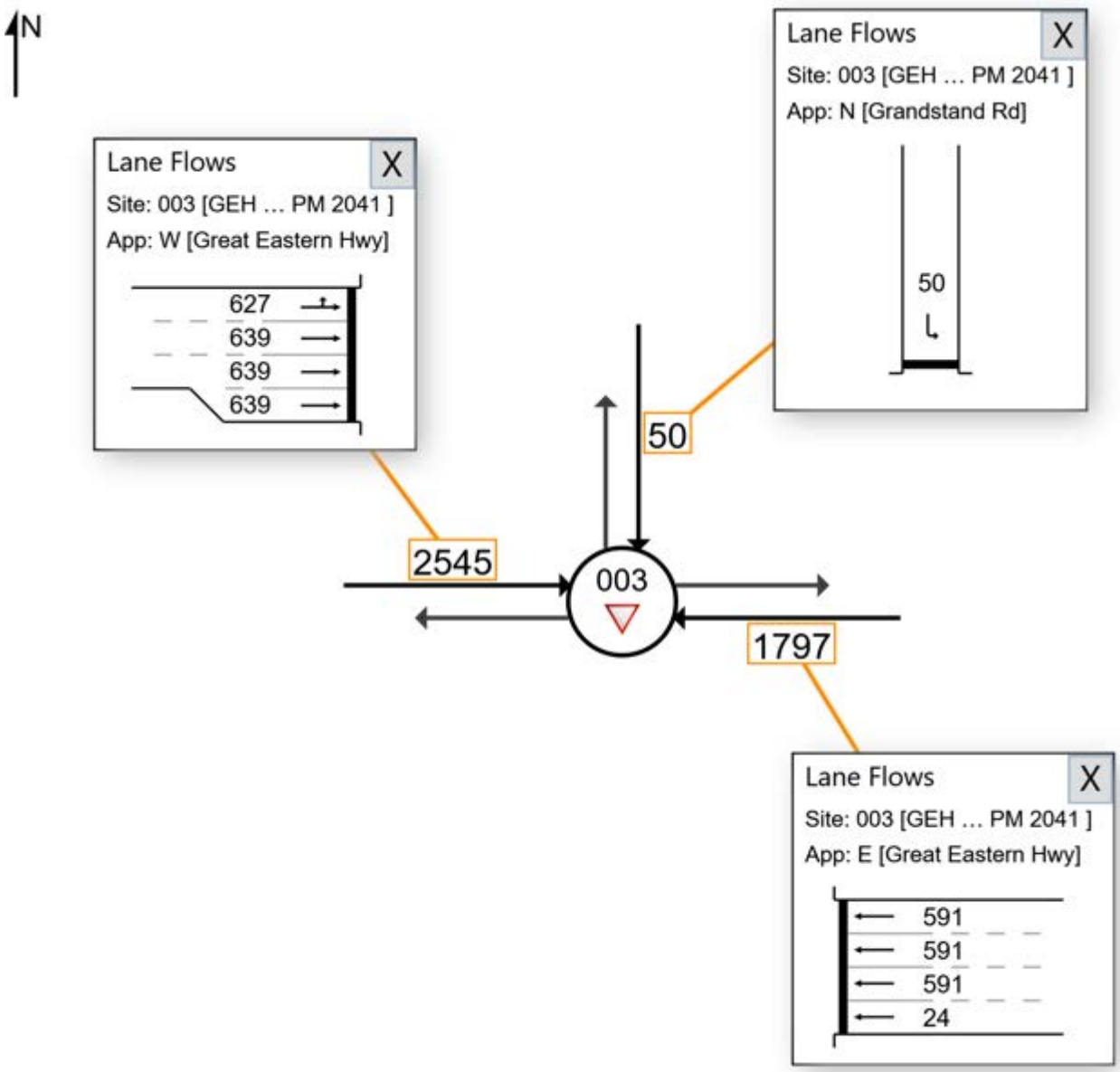

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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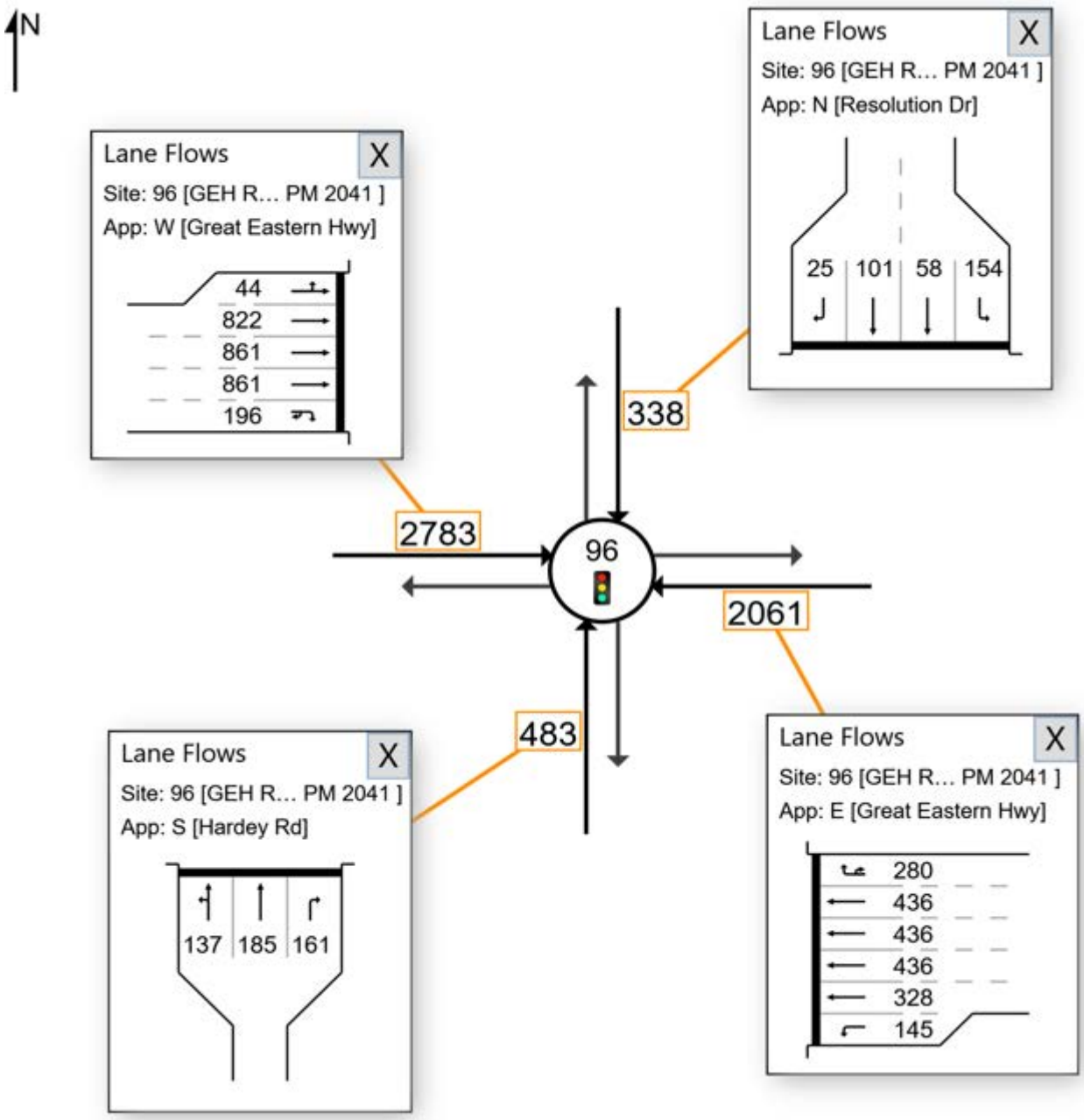

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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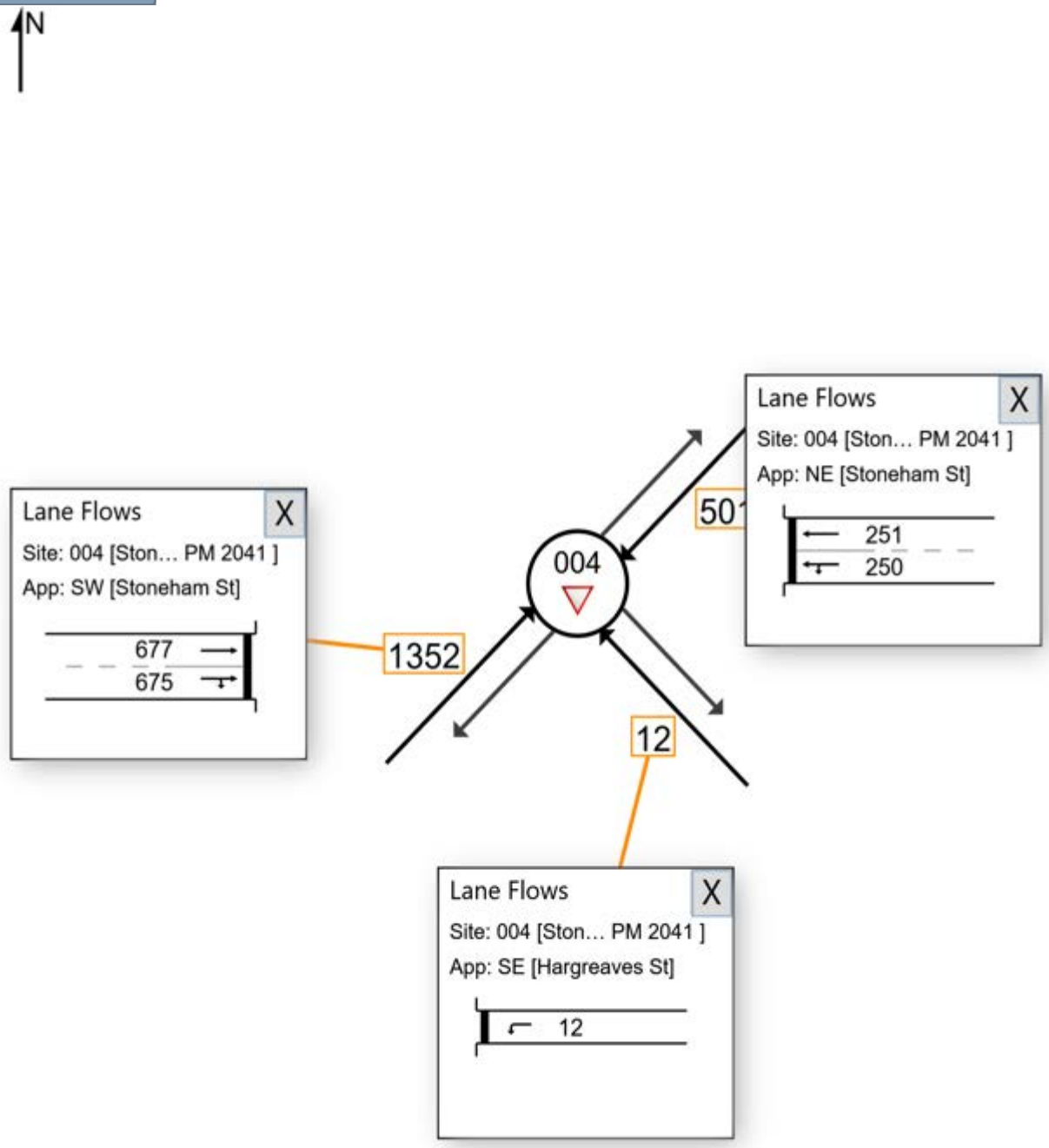

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 006 [Stoneham Daly PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

Stoneham St / Daly St
Left out only, Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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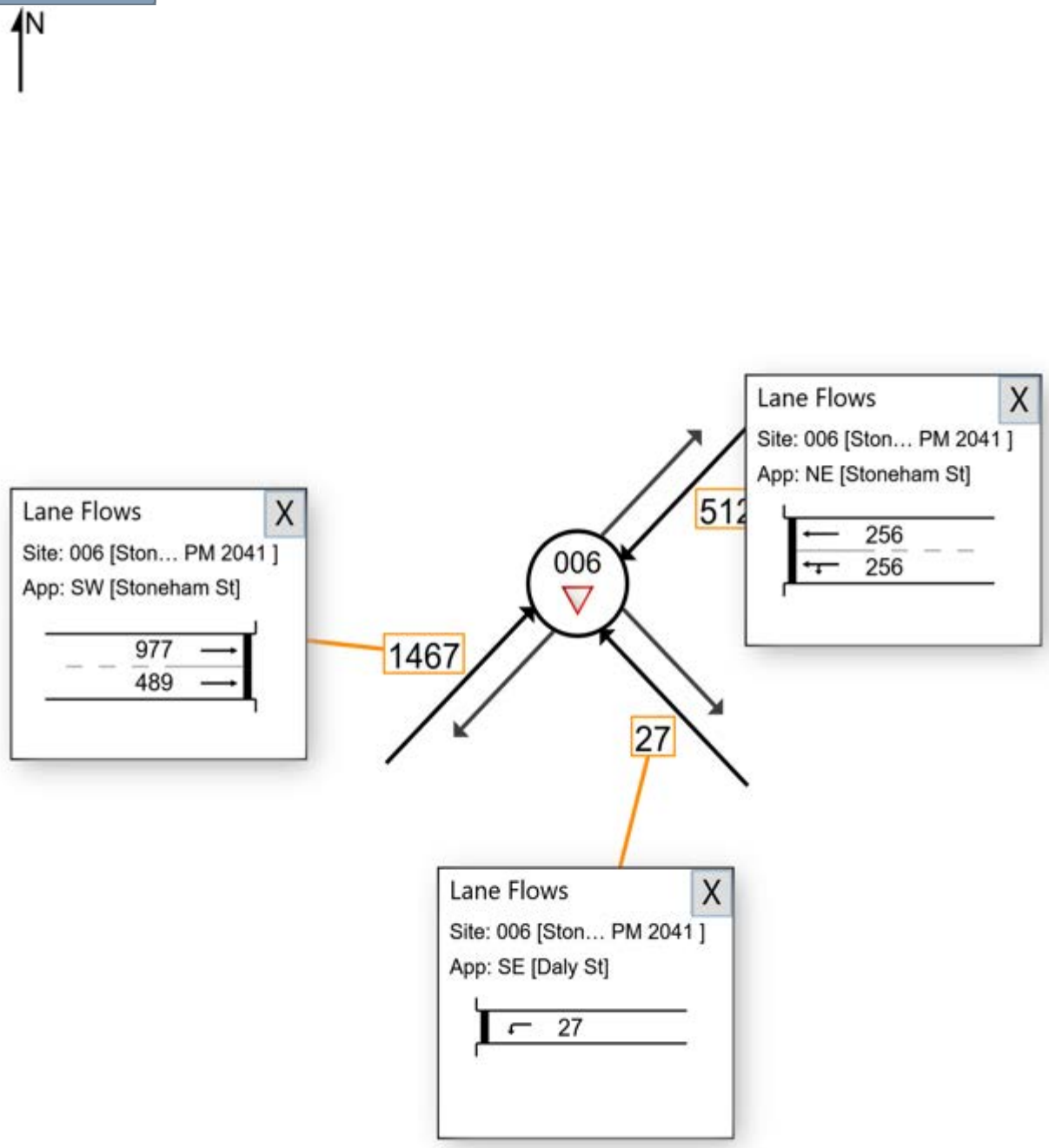

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak
Site Category: Existing Design
Roundabout

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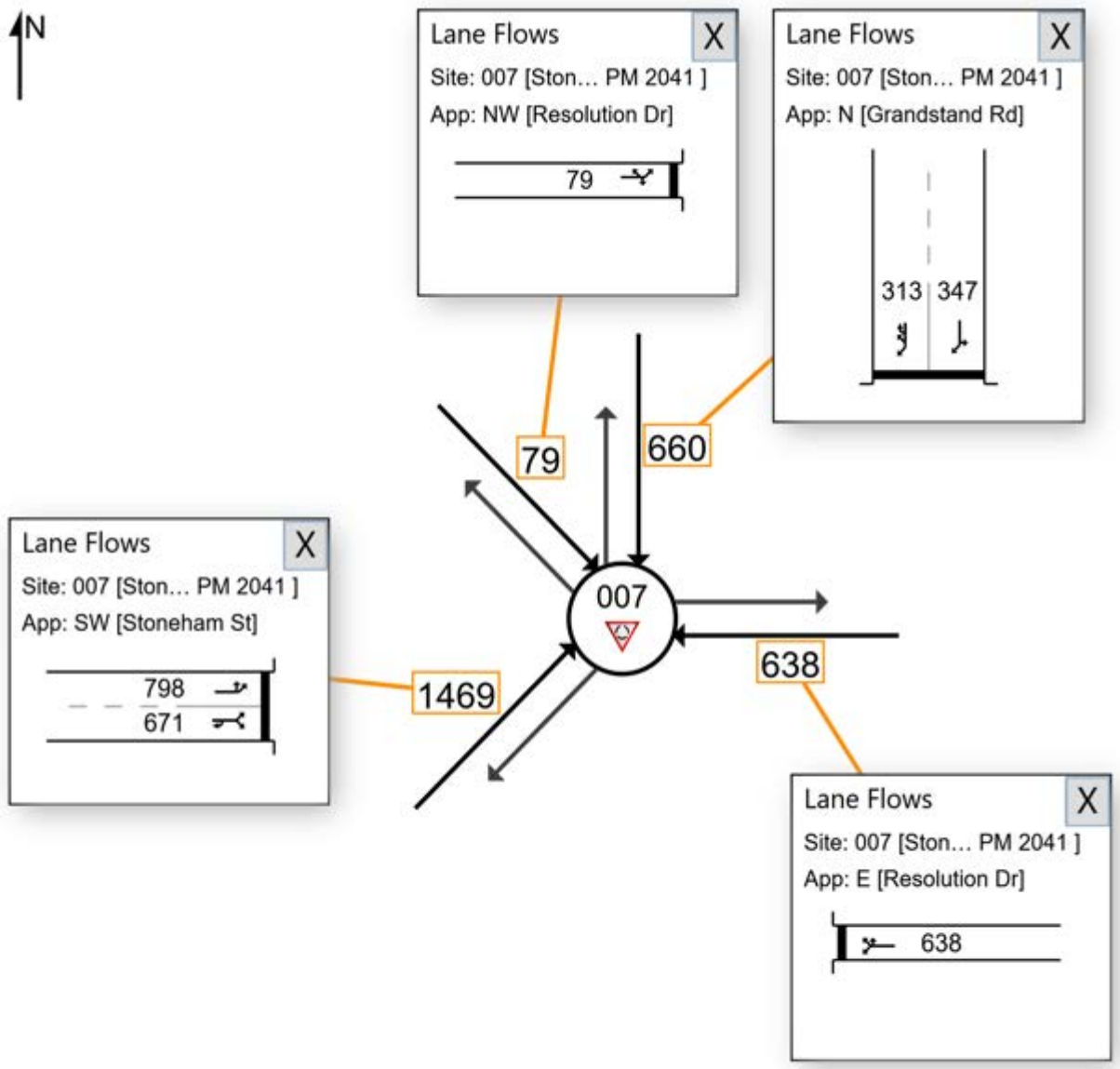

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2041 (Site Folder: 2041 PM Peak)]

Network: N101 [2041 PM Peak (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2041 PM Peak
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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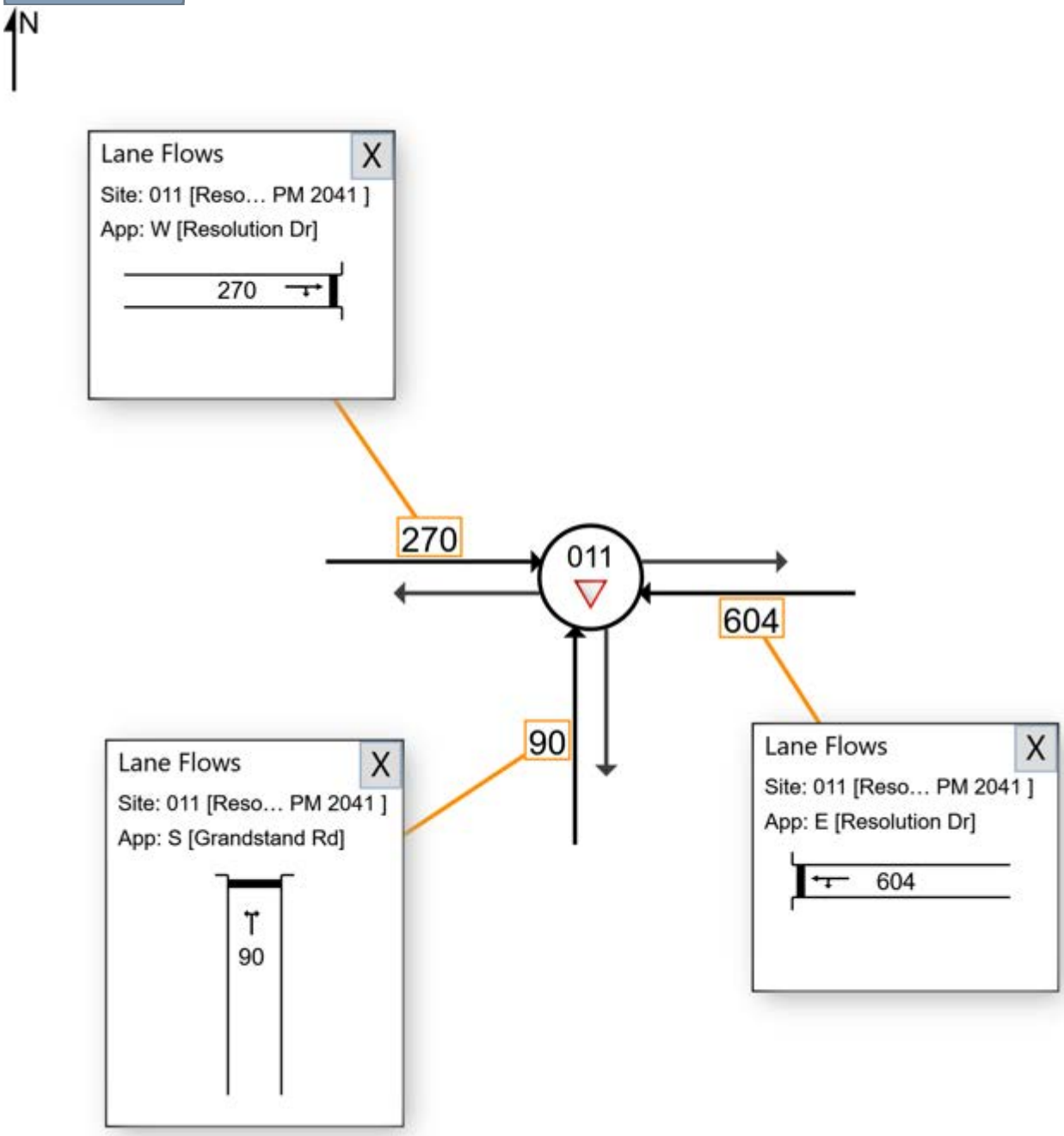

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 AM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

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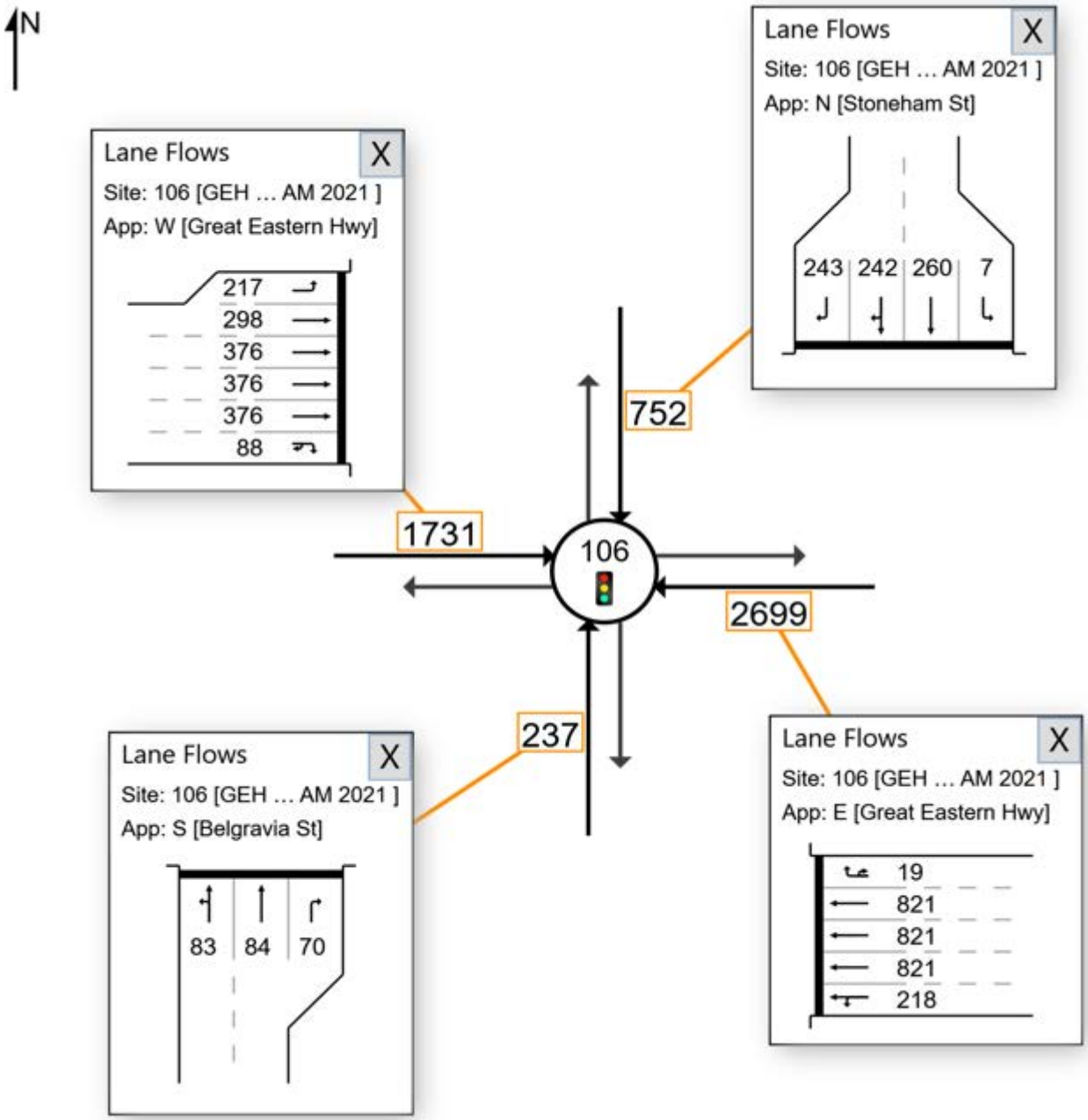

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2021 AM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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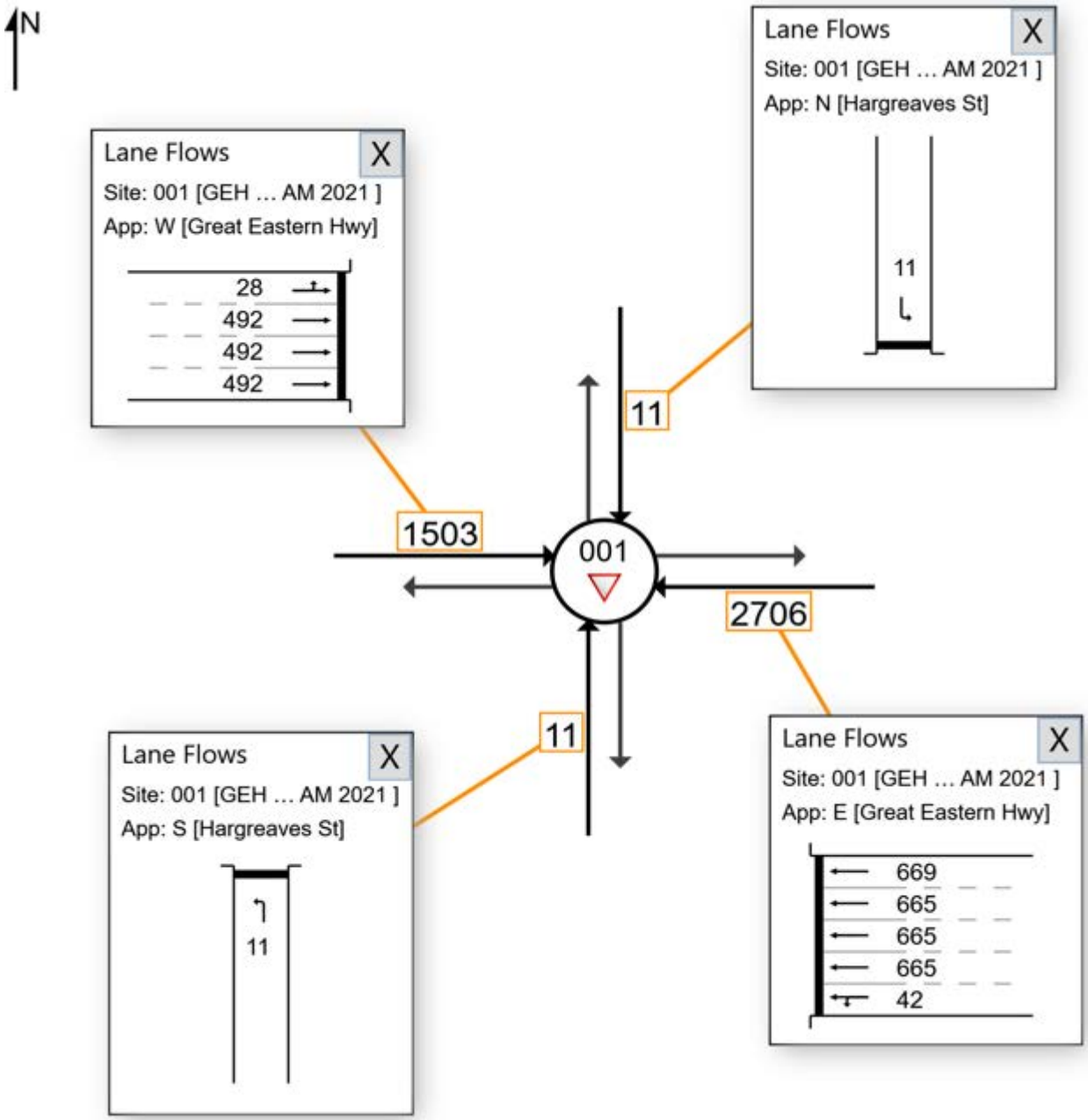

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2021 AM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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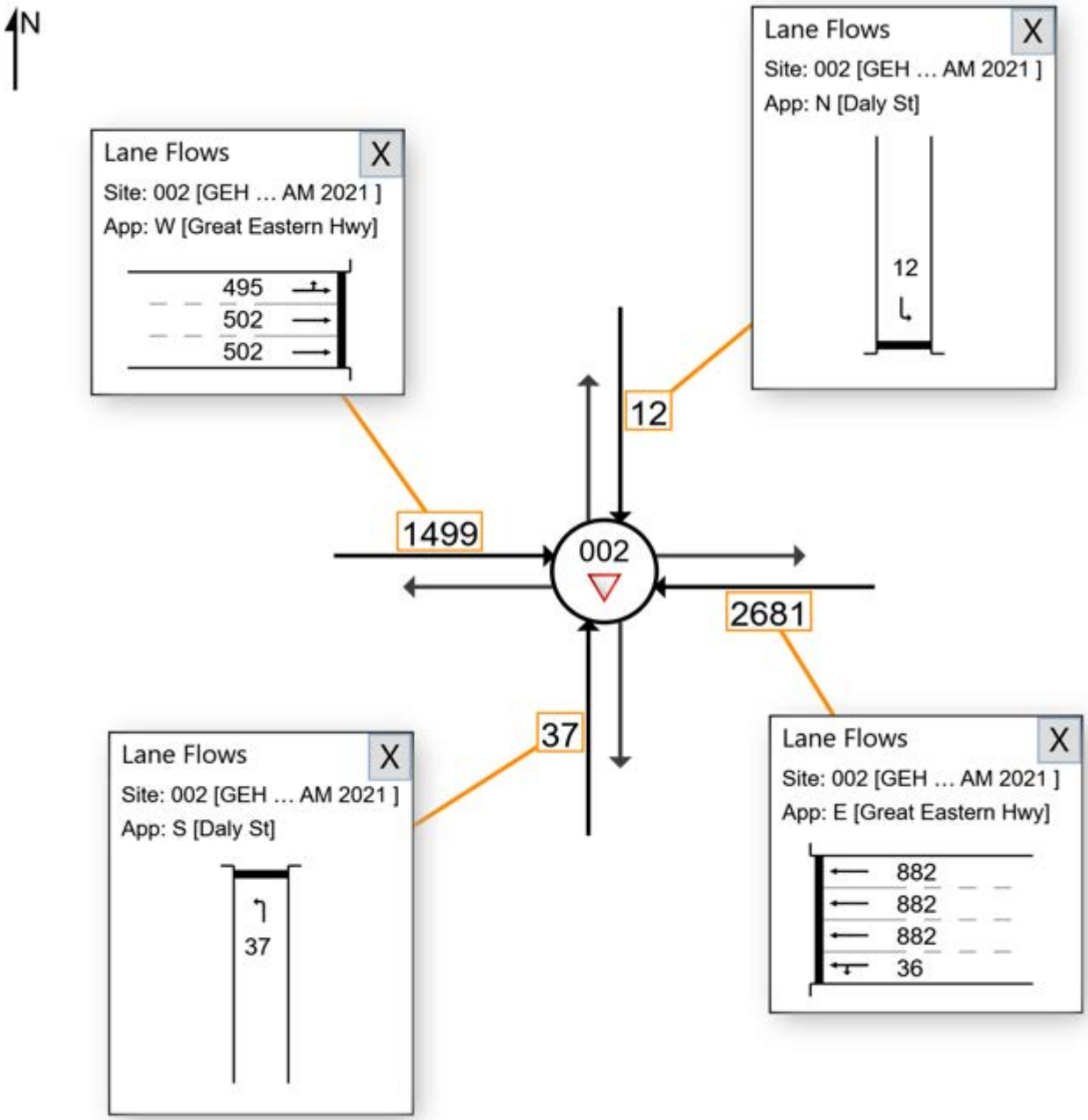

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2021 AM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

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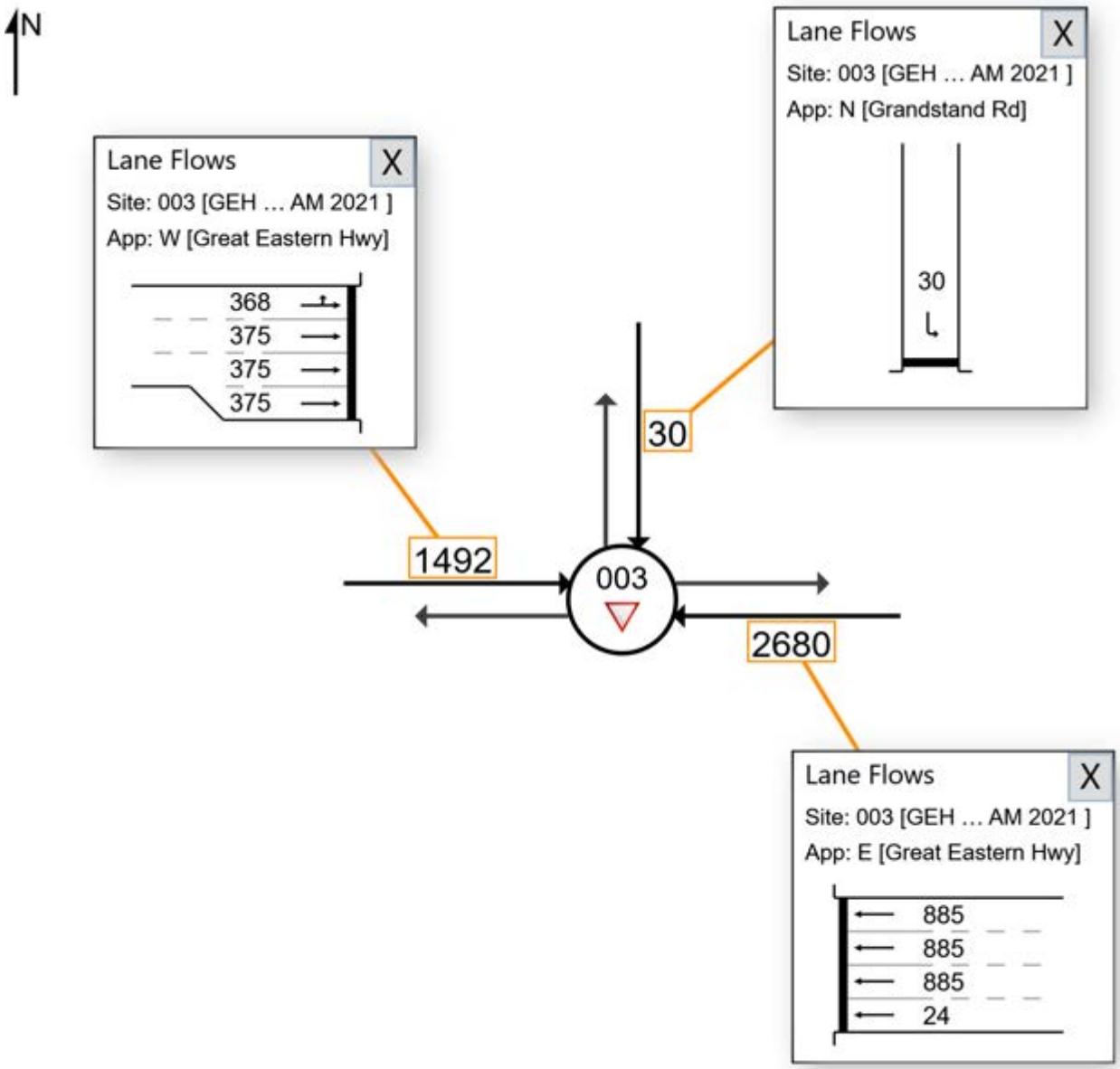

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 AM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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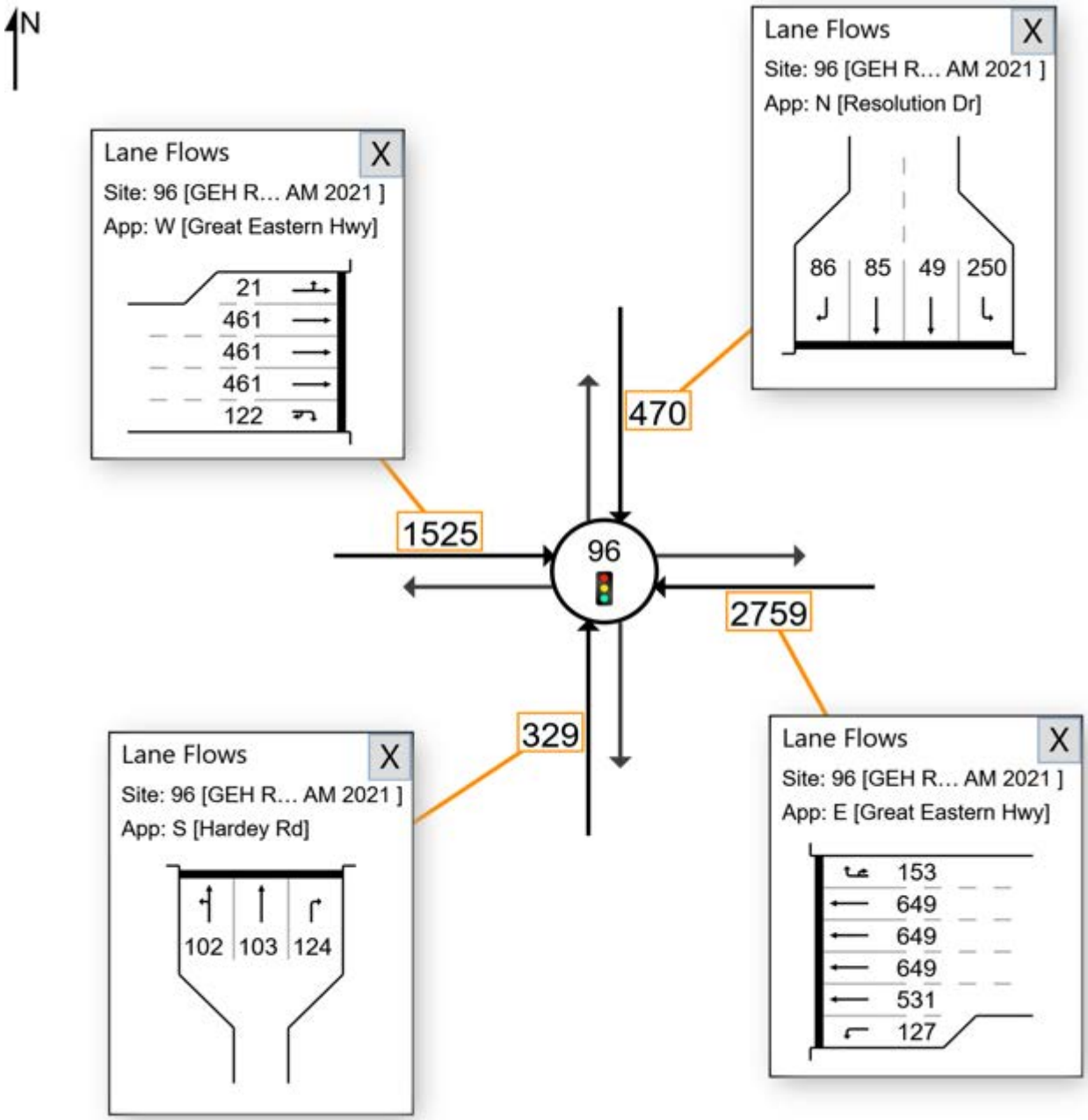
Close All Popups



APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2021 AM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

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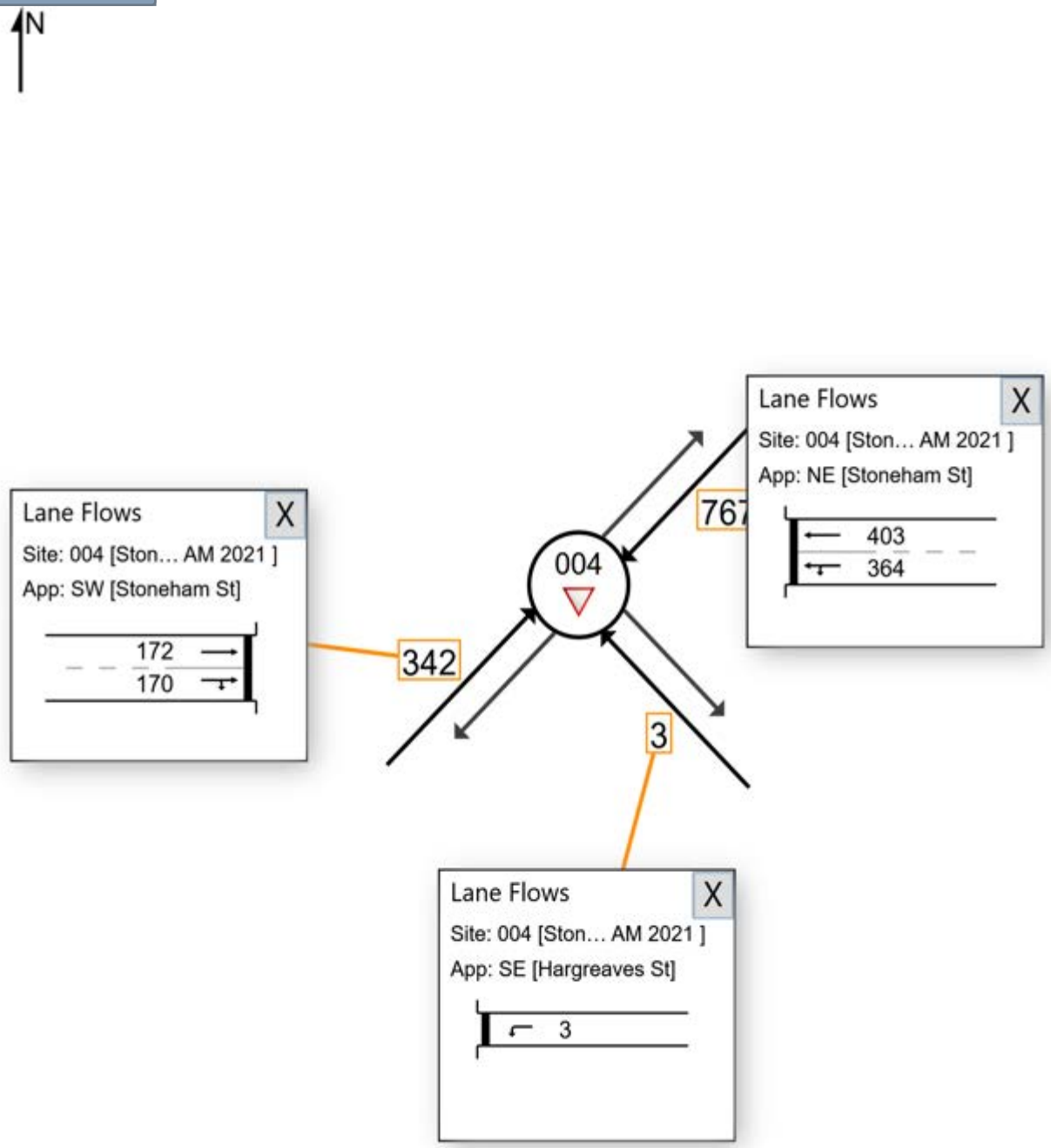

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 AM Peak with proposed road network
Site Category: Existing Design
Roundabout

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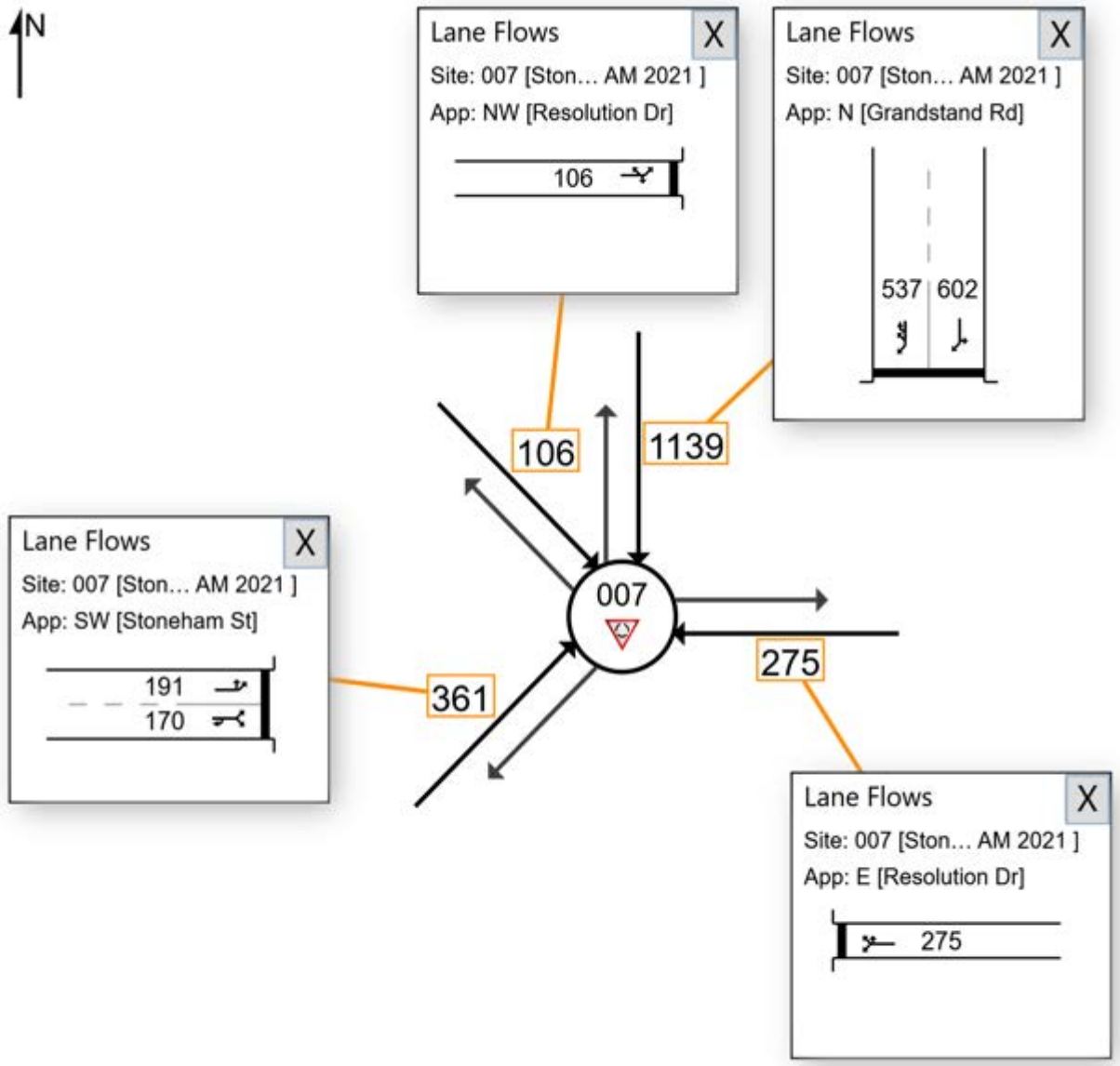

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand AM 2021 (Site Folder: 2021 AM Peak Proposed Network)]

Network: N101 [2021 AM Peak Proposed Network (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2021 AM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups. Click value labels to open selected ones.
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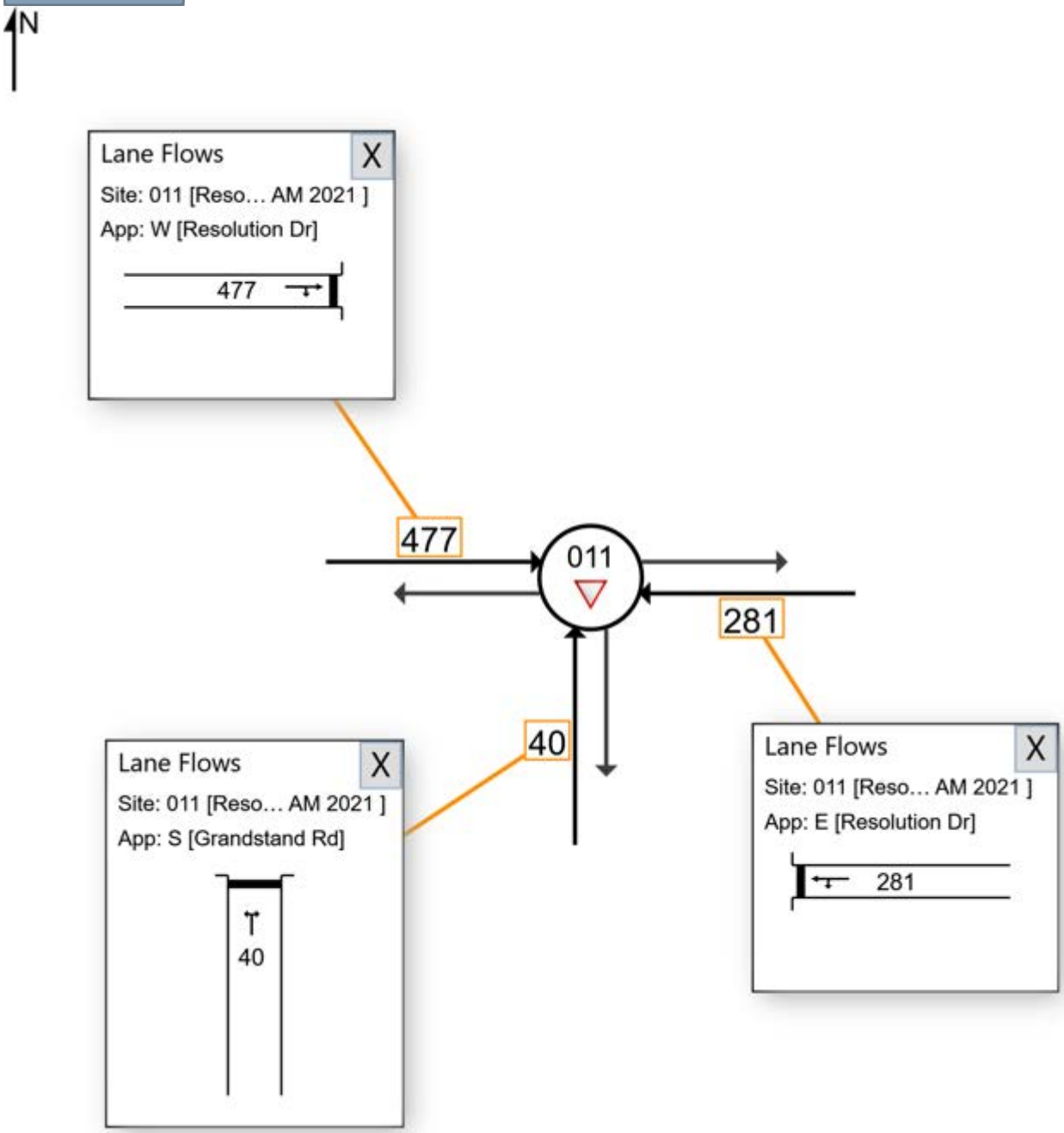

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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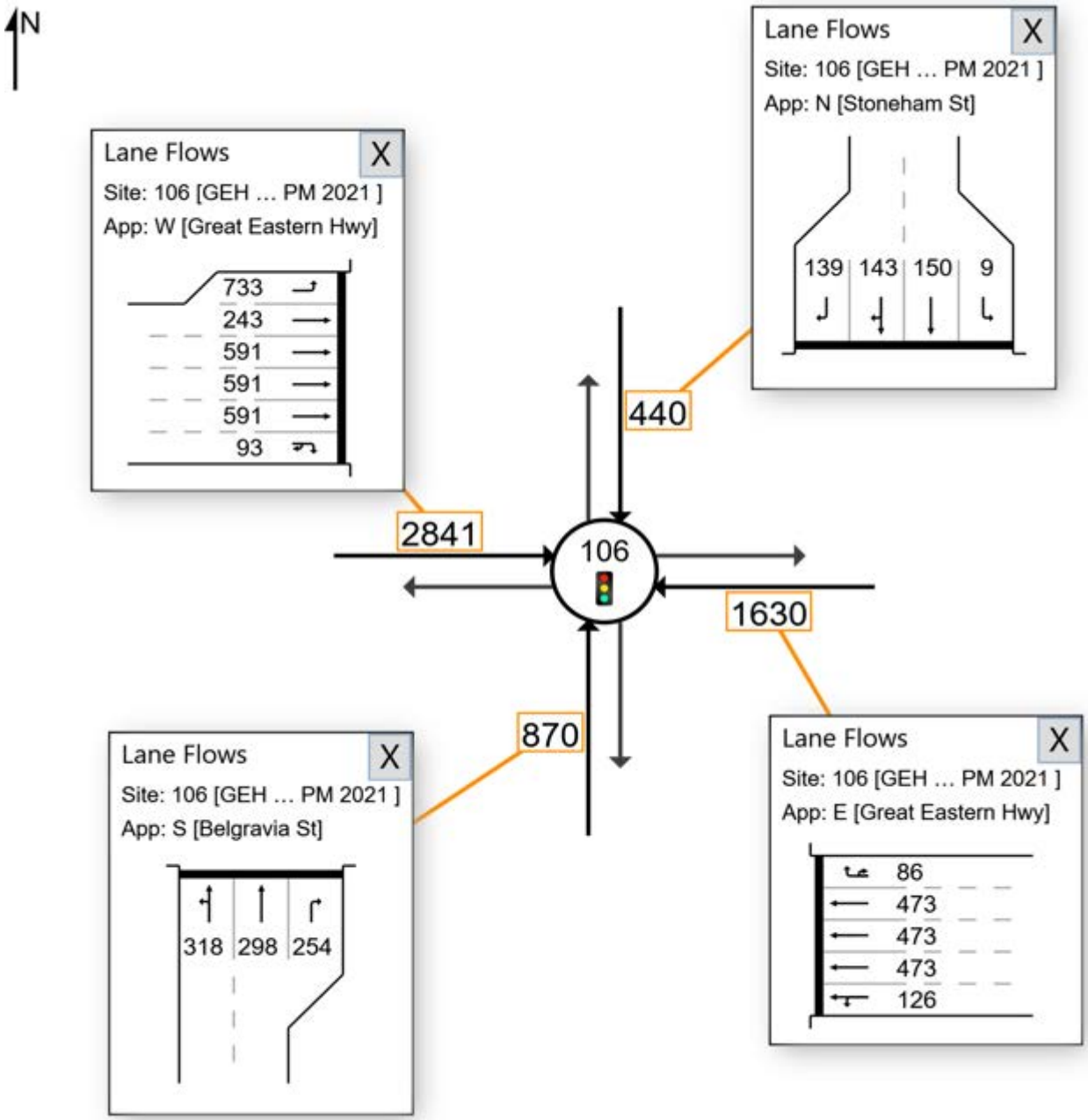

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2021 PM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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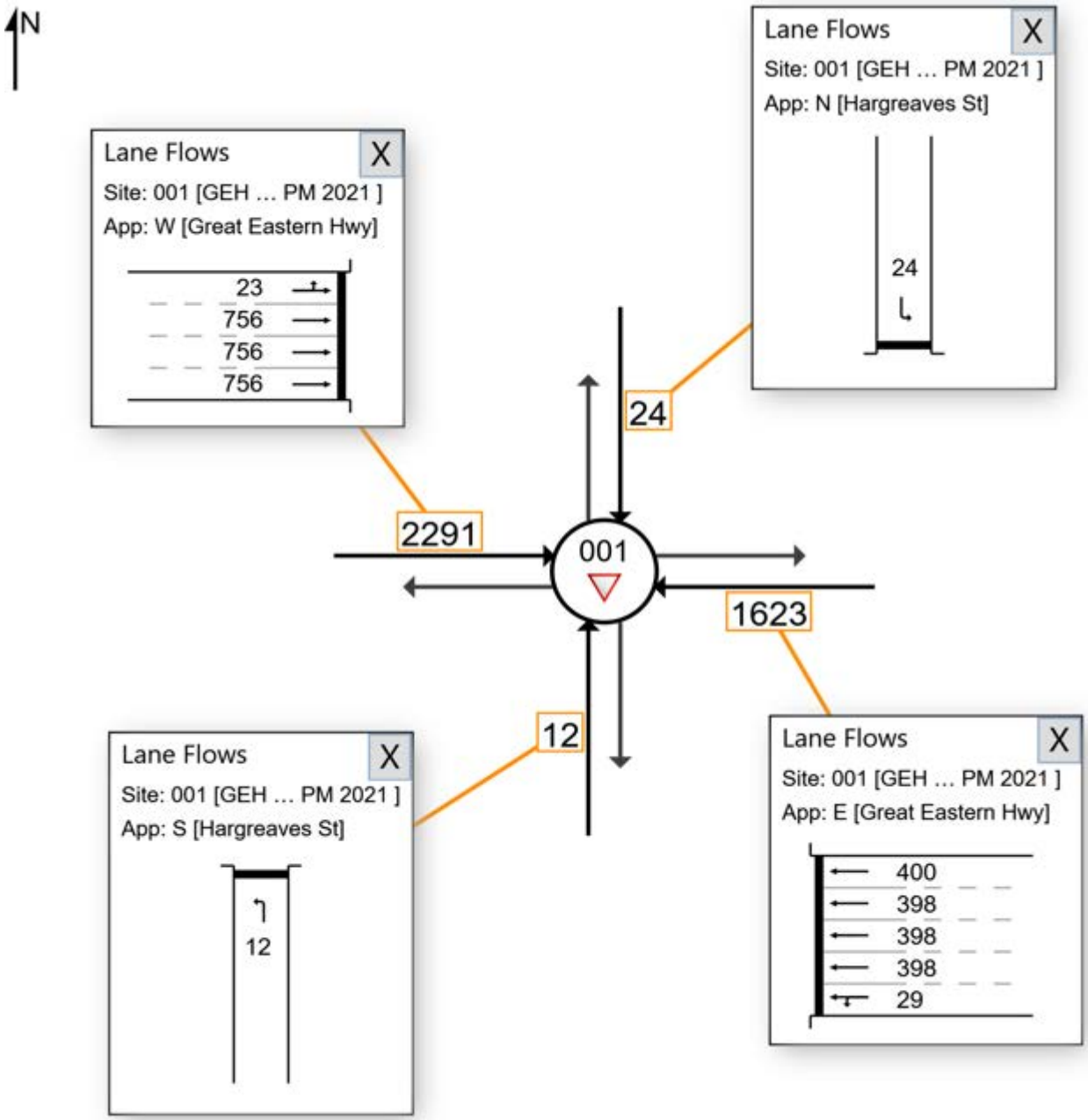

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2021 PM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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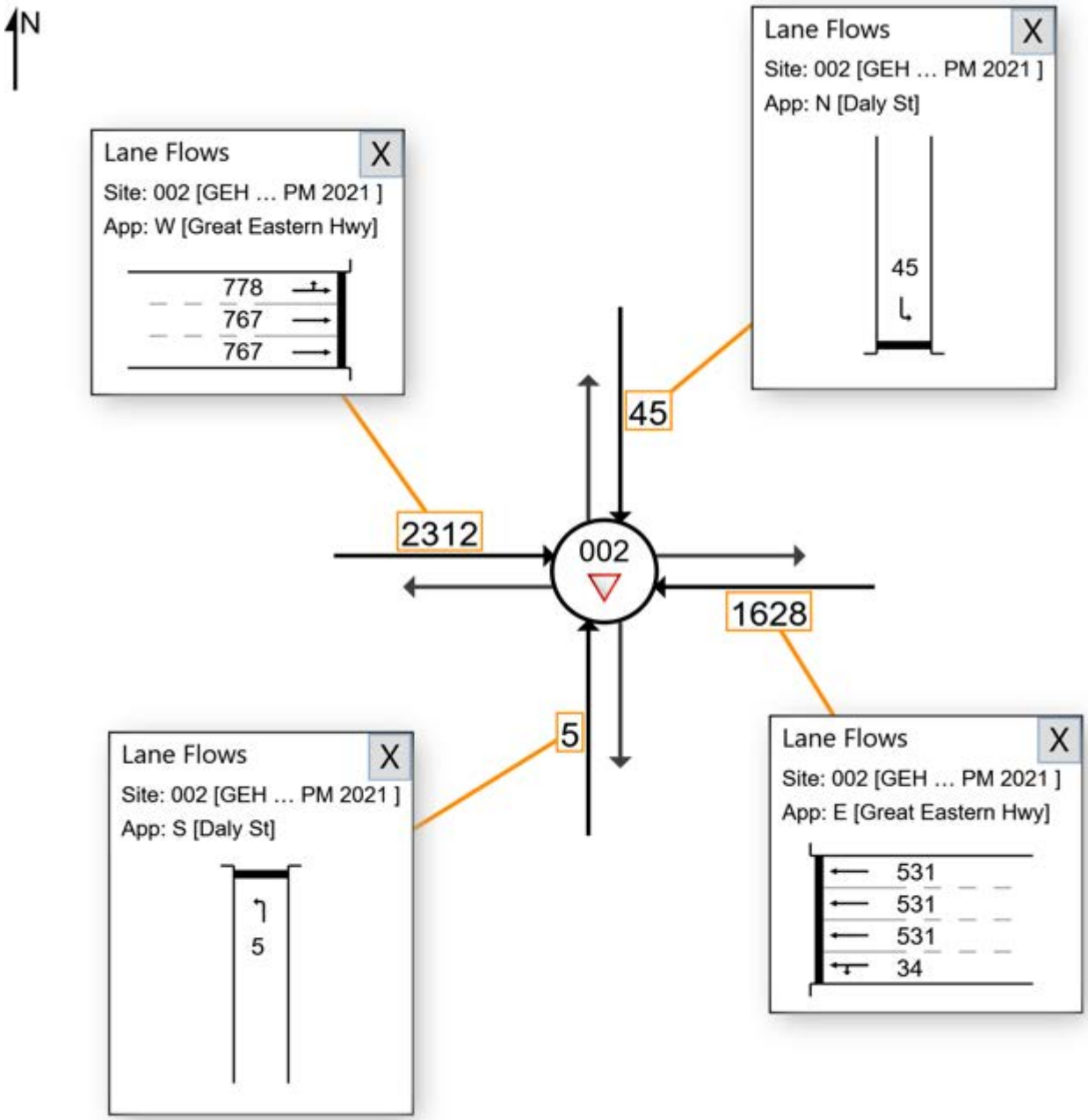

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2021 PM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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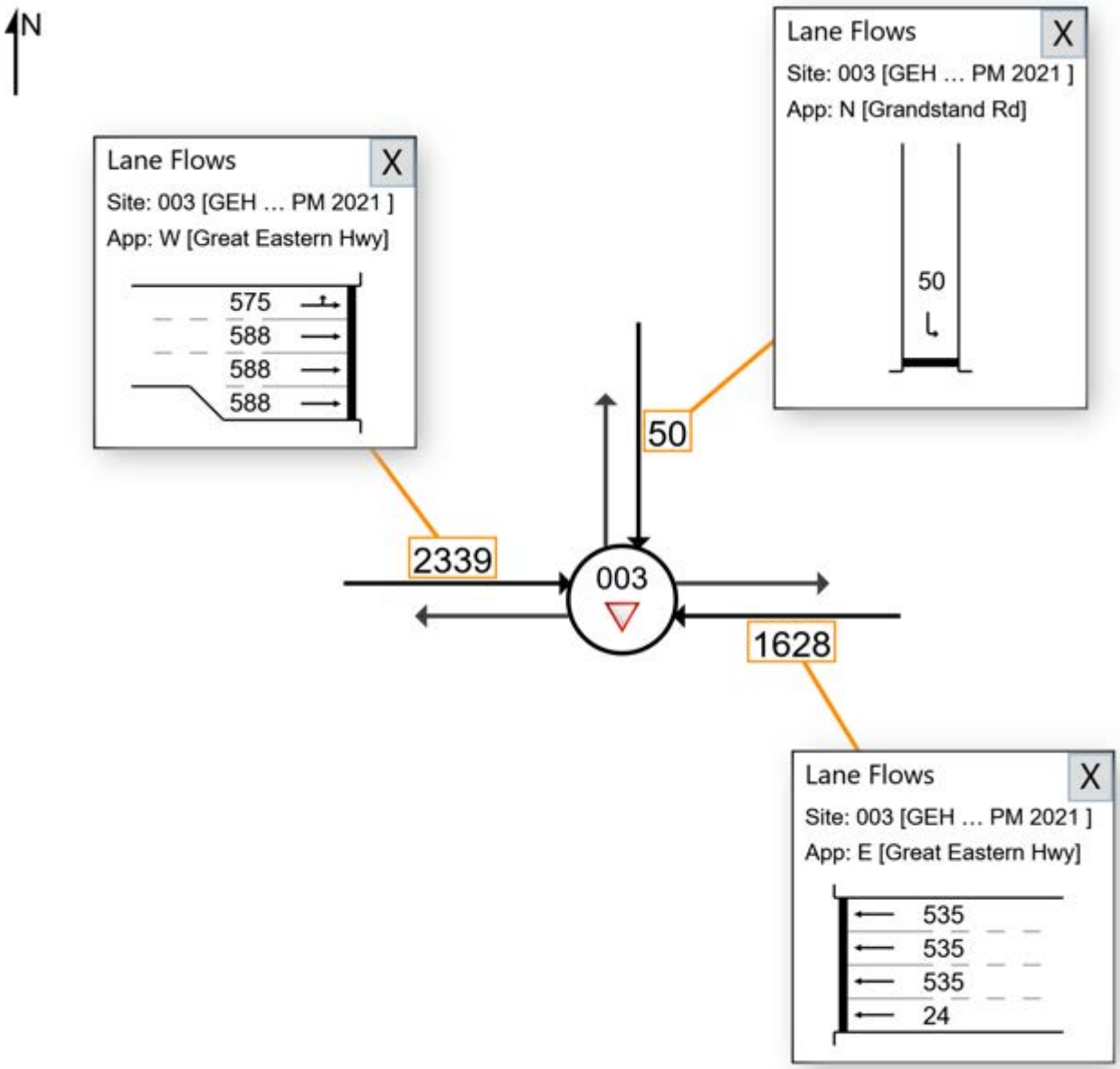
Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak with proposed road network
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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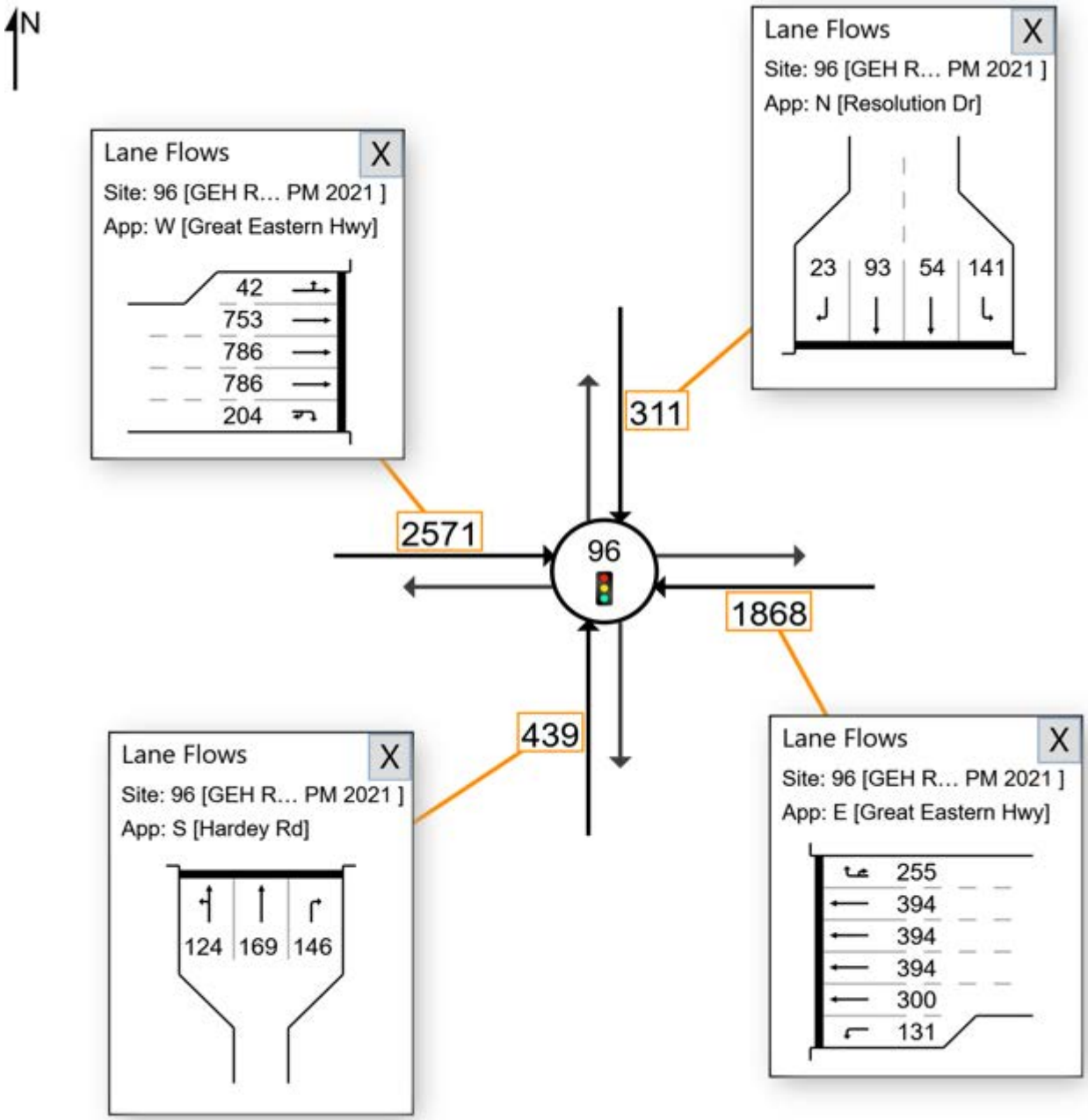

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2021 PM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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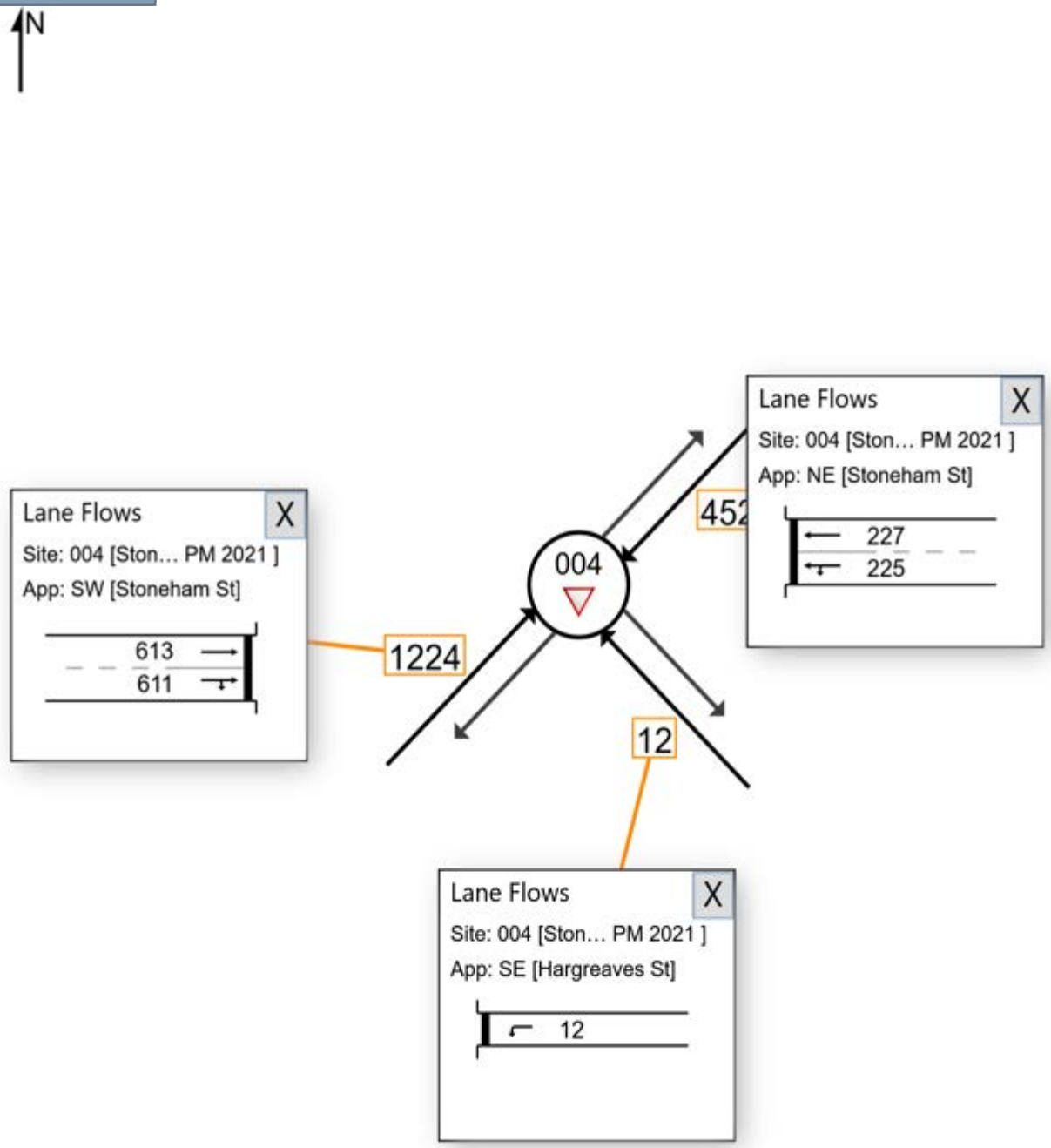

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak with proposed road network
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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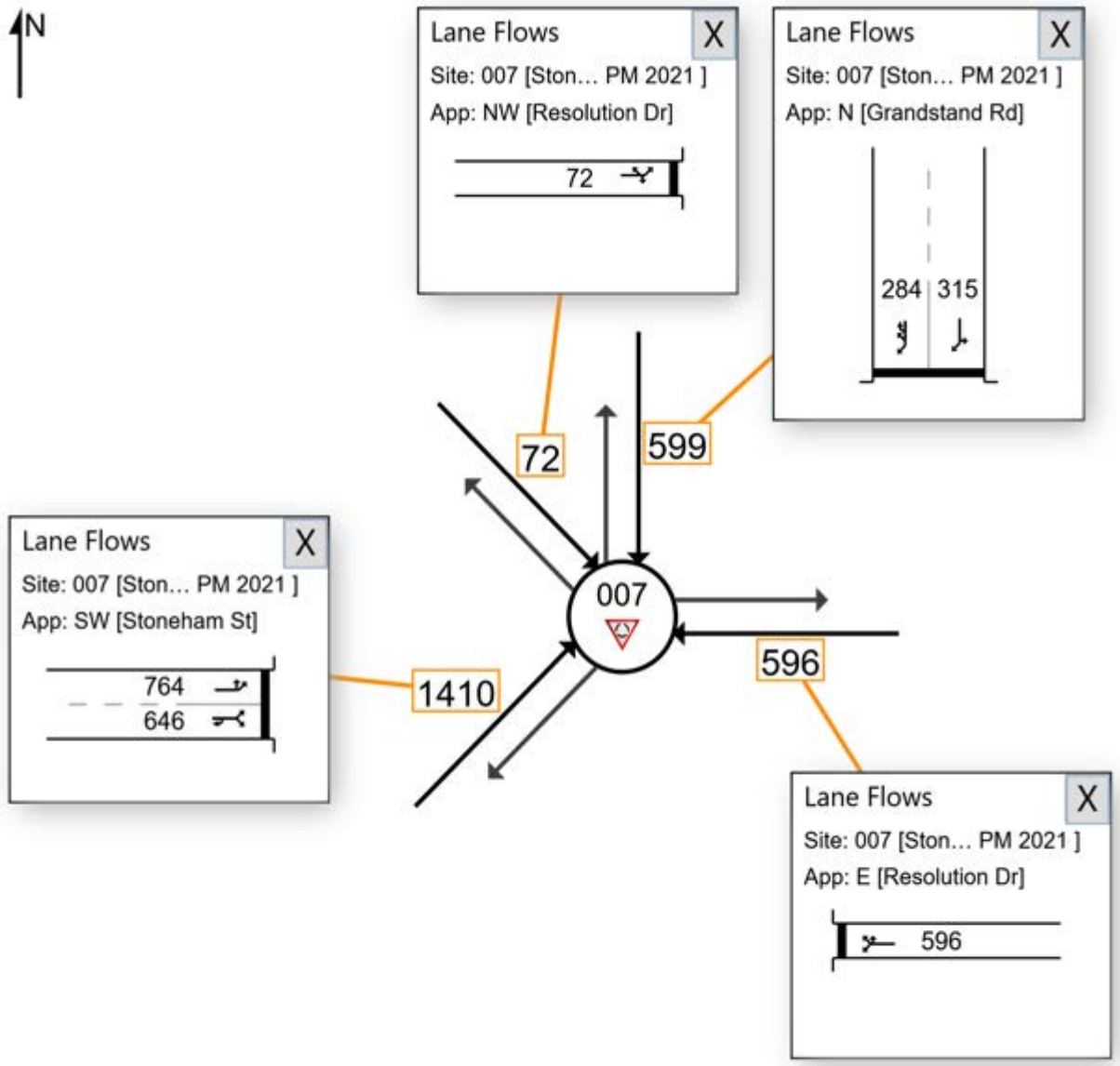


Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

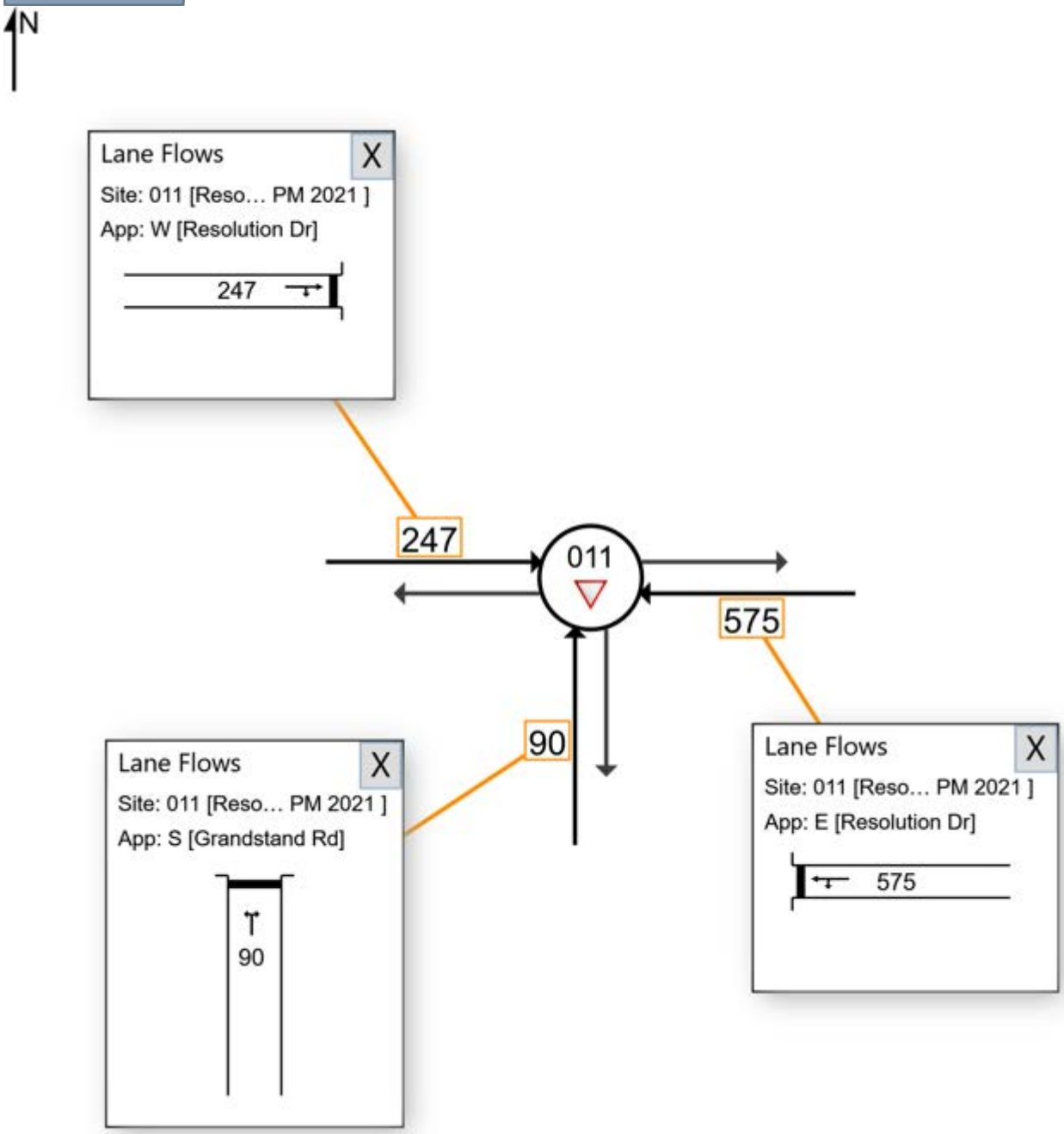
Site: 011 [Resolution Grandstand PM 2021 (Site Folder: 2021 PM Peak Proposed Network)]

Network: N101 [2021 PM Peak Proposed Network (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2021 PM Peak with proposed road network
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

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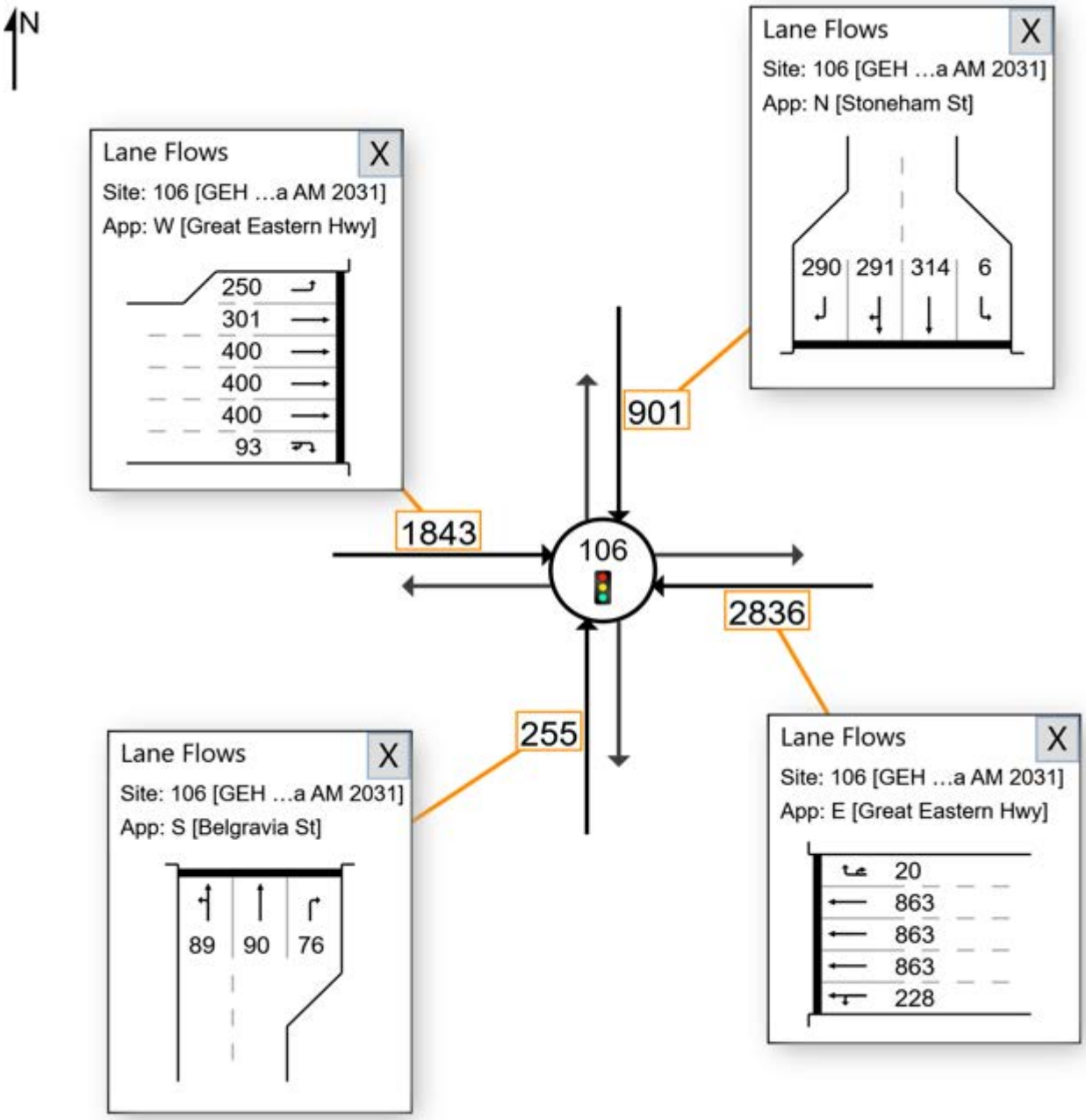

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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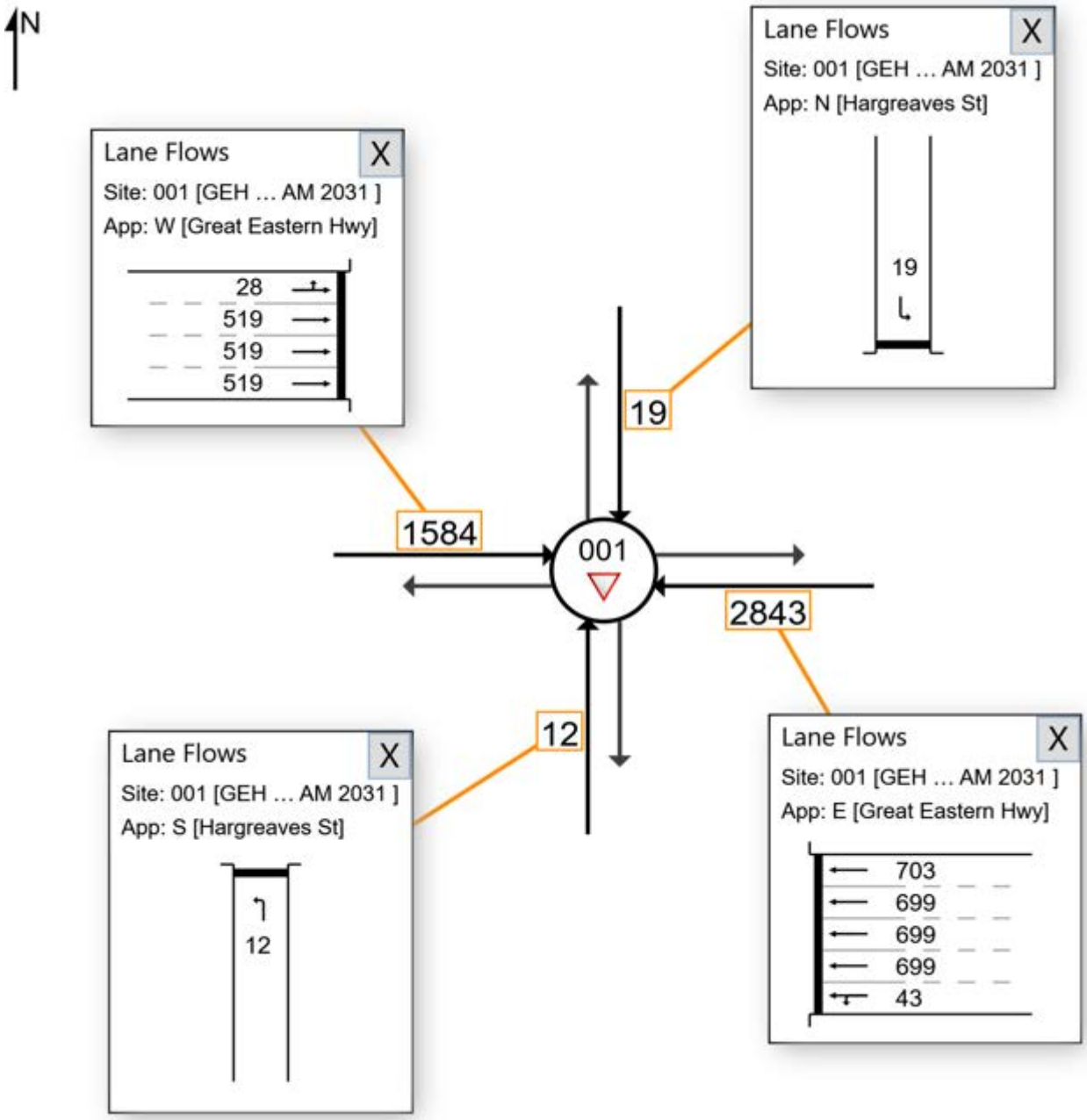

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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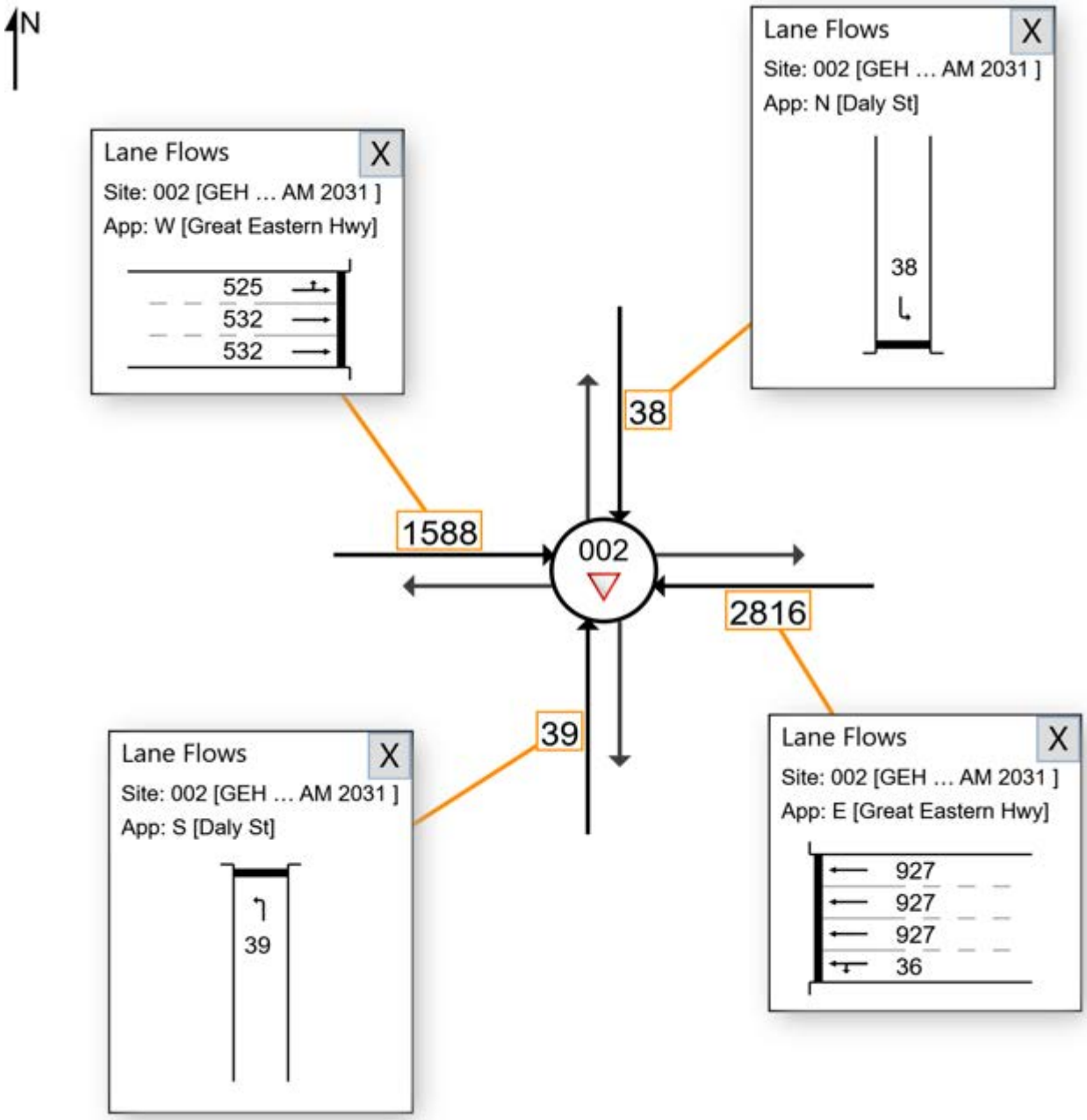

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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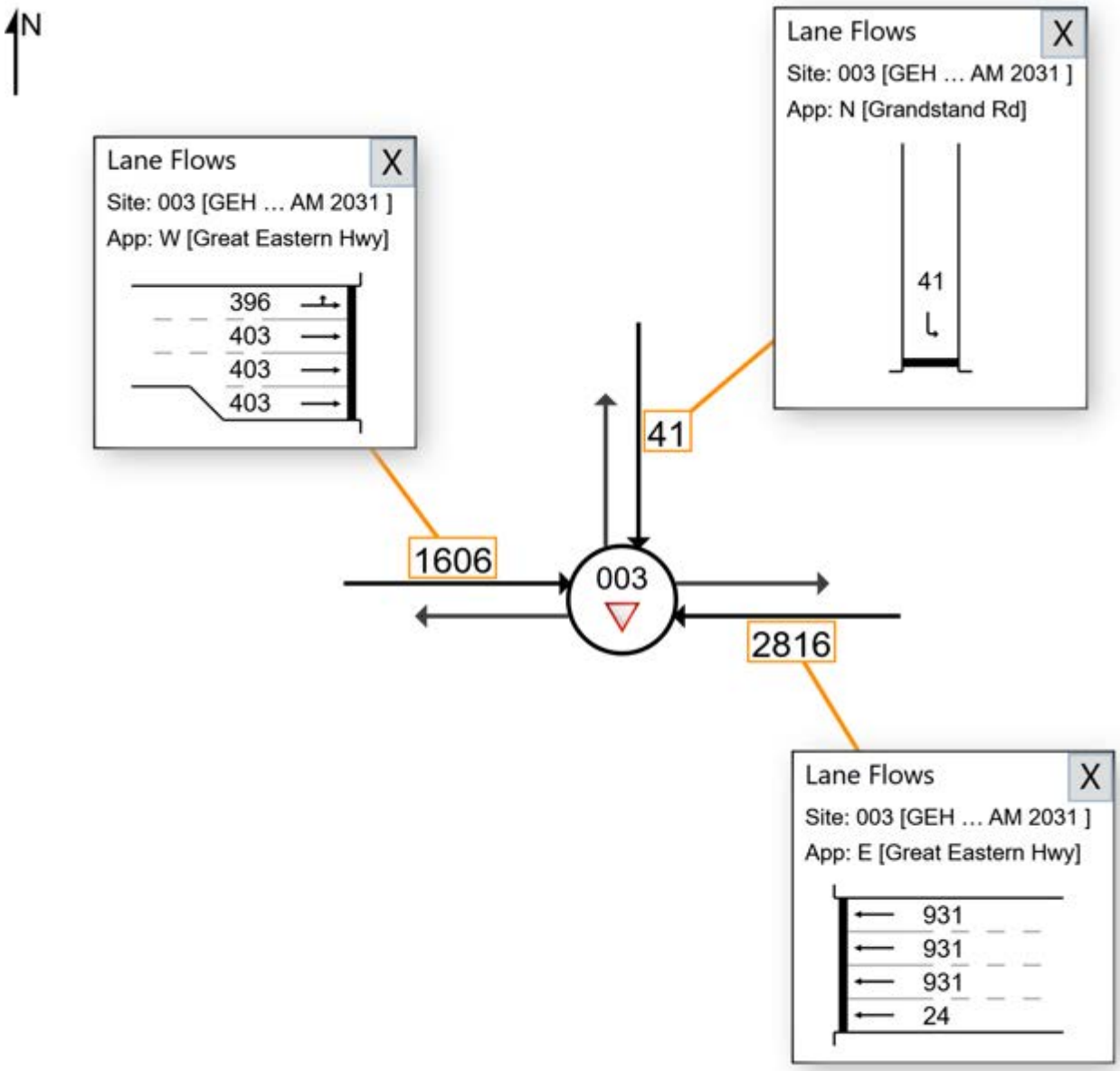

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

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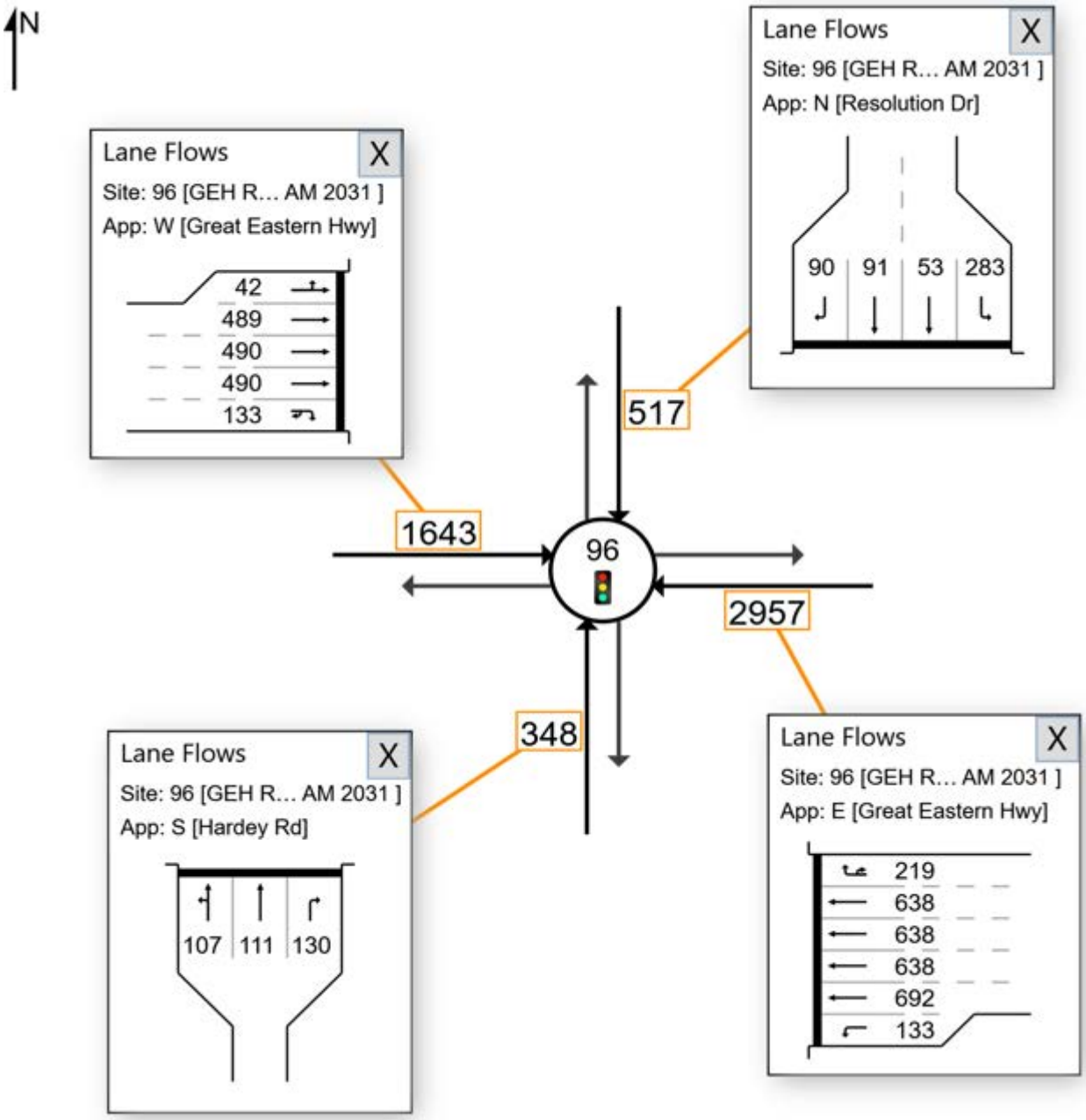

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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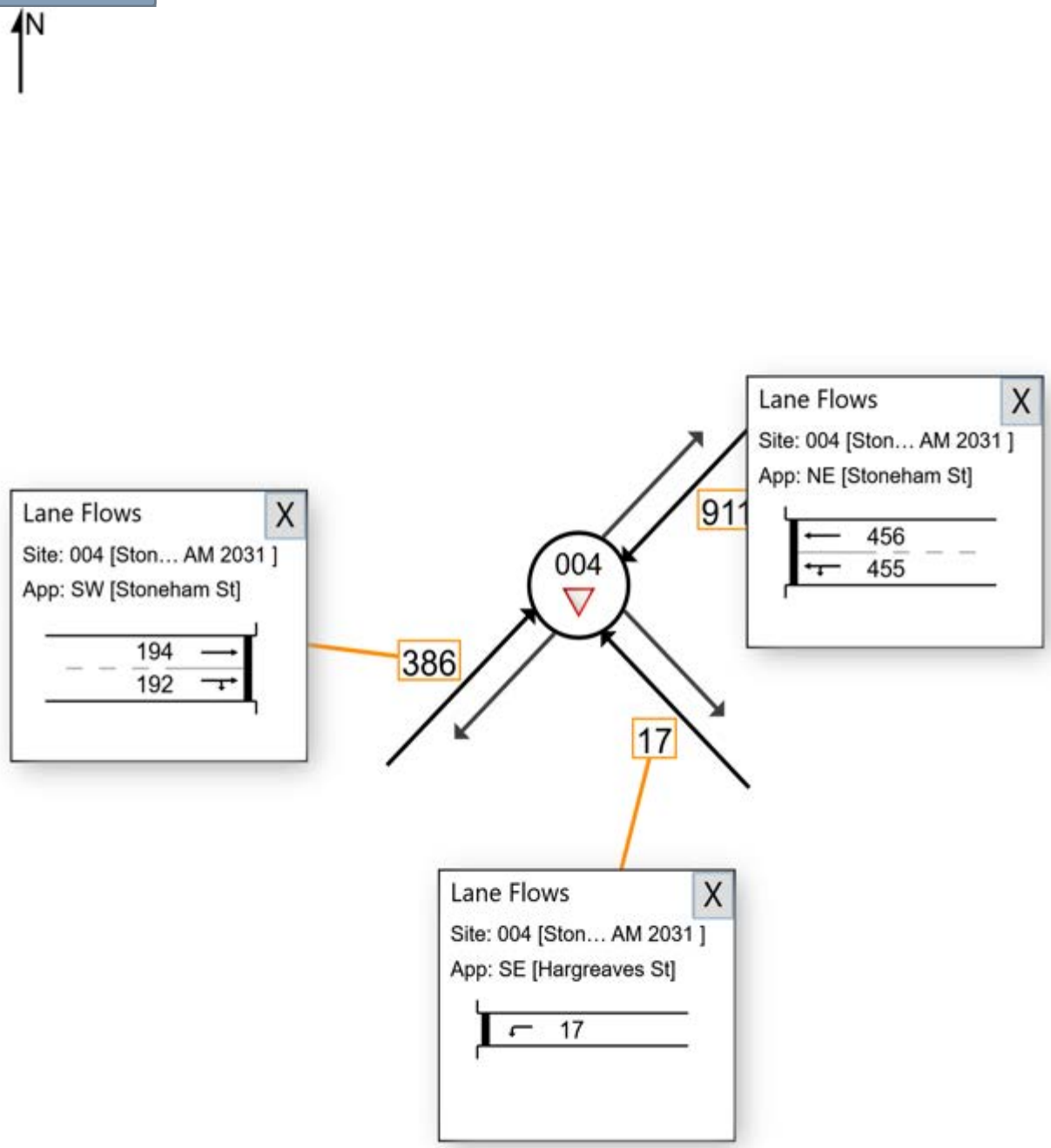

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

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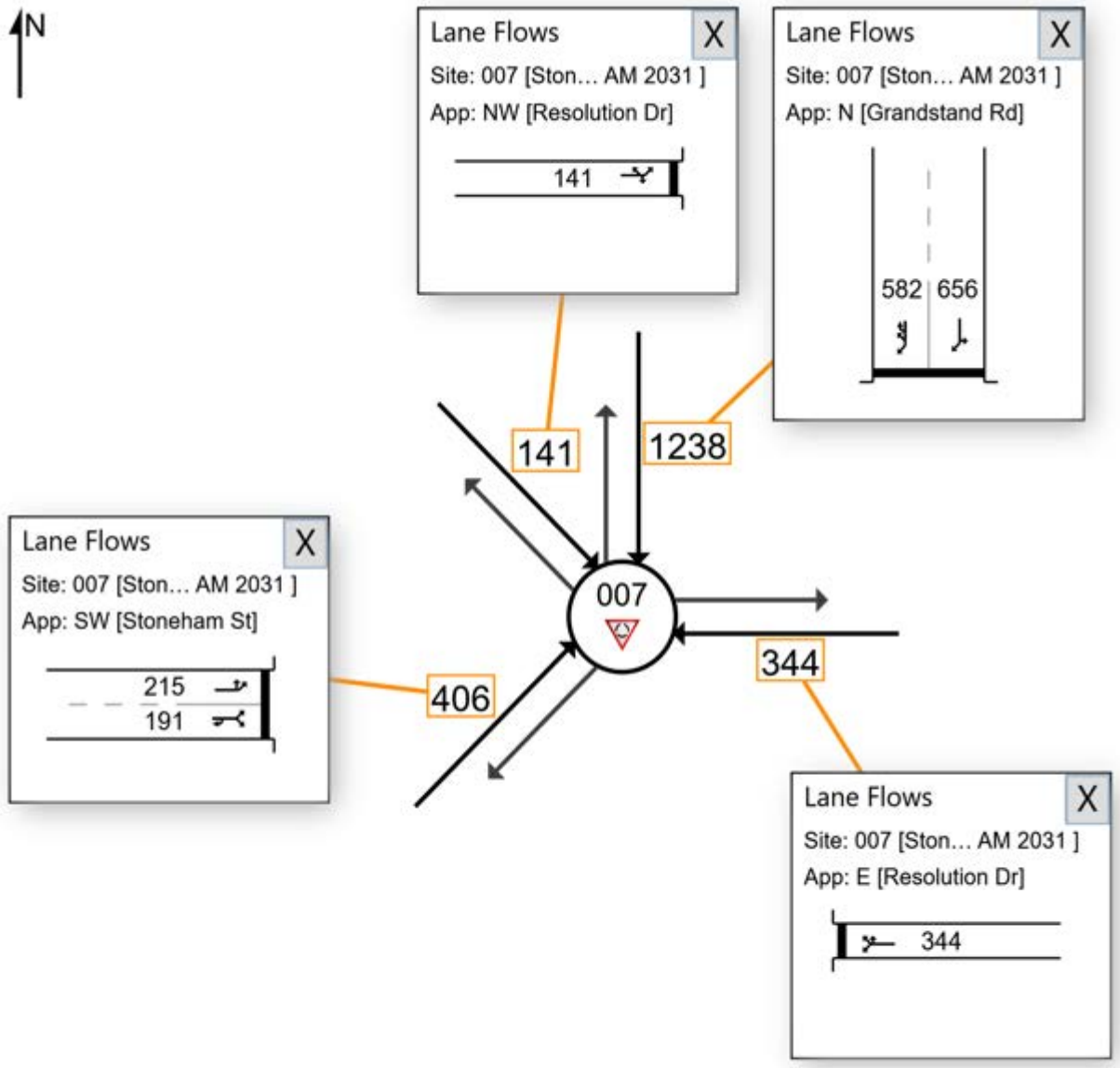

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand AM 2031 (Site Folder: 2031 AM Peak Proposed Network and Land Uses)]

Network: N101 [2031 AM Peak Proposed Network and Land Use (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2031 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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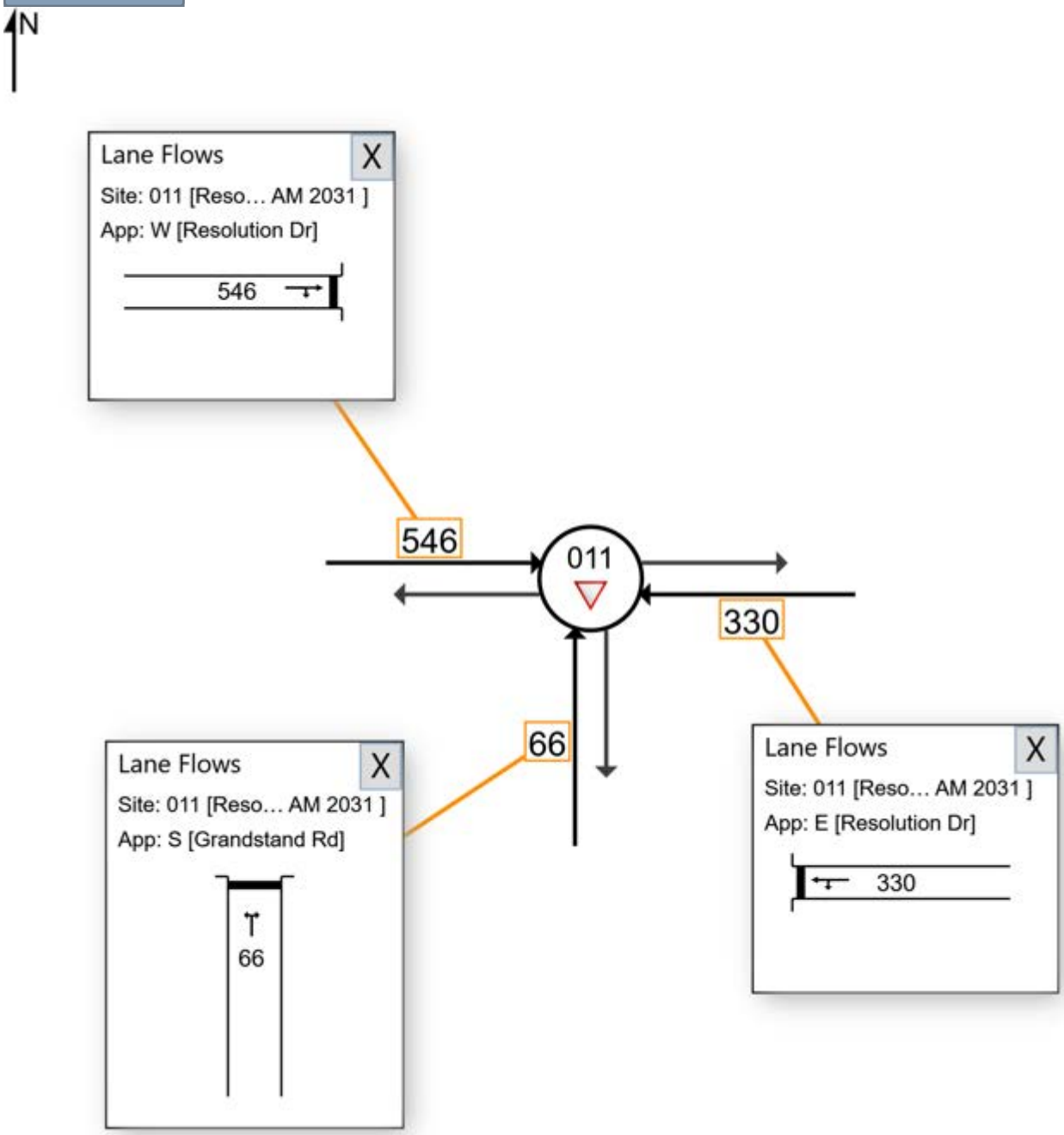

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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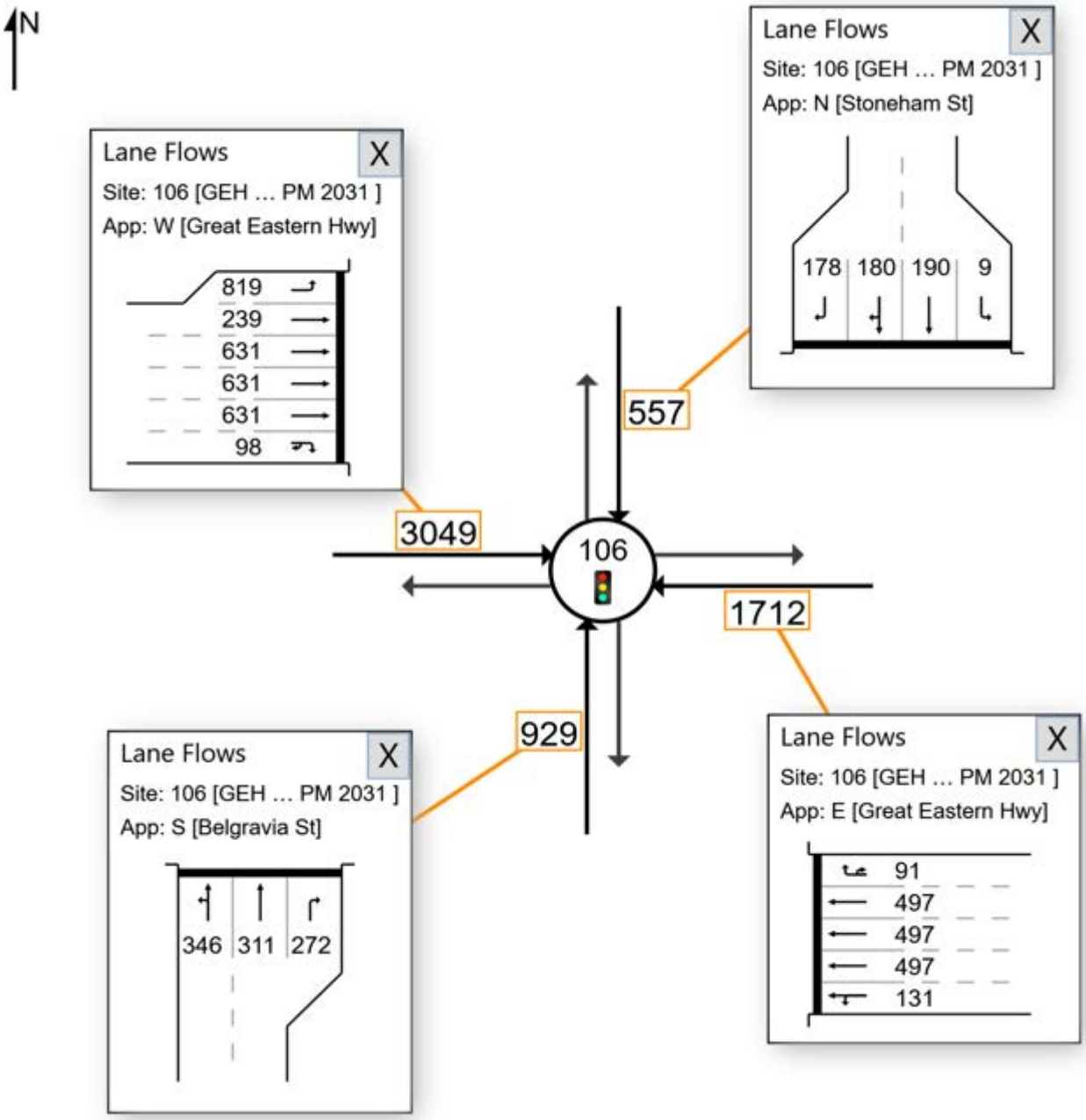

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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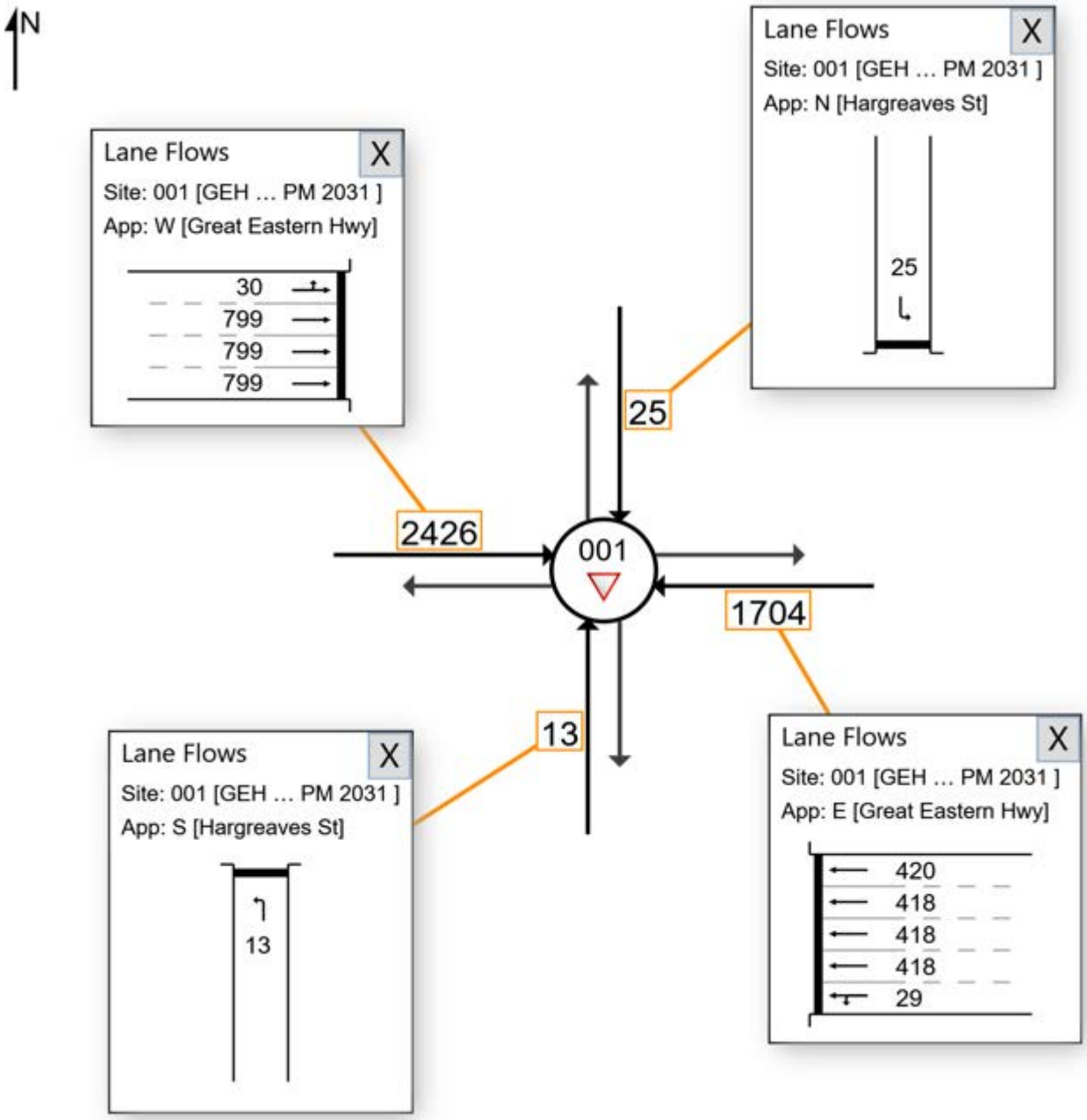

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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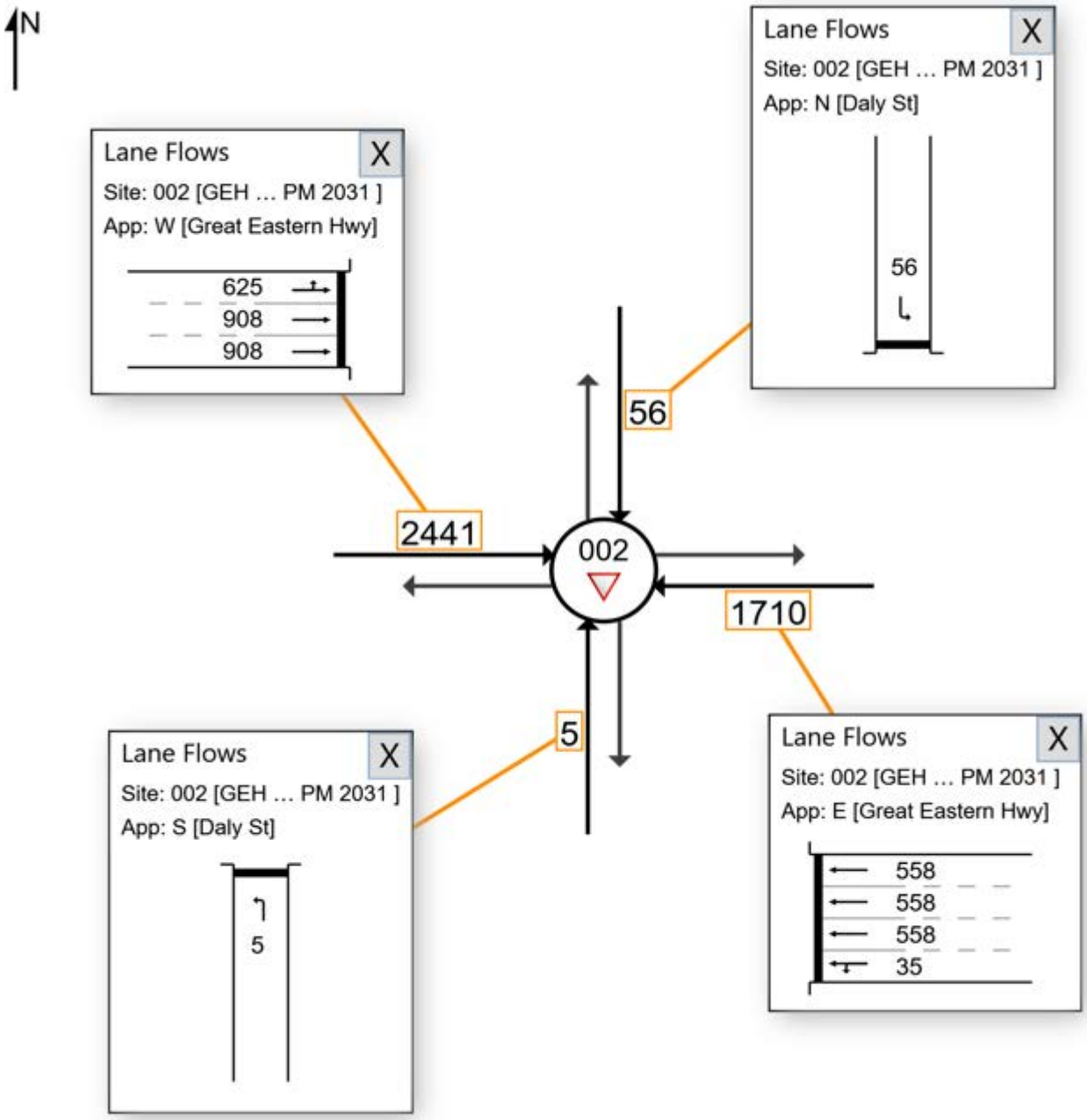

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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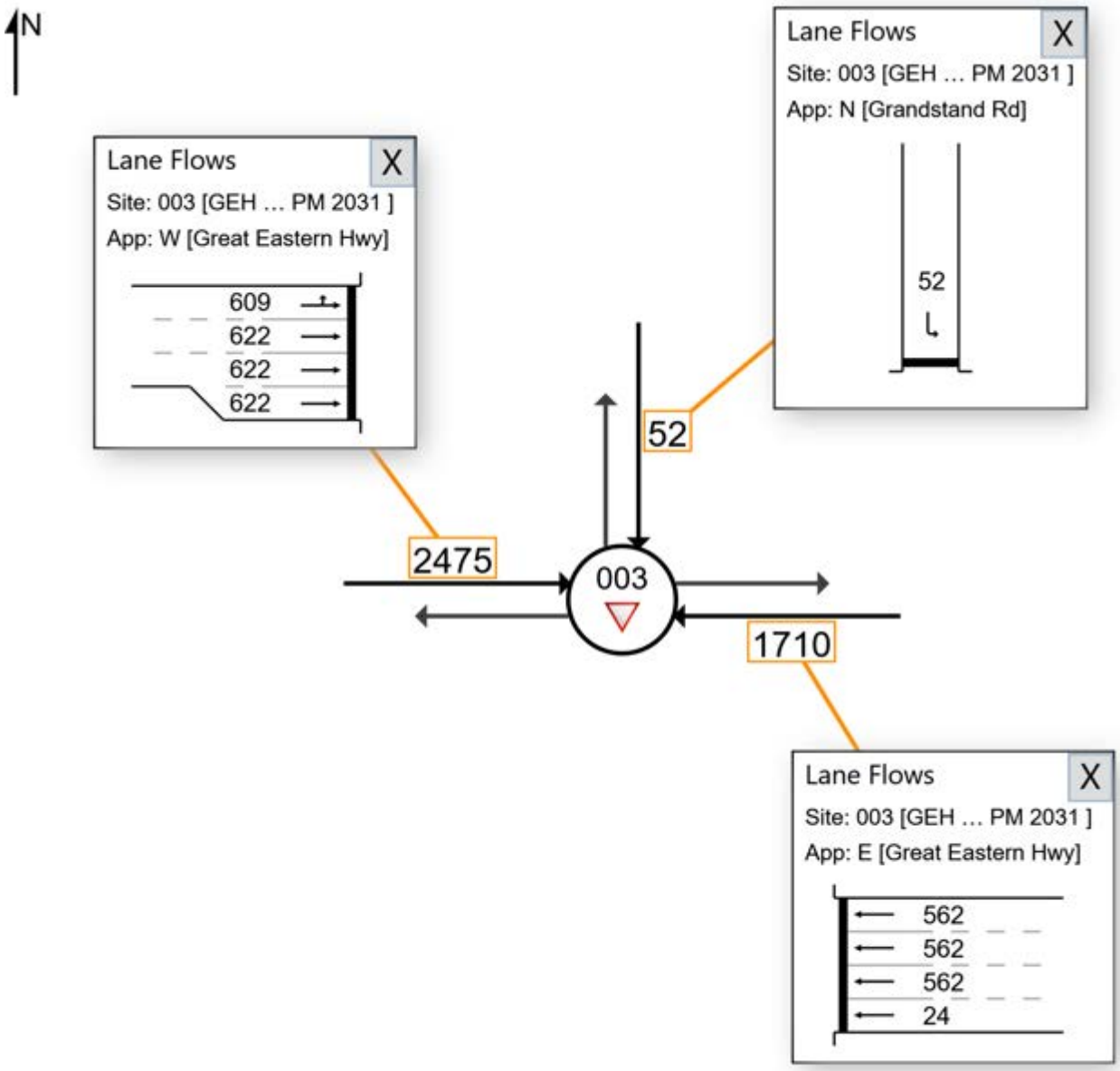

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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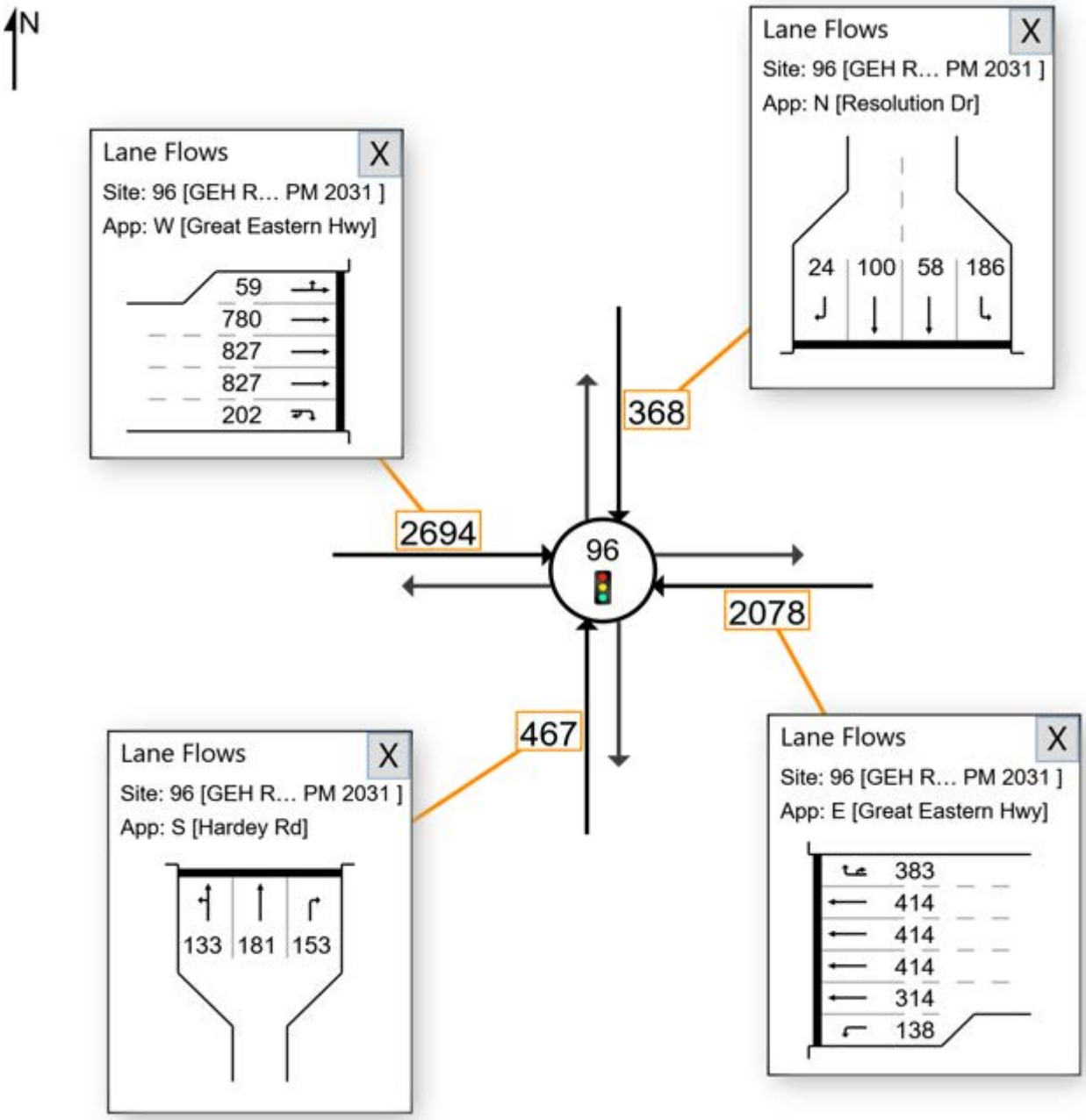

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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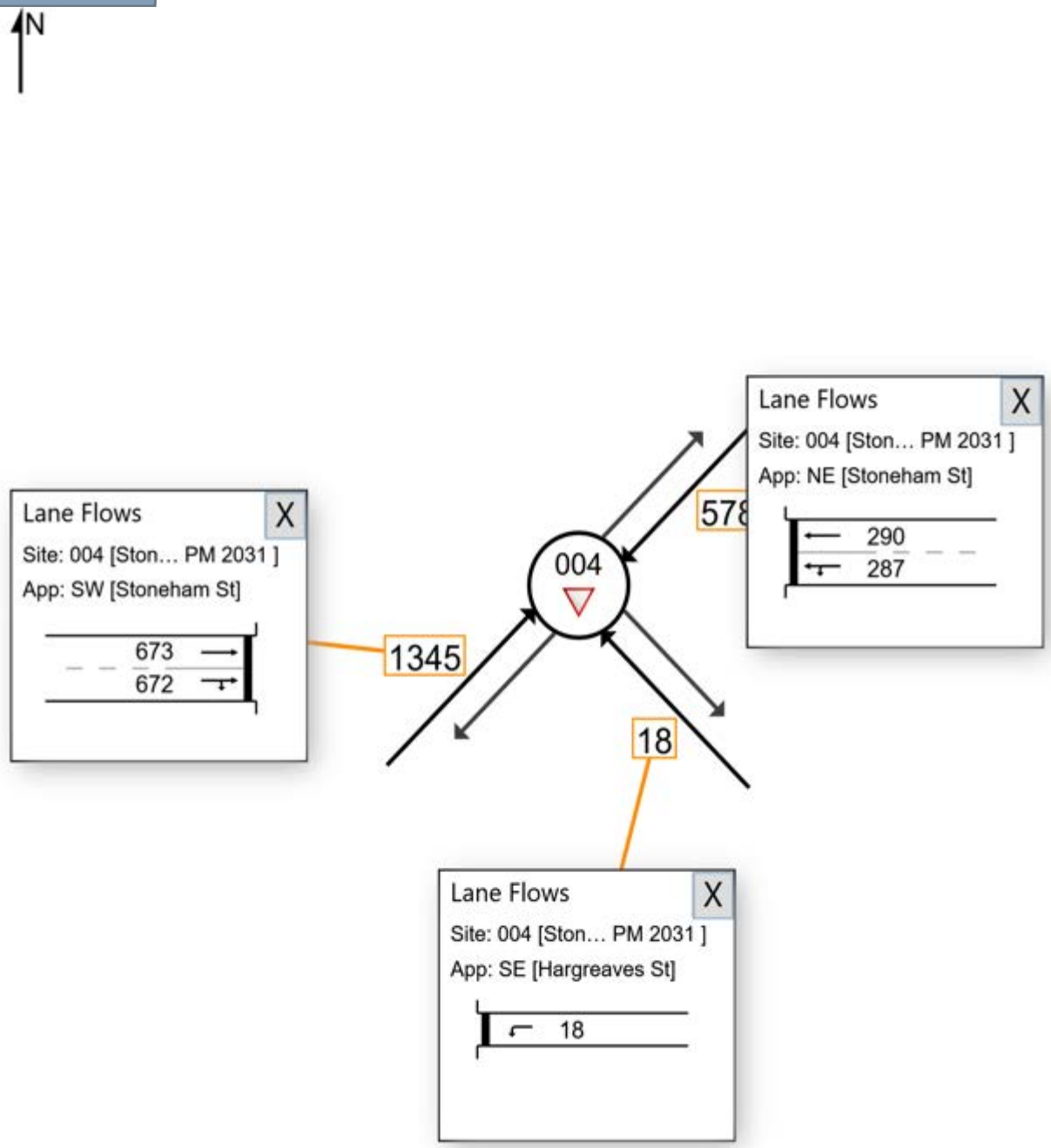

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

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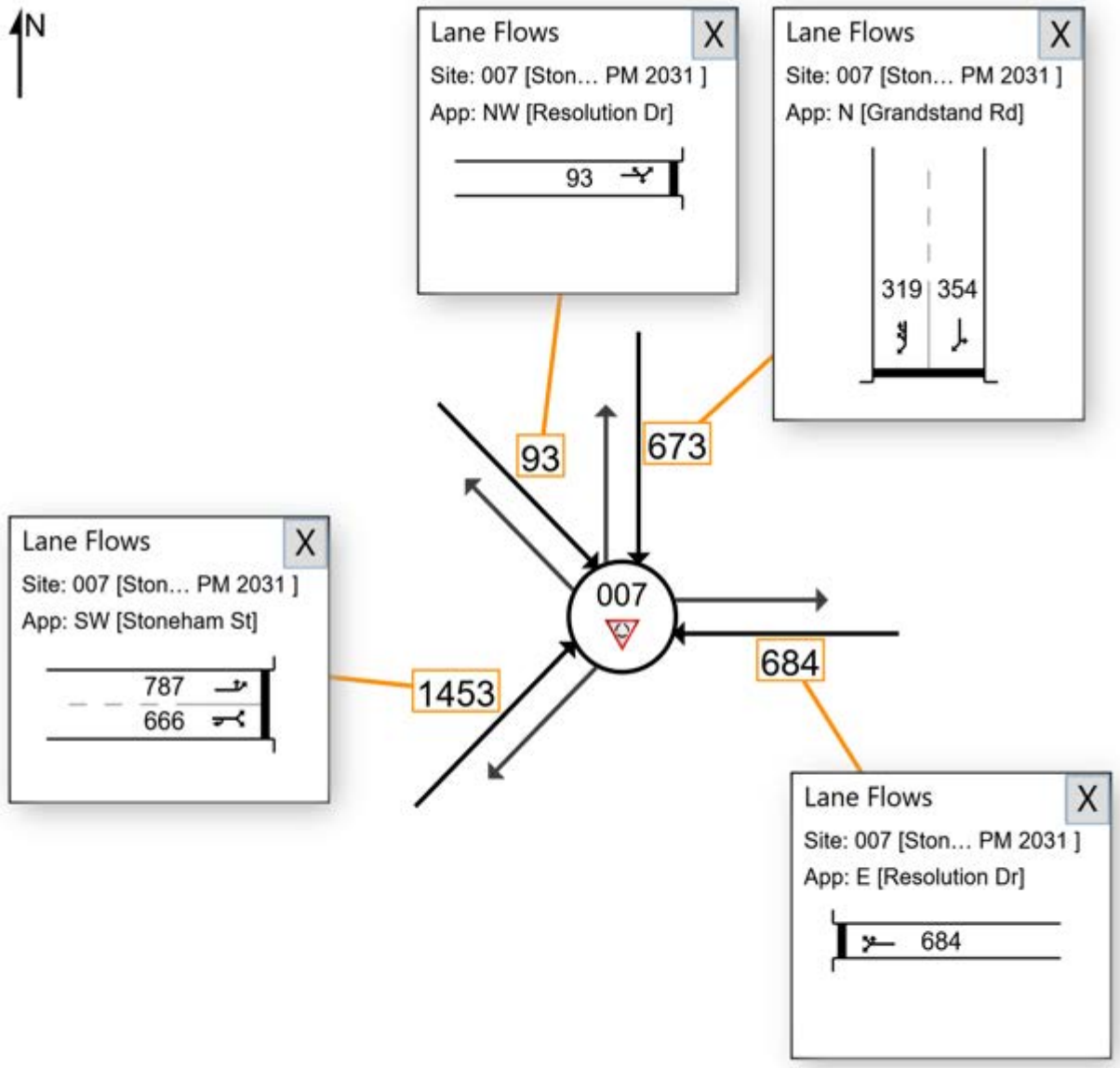

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Version: 1, Version Date: 11/09/2024

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

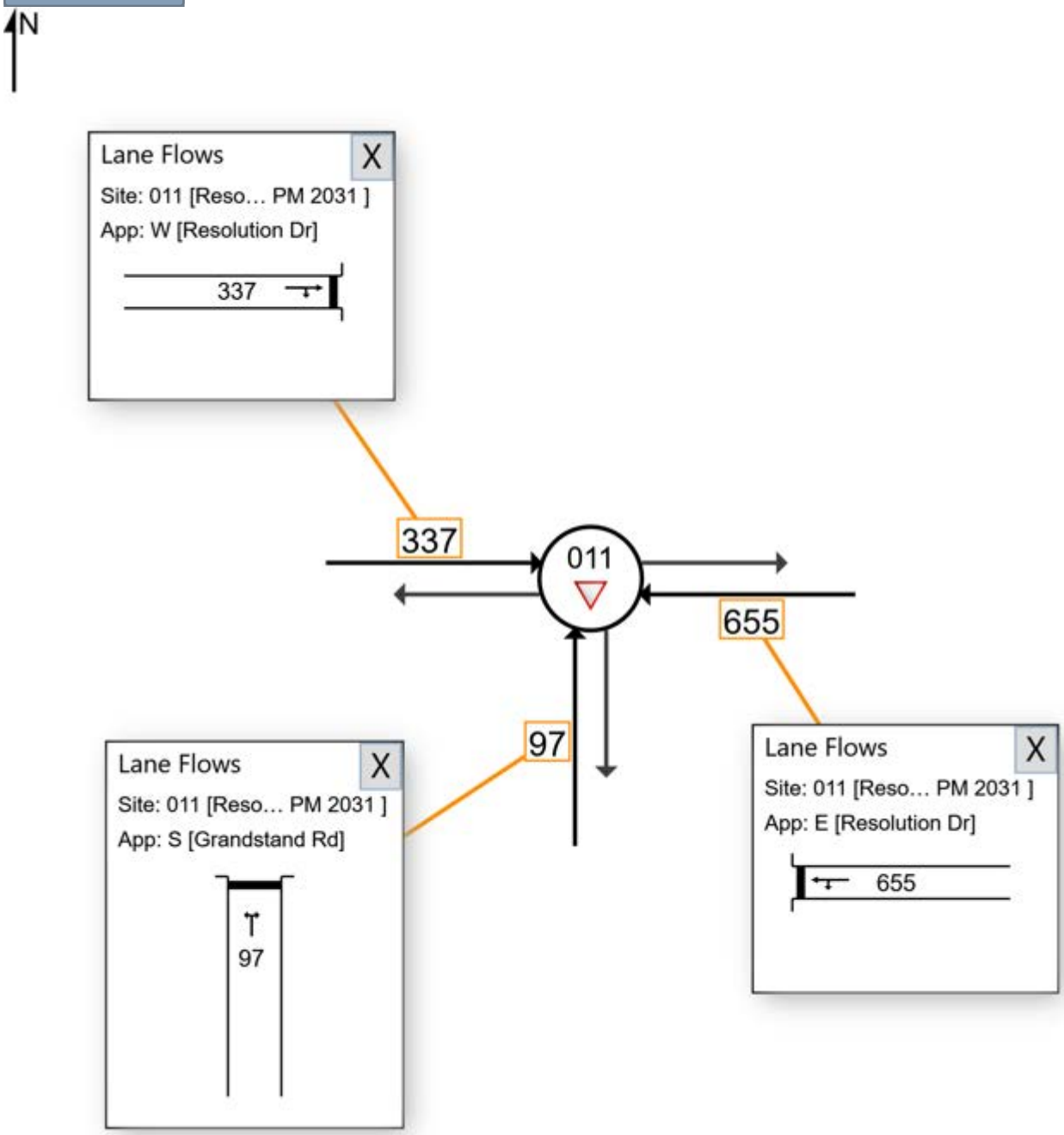
Site: 011 [Resolution Grandstand PM 2031 (Site Folder: 2031 PM Peak Proposed Network and Land Uses)]

Network: N101 [2031 PM Peak Proposed Network and Land Use (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

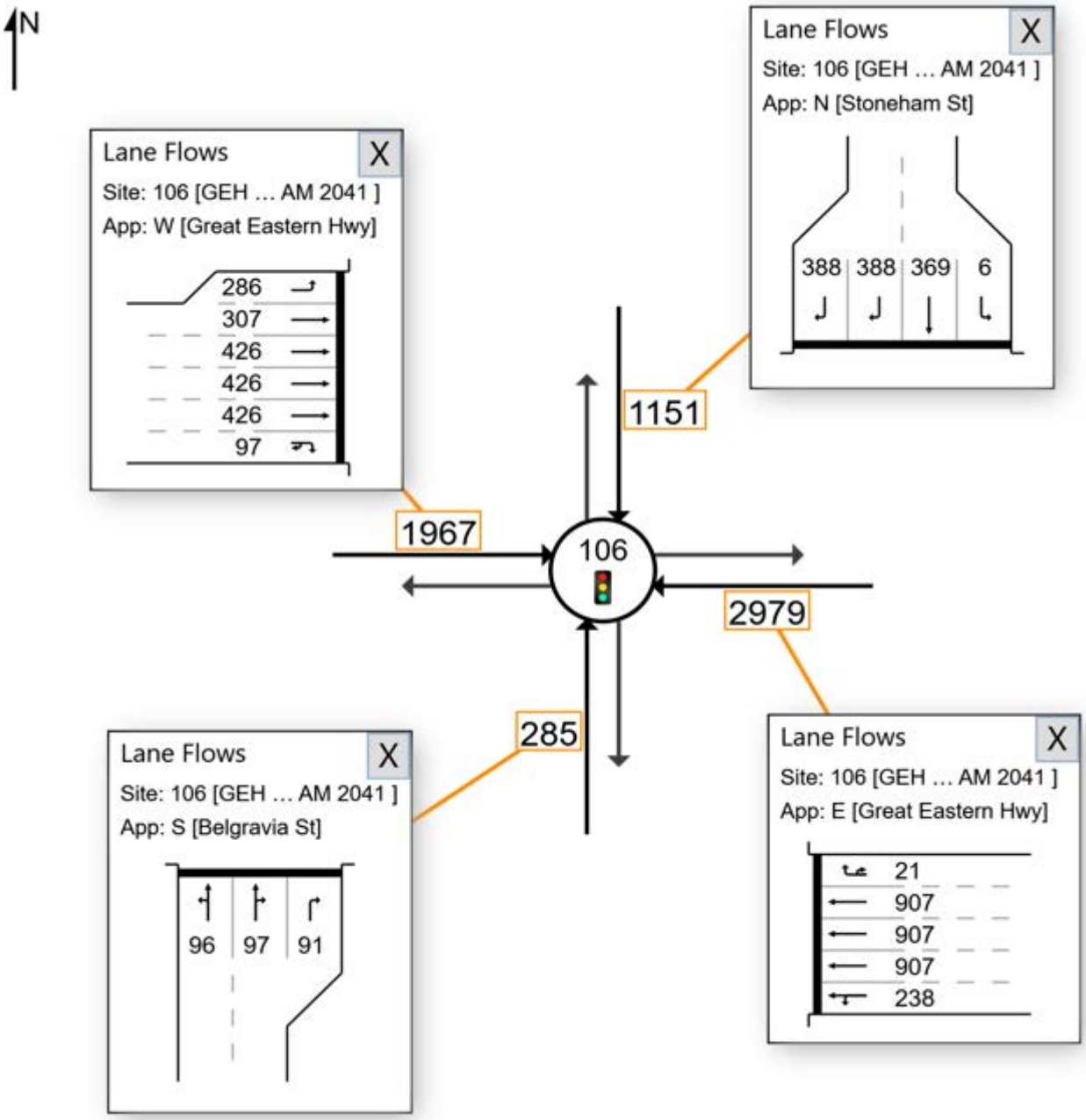
Site: 106 [GEH Stoneham Belgravia AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

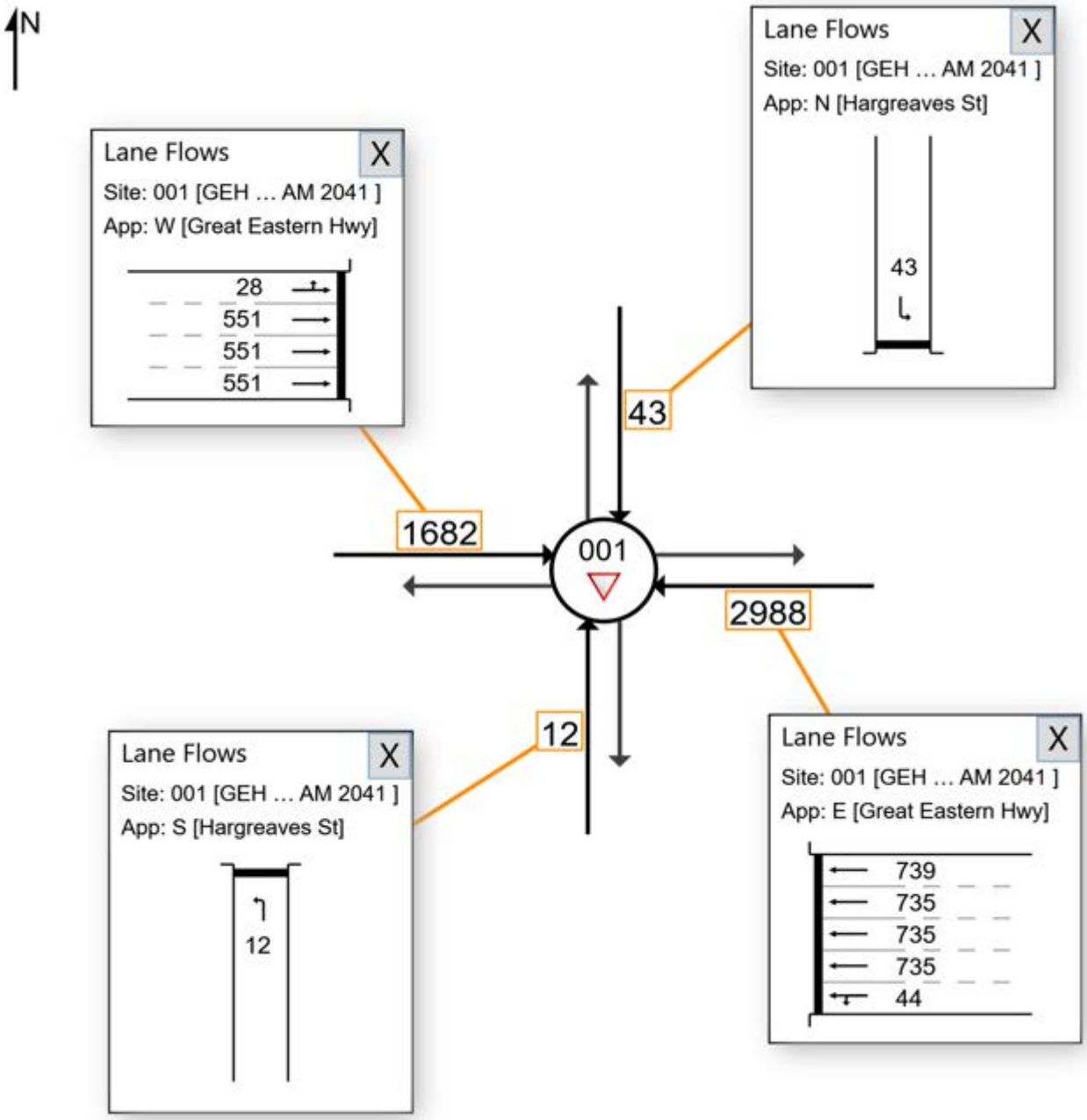
Site: 001 [GEH Hargreaves AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

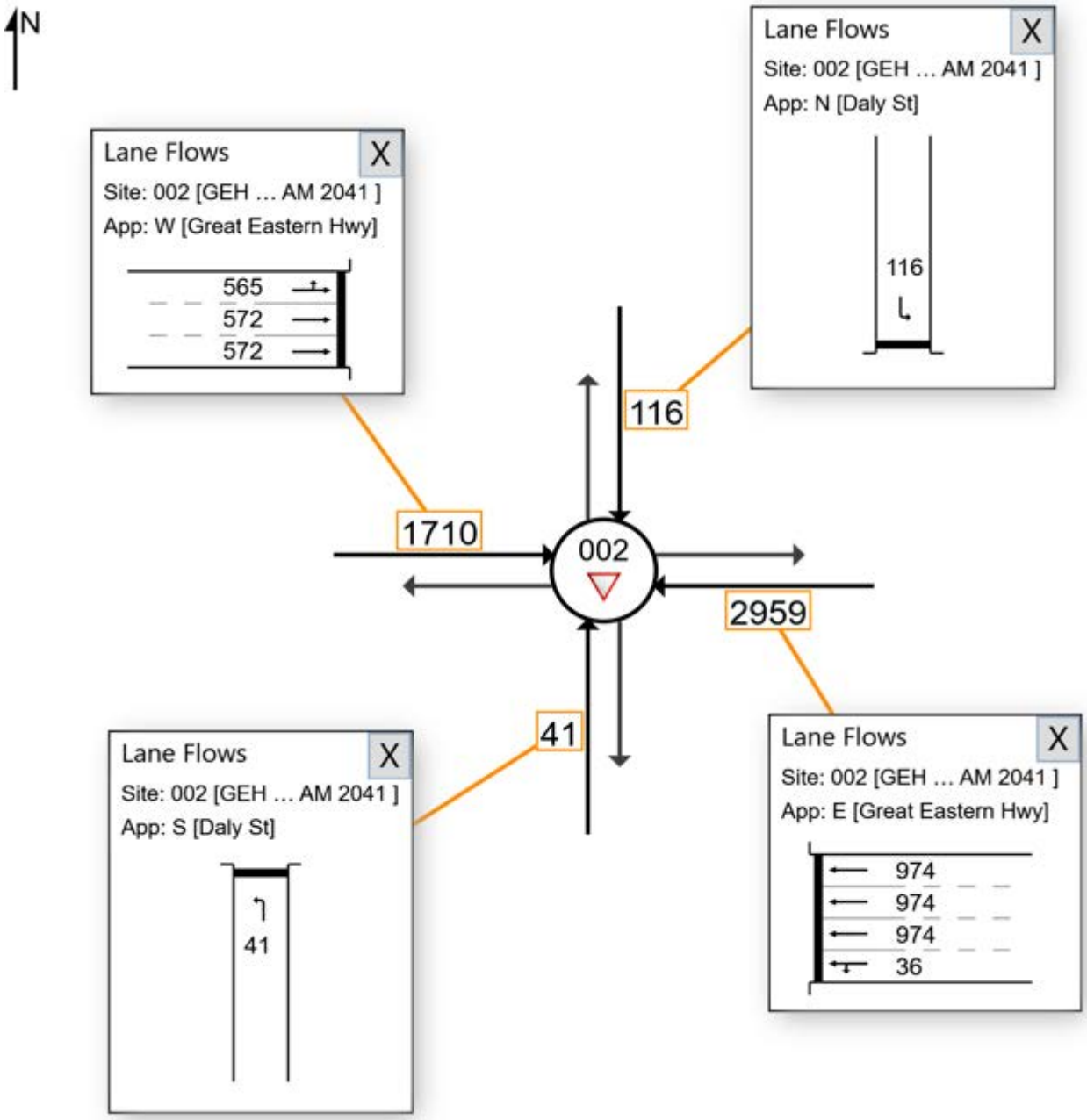
Site: 002 [GEH Daly AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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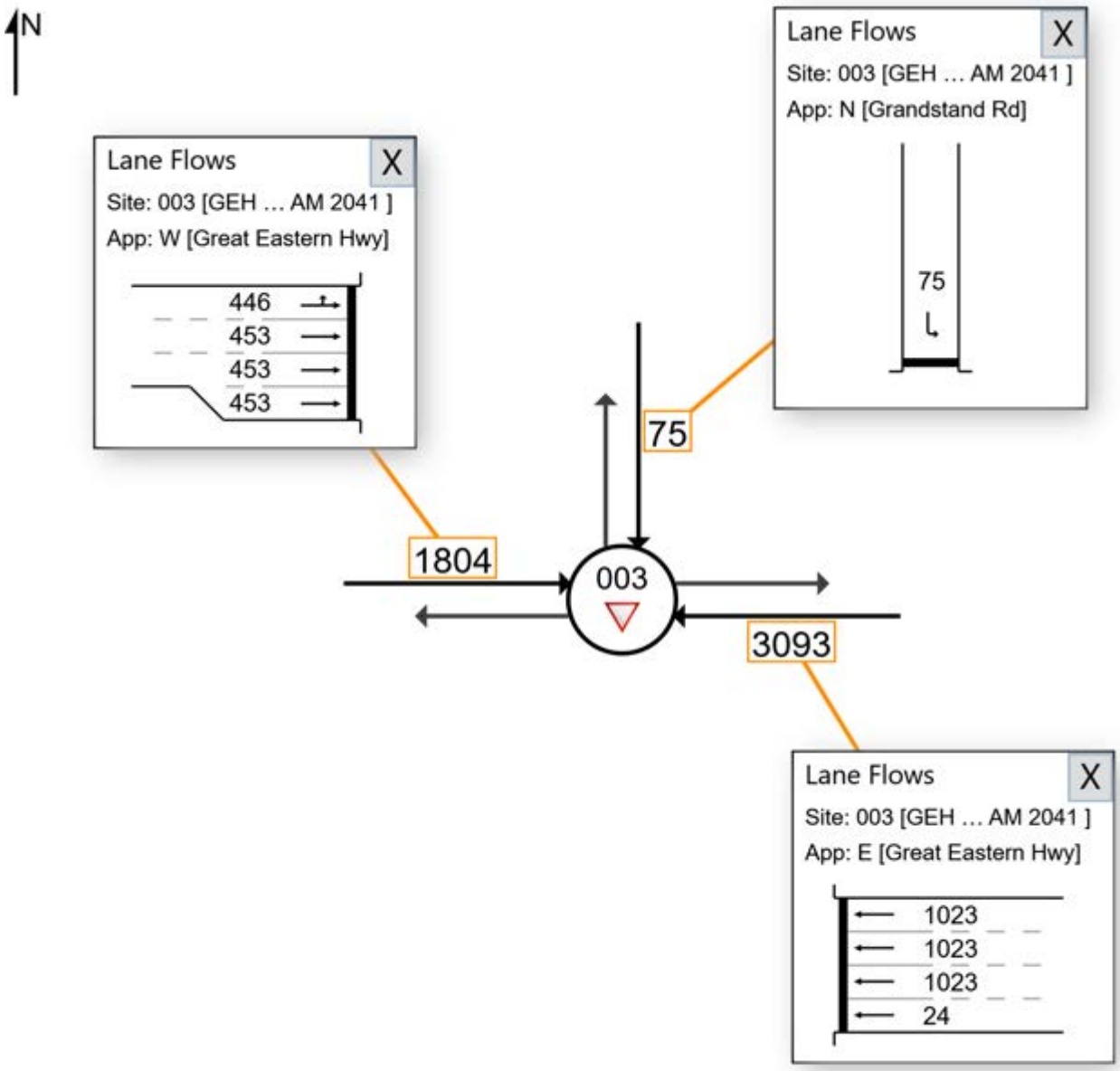

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 134 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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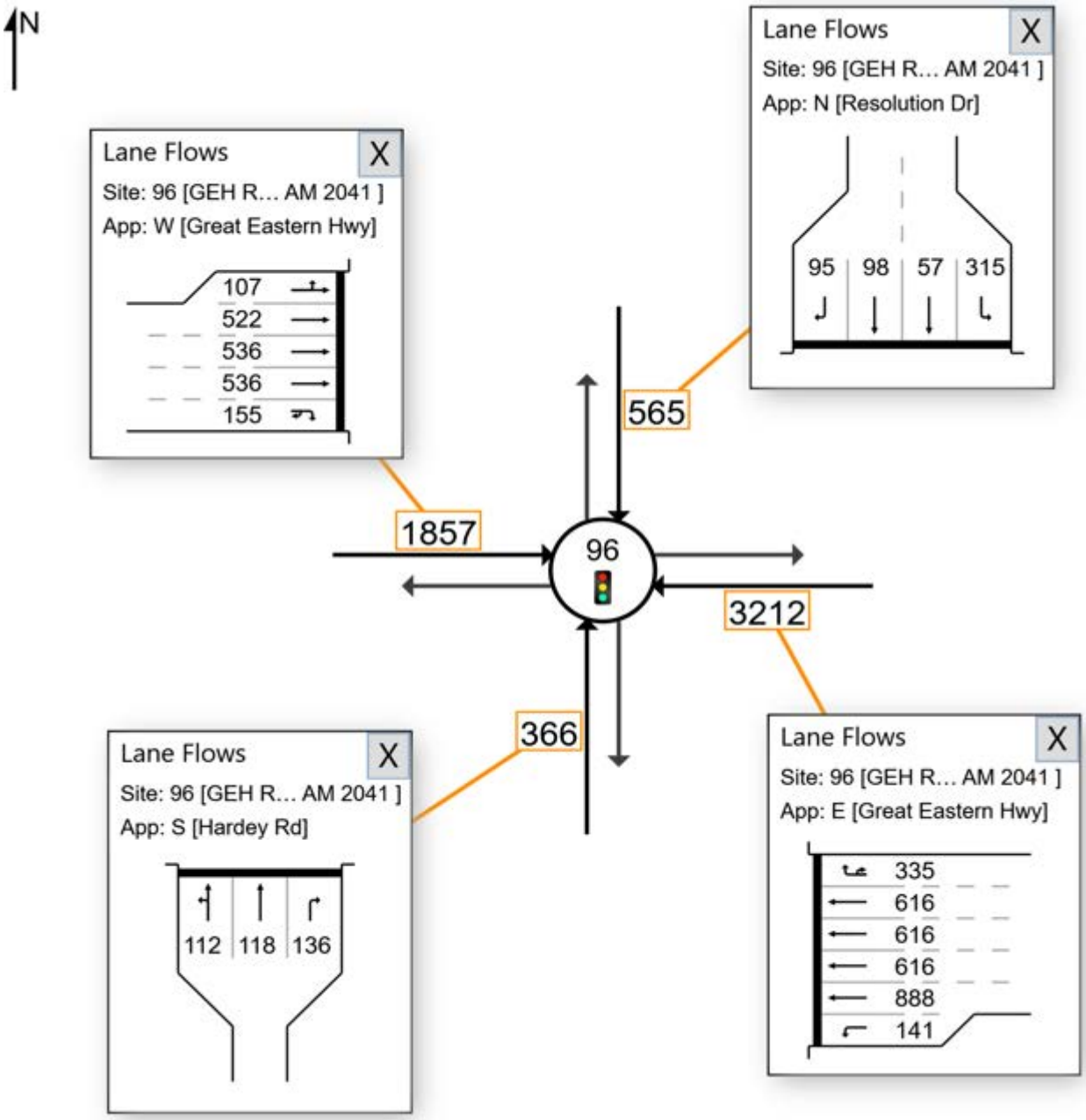

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

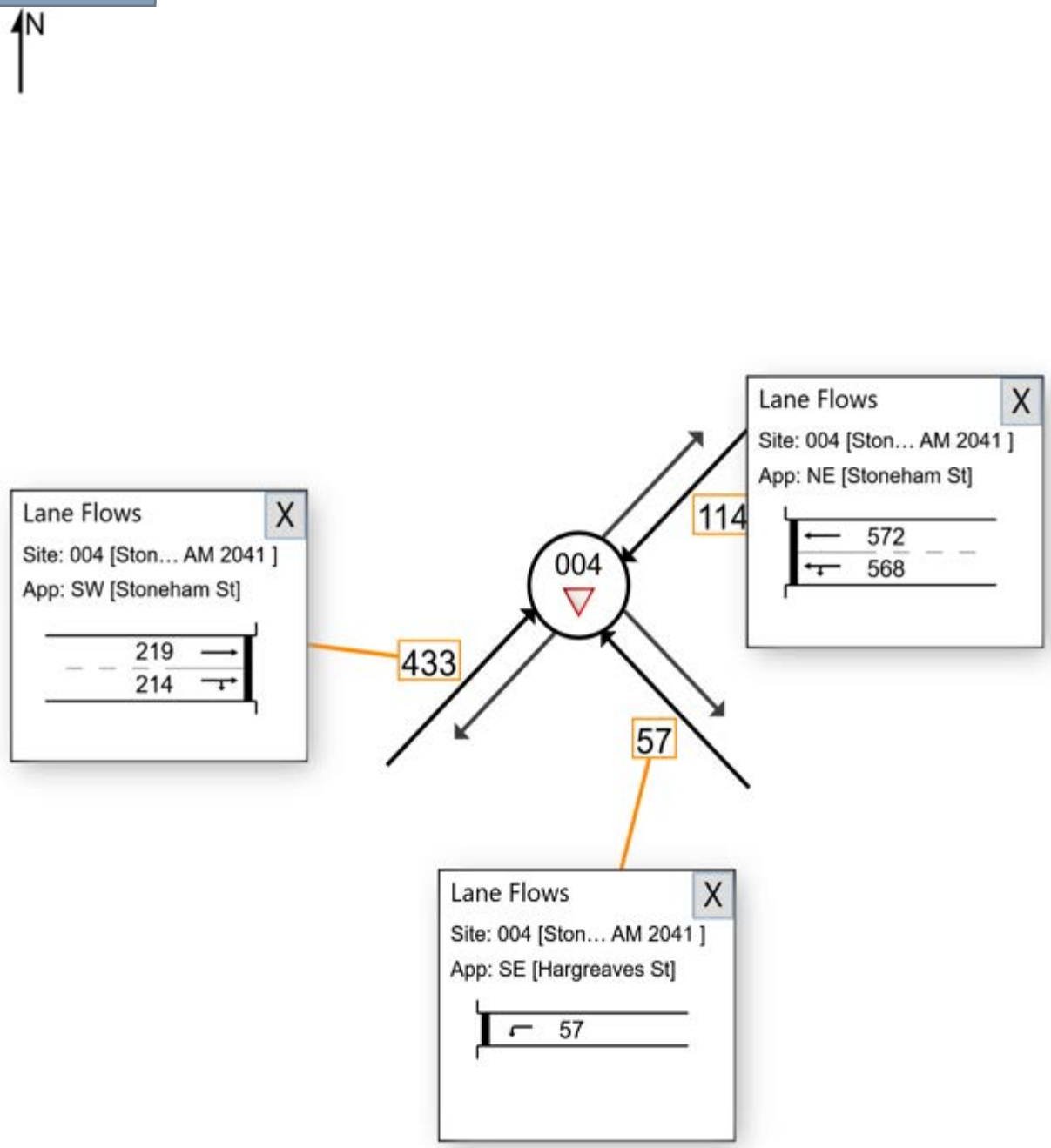
Site: 004 [Stoneham Hargreaves AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

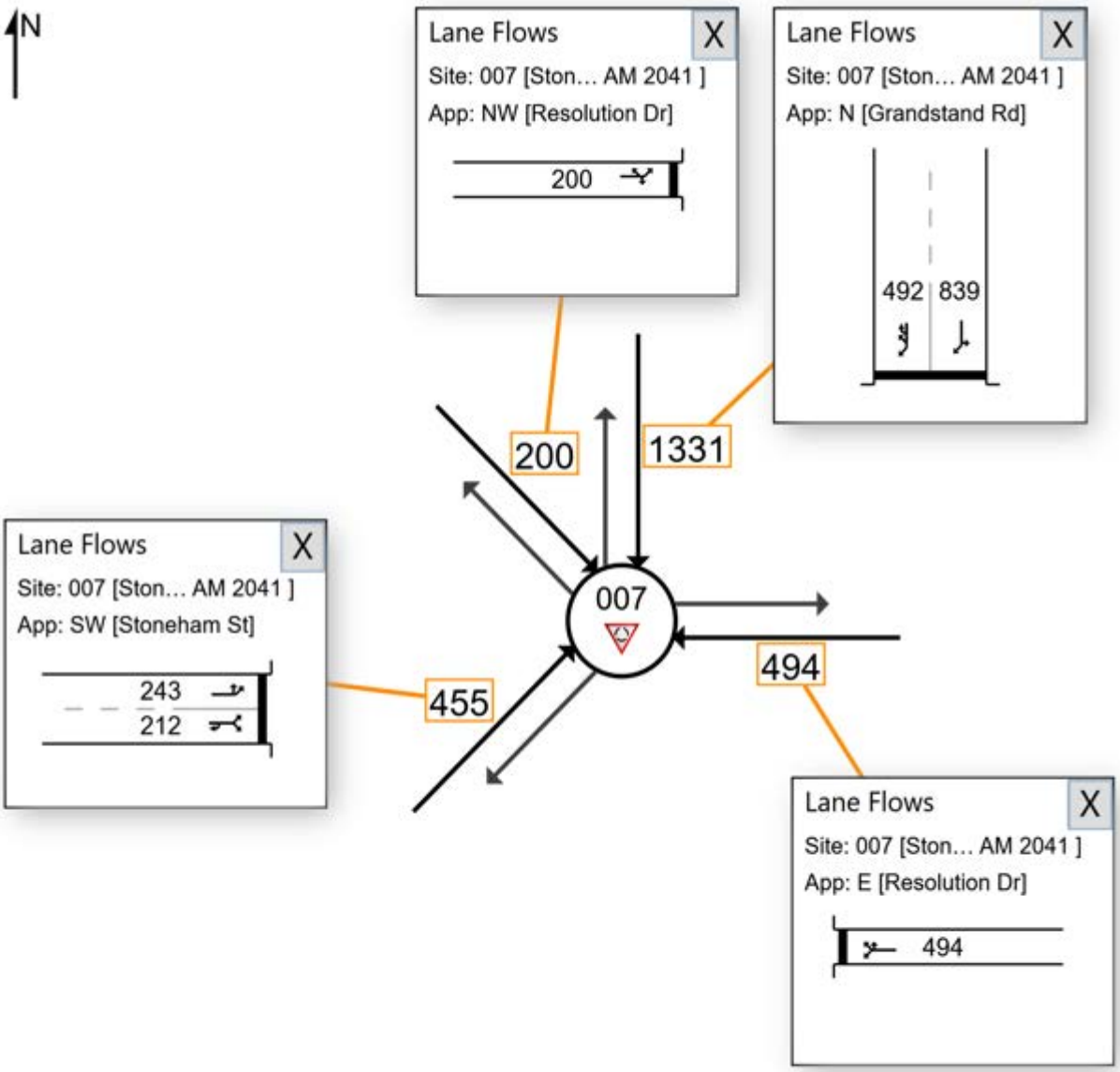
Site: 007 [Stoneham Grandstand Resolution AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand AM 2041 (Site Folder: 2041 AM Peak Proposed Network and Land Uses)]

Network: N101 [2041 AM Peak Proposed Network and Land Use (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2041 AM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
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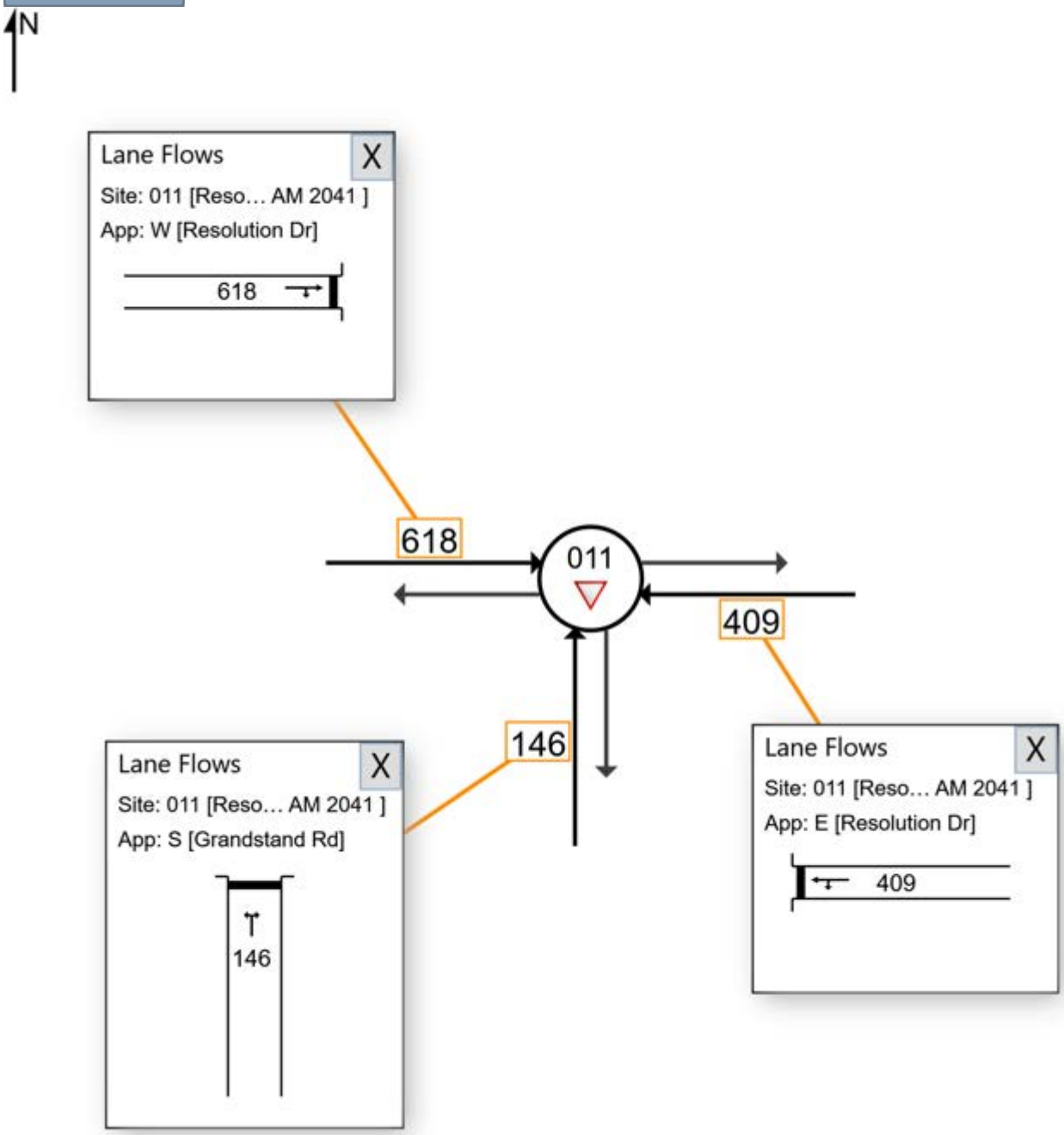

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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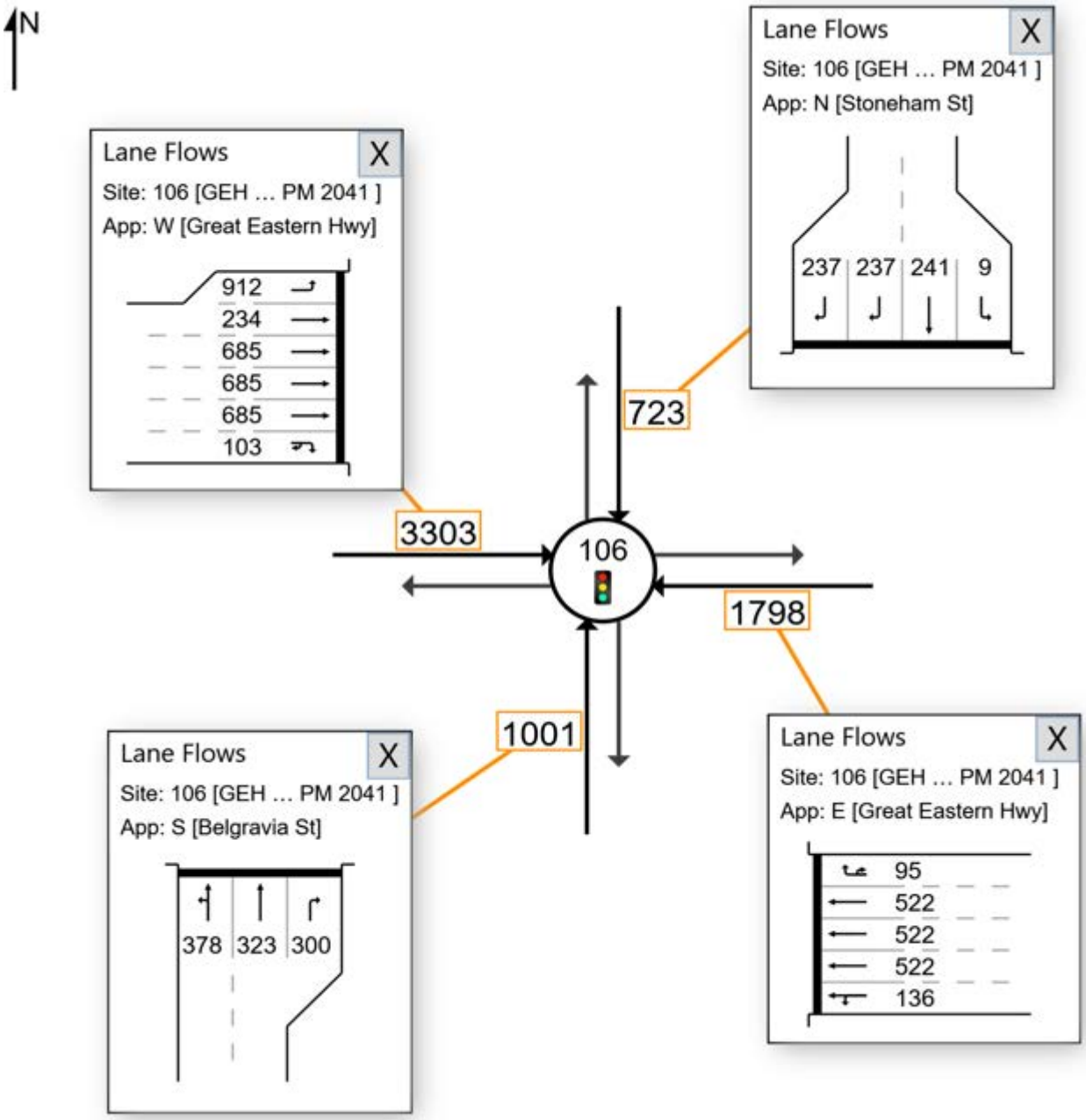

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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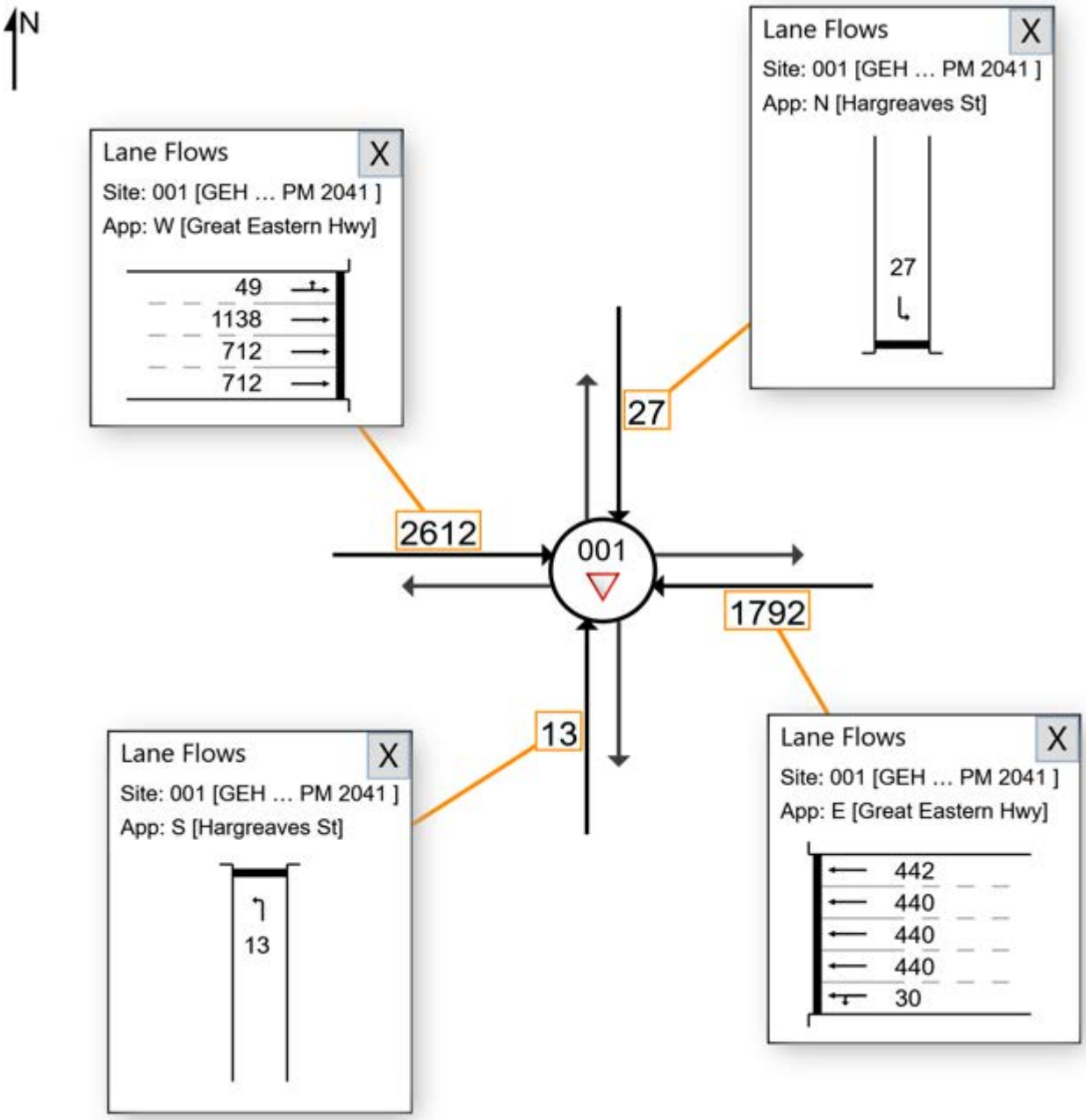

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Document Set ID: 5882082
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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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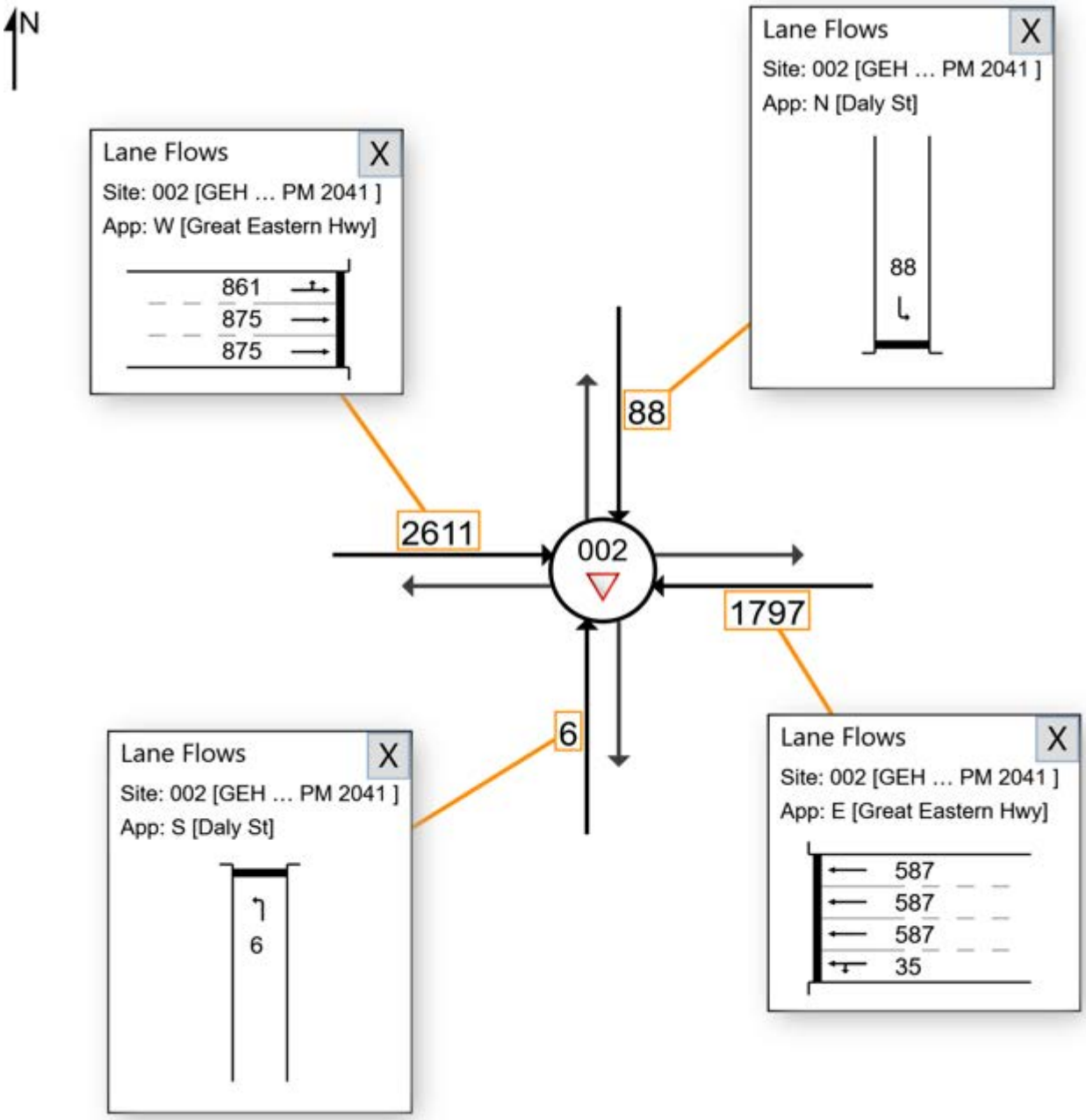

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

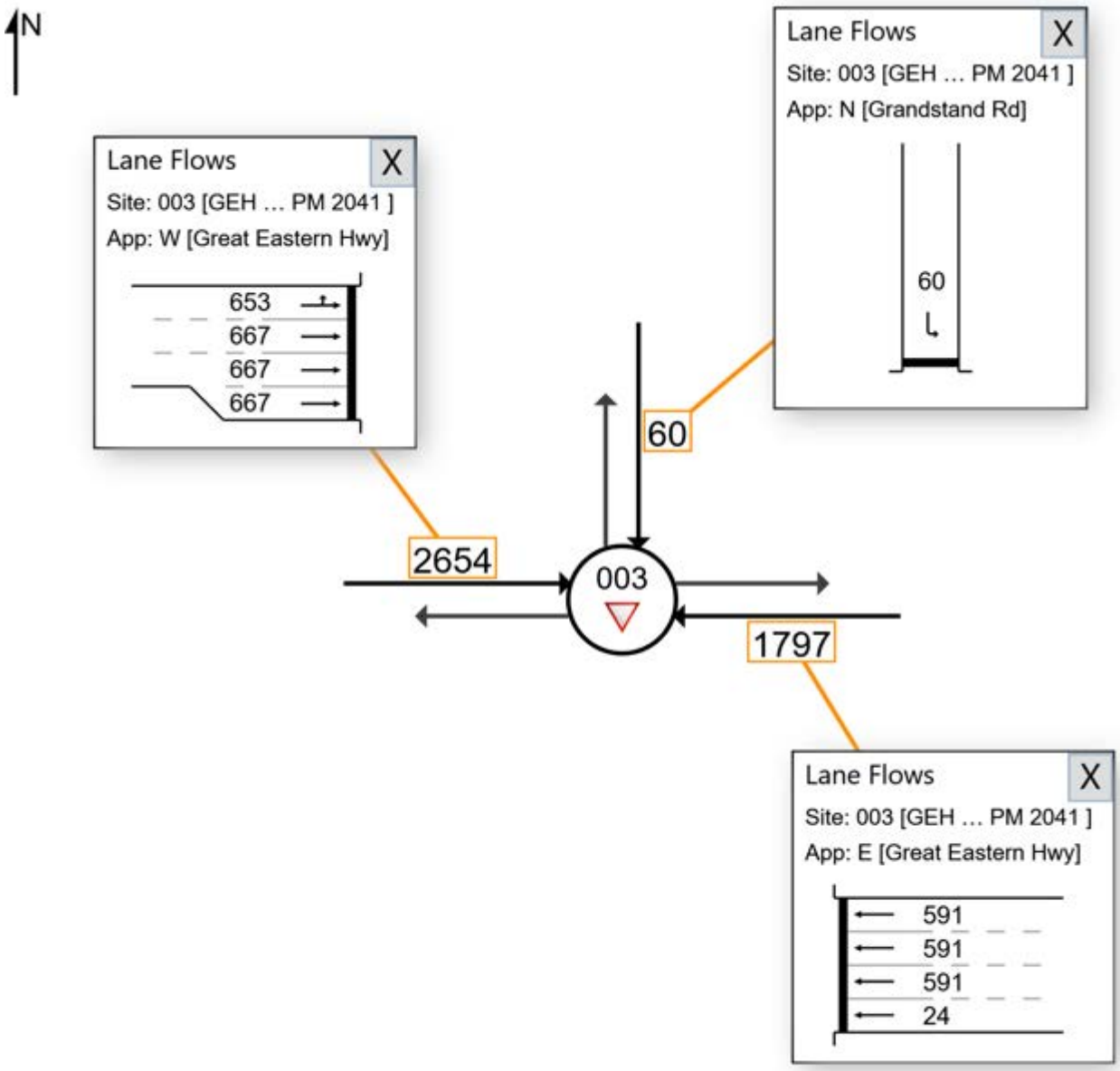
Site: 003 [GEH Grandstand PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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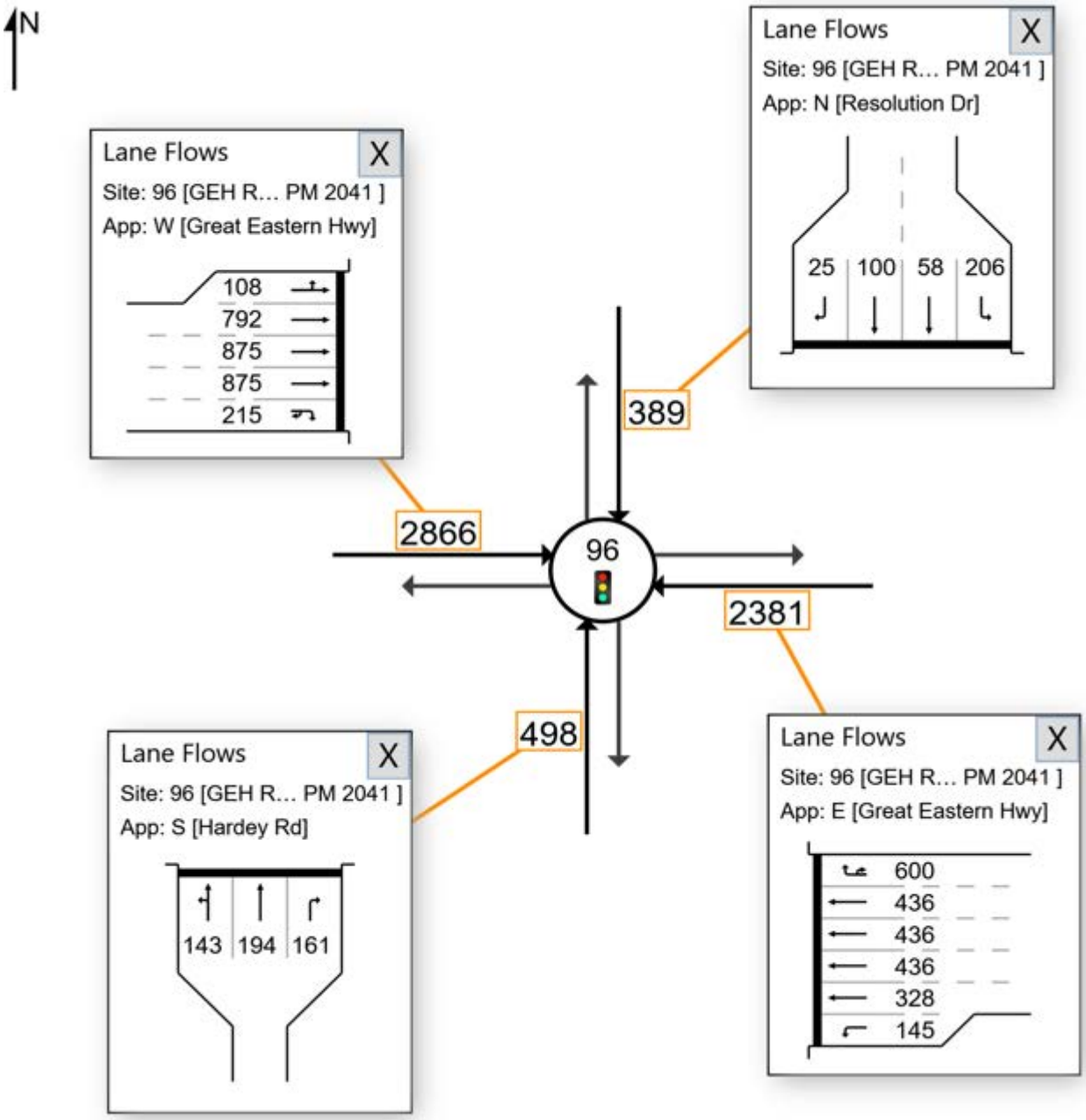

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

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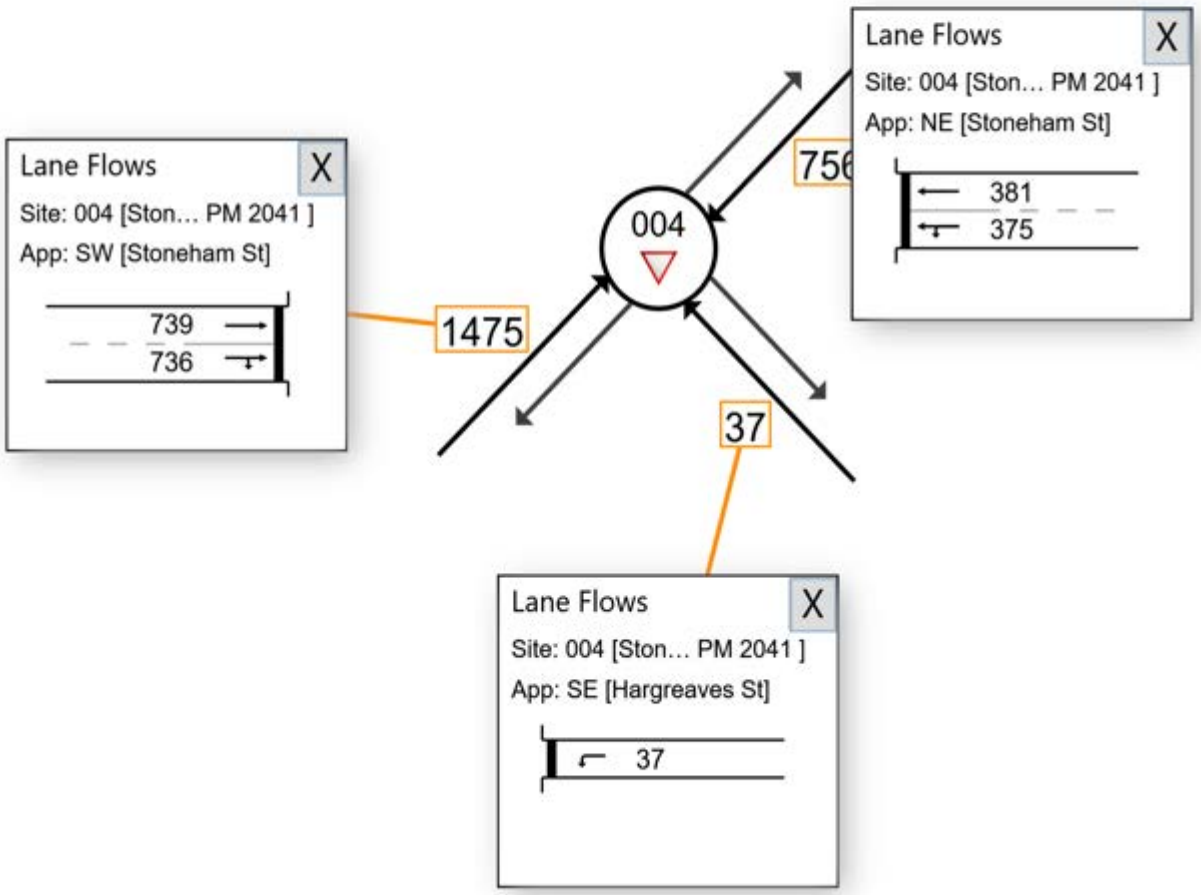

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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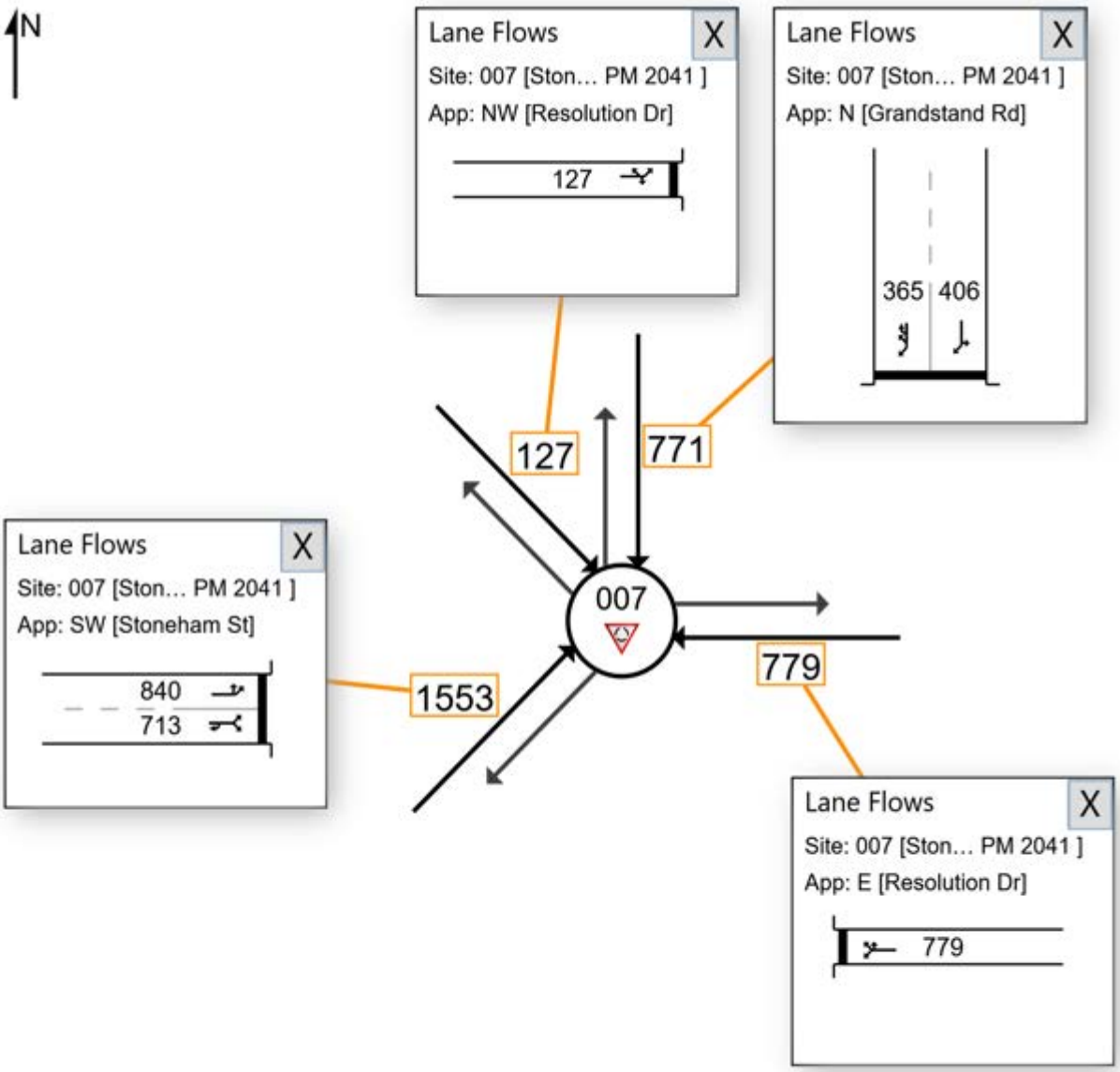

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2041 (Site Folder: 2041 PM Peak Proposed Network and Land Uses)]

Network: N101 [2041 PM Peak Proposed Network and Land Use (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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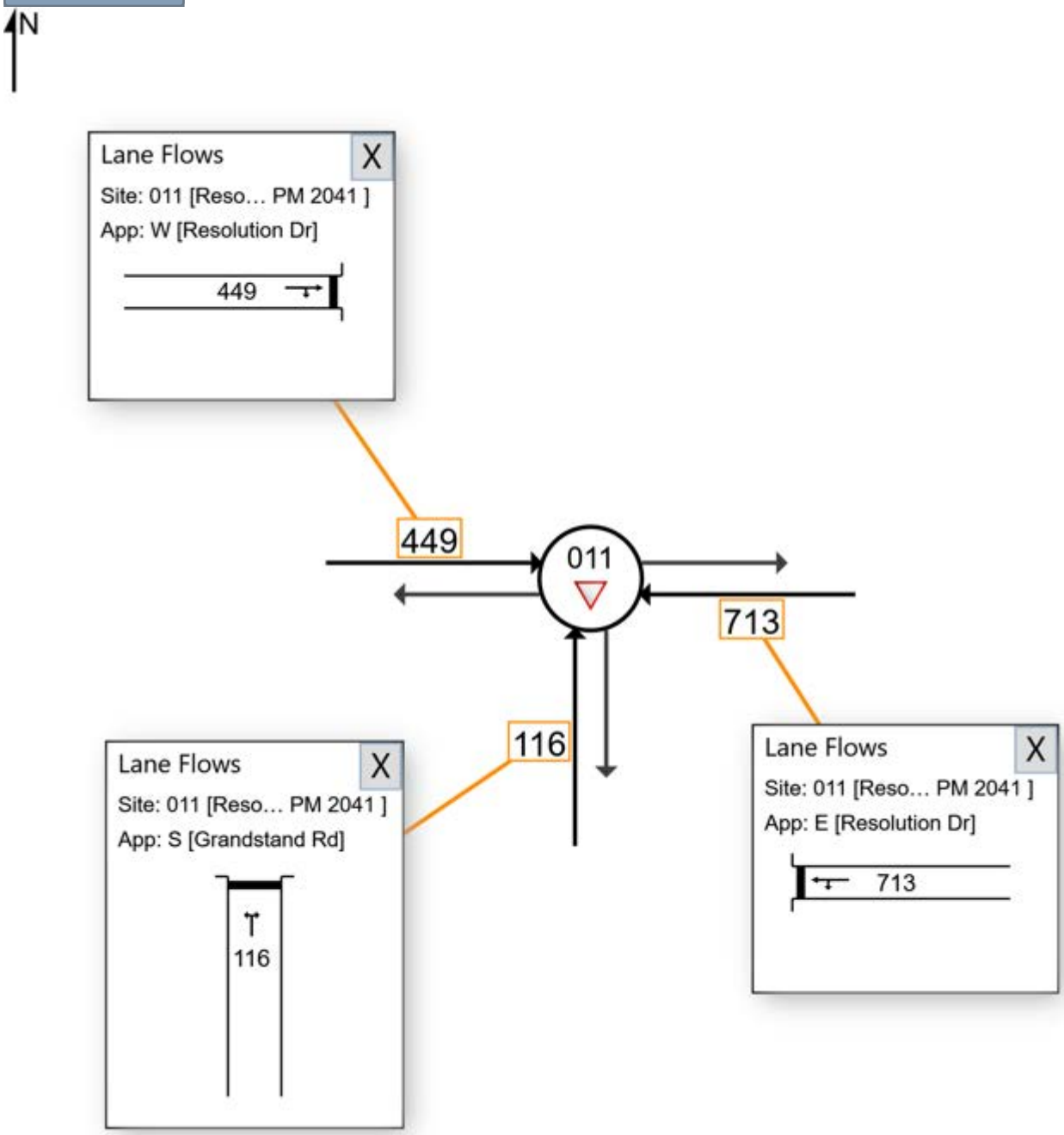

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

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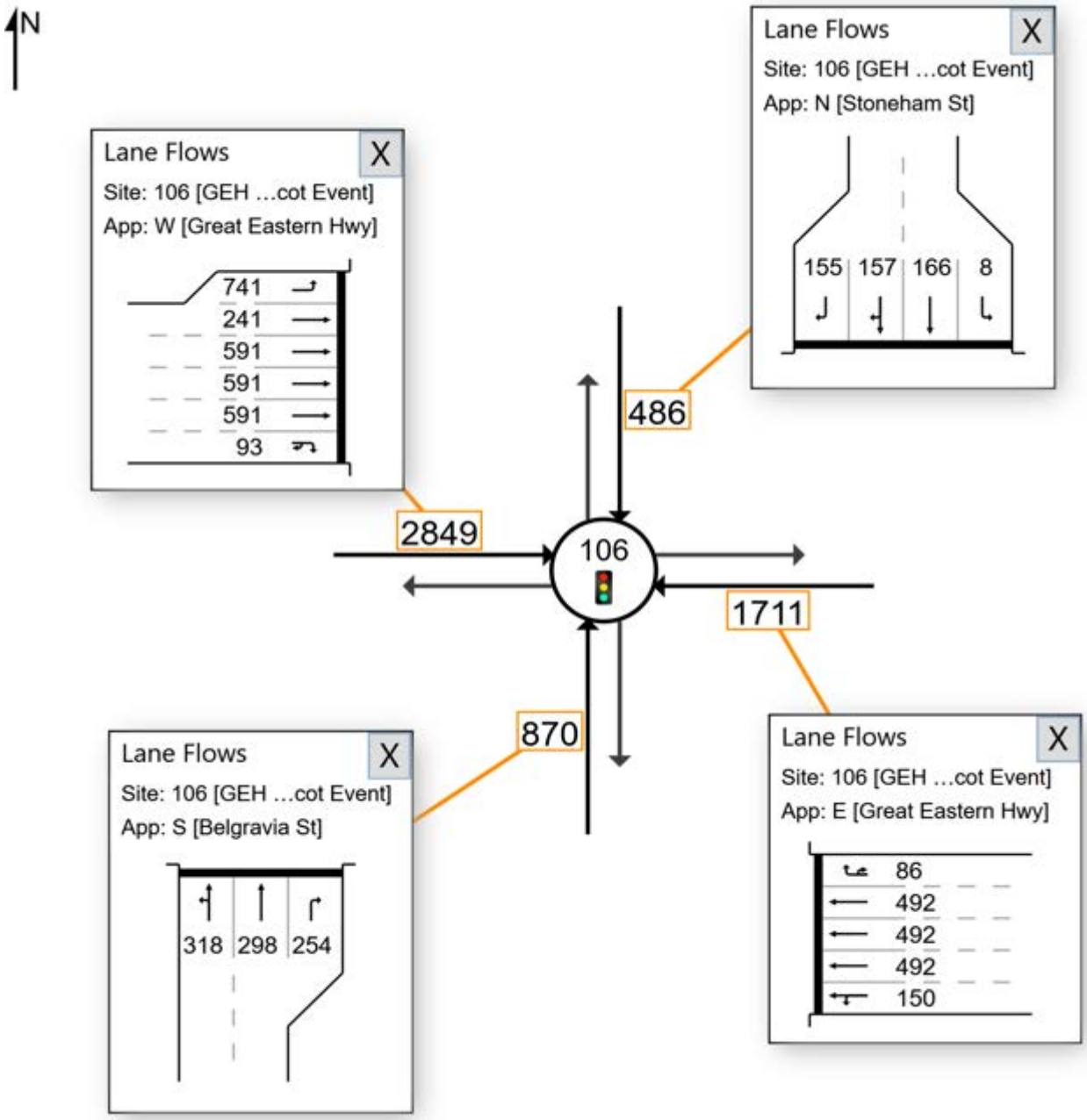

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
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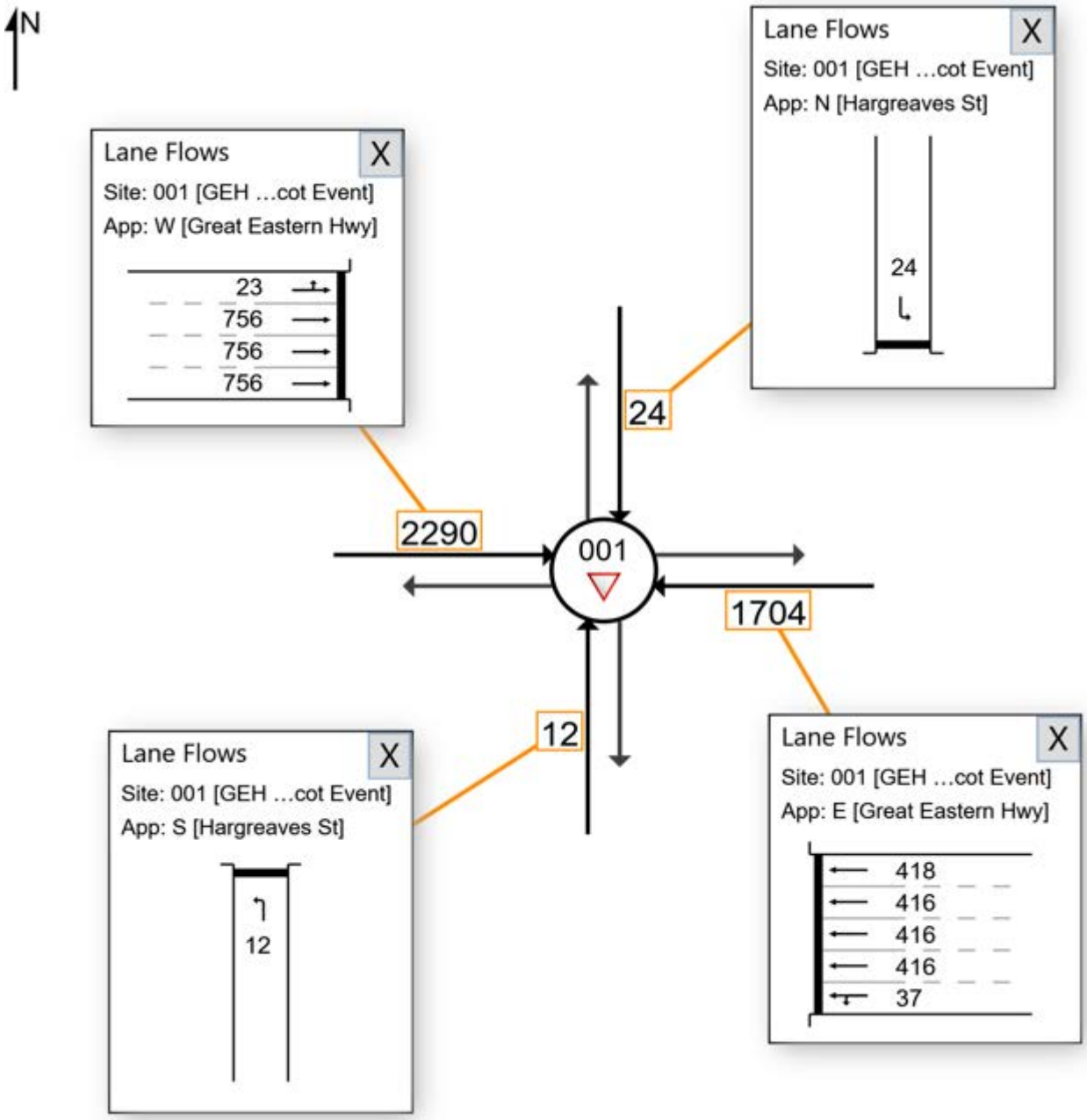

Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

Document Set ID: 5882082
Version: 1, Version Date: 11/09/2024

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
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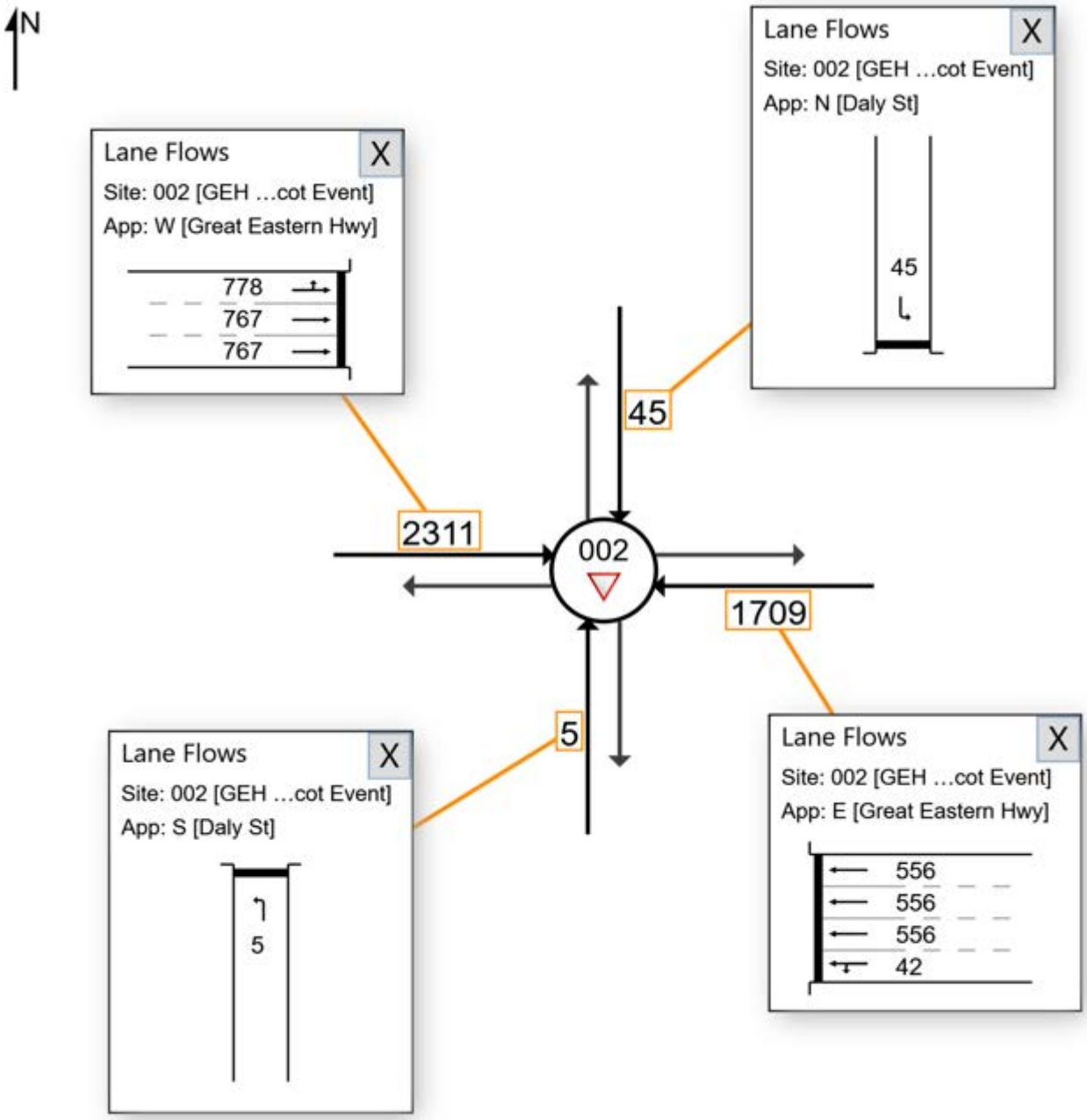

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Give-Way (Two-Way)

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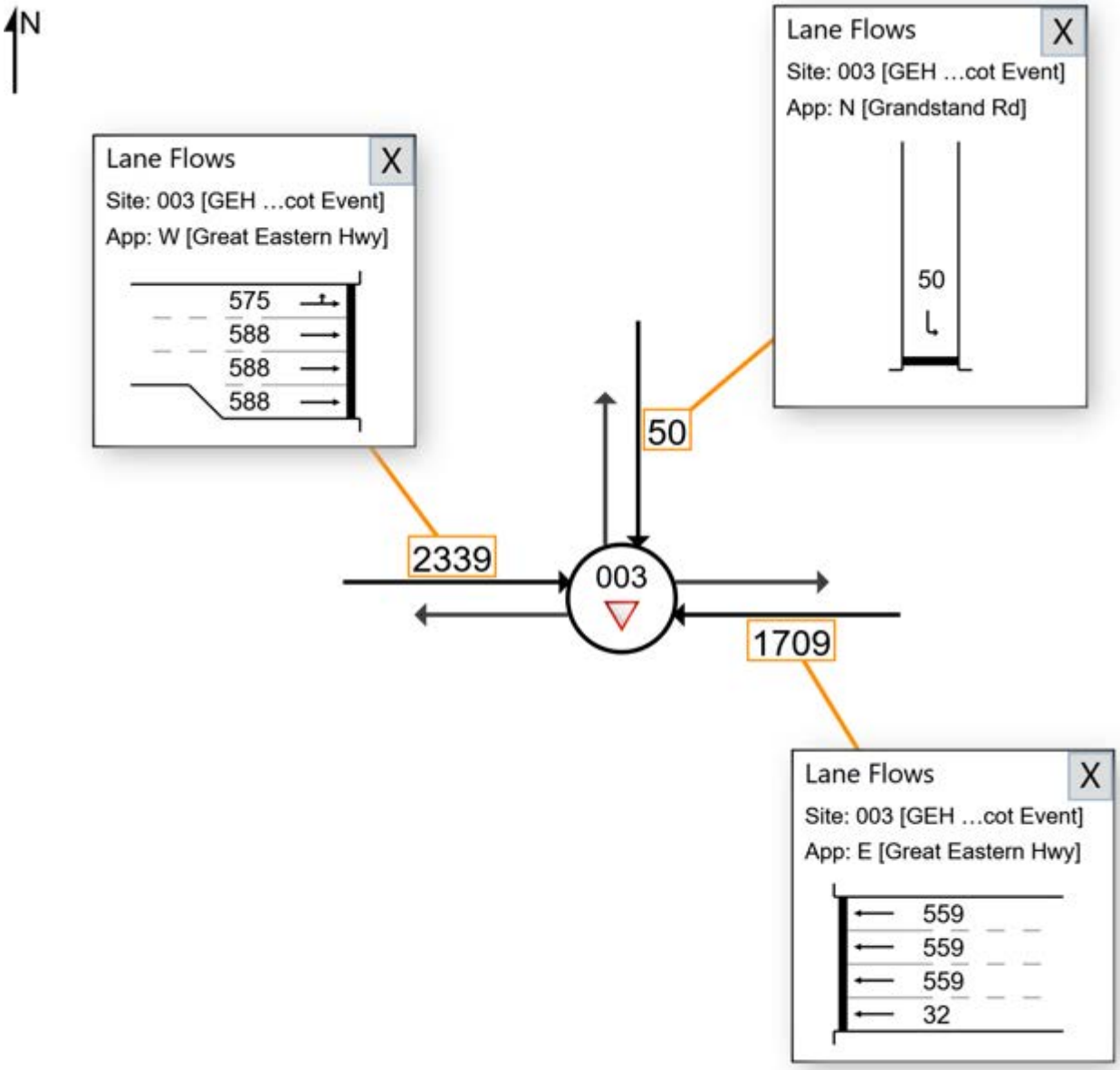

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Version: 1, Version Date: 11/09/2024

APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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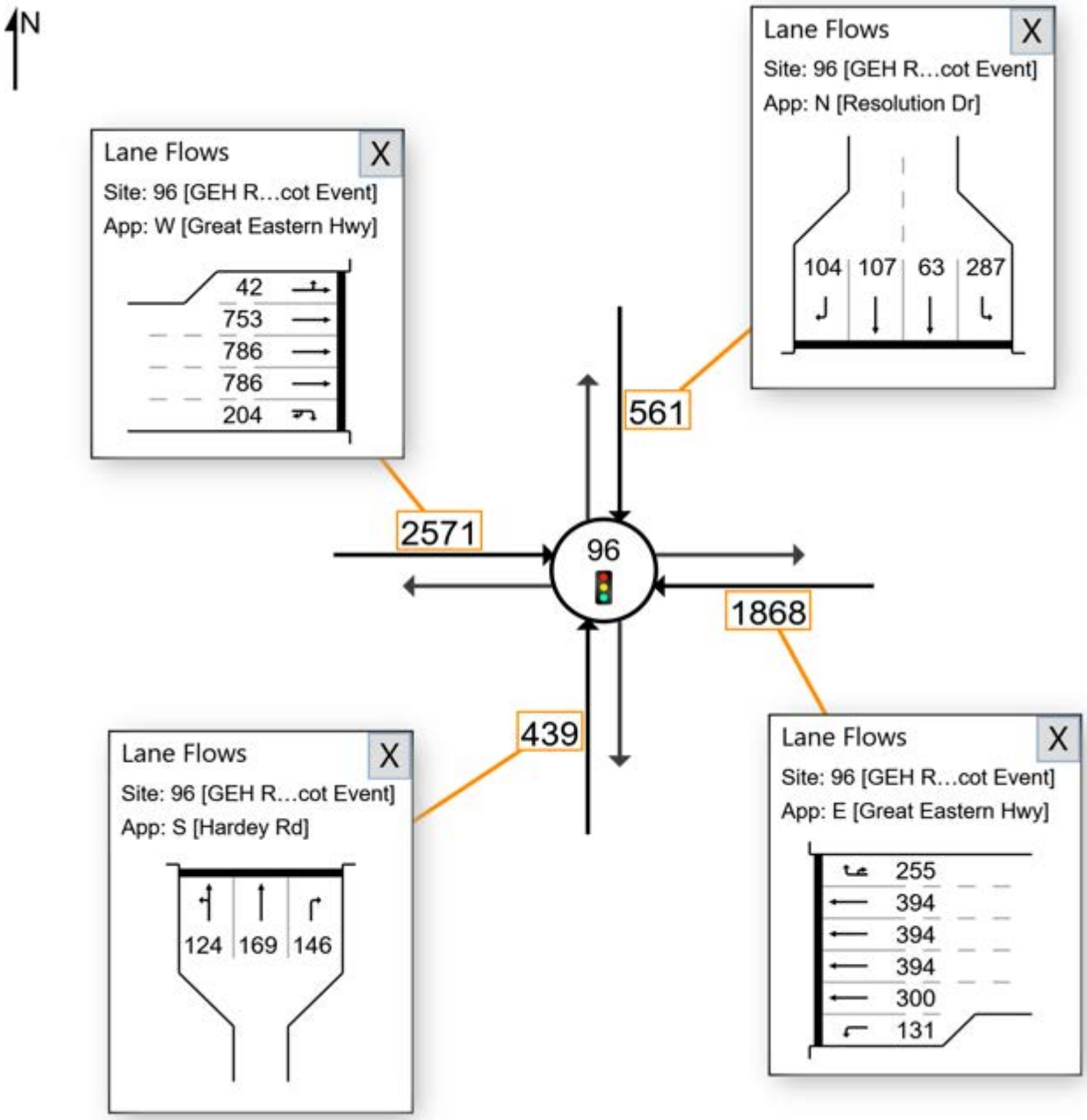

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Give-Way (Two-Way)

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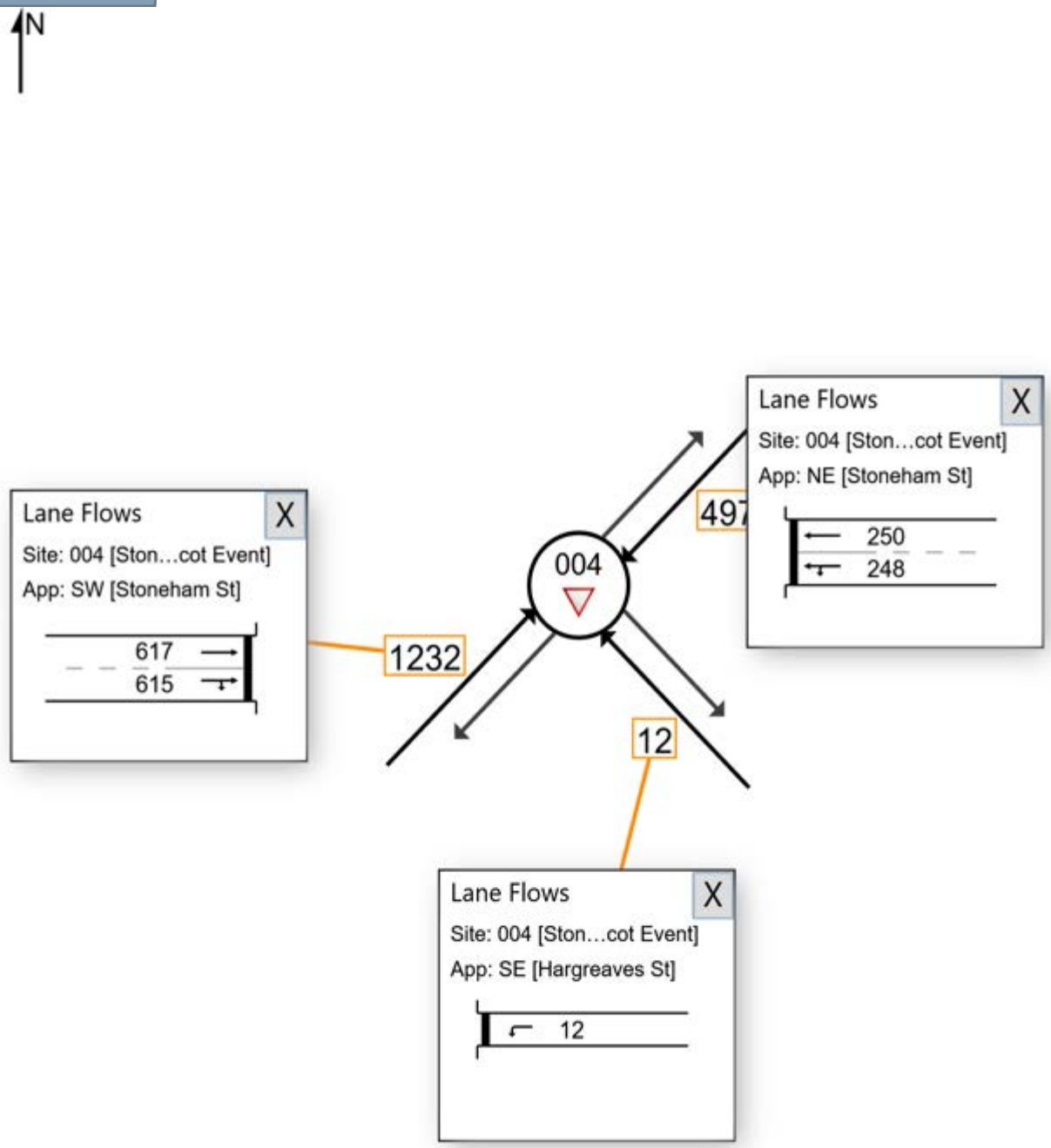

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Roundabout

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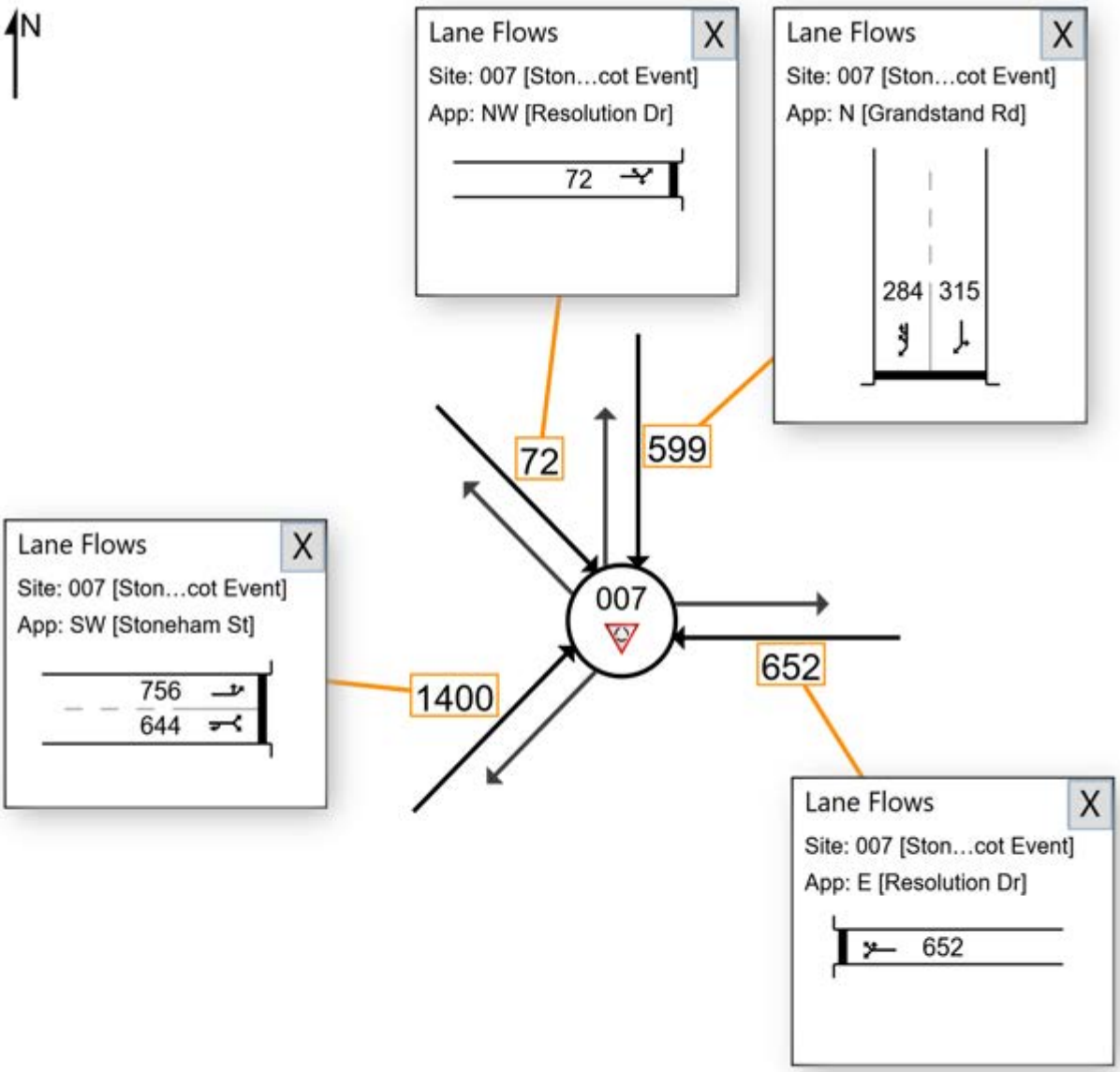

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2021 Ascot Event (Site Folder: 2021 PM Peak Proposed Network ASCOT TEST)]

Network: N101 [2021 PM Peak Proposed Network Ascot Weekday Event (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2021 PM Peak with proposed road network Ascot Event
Site Category: Existing Design
Give-Way (Two-Way)

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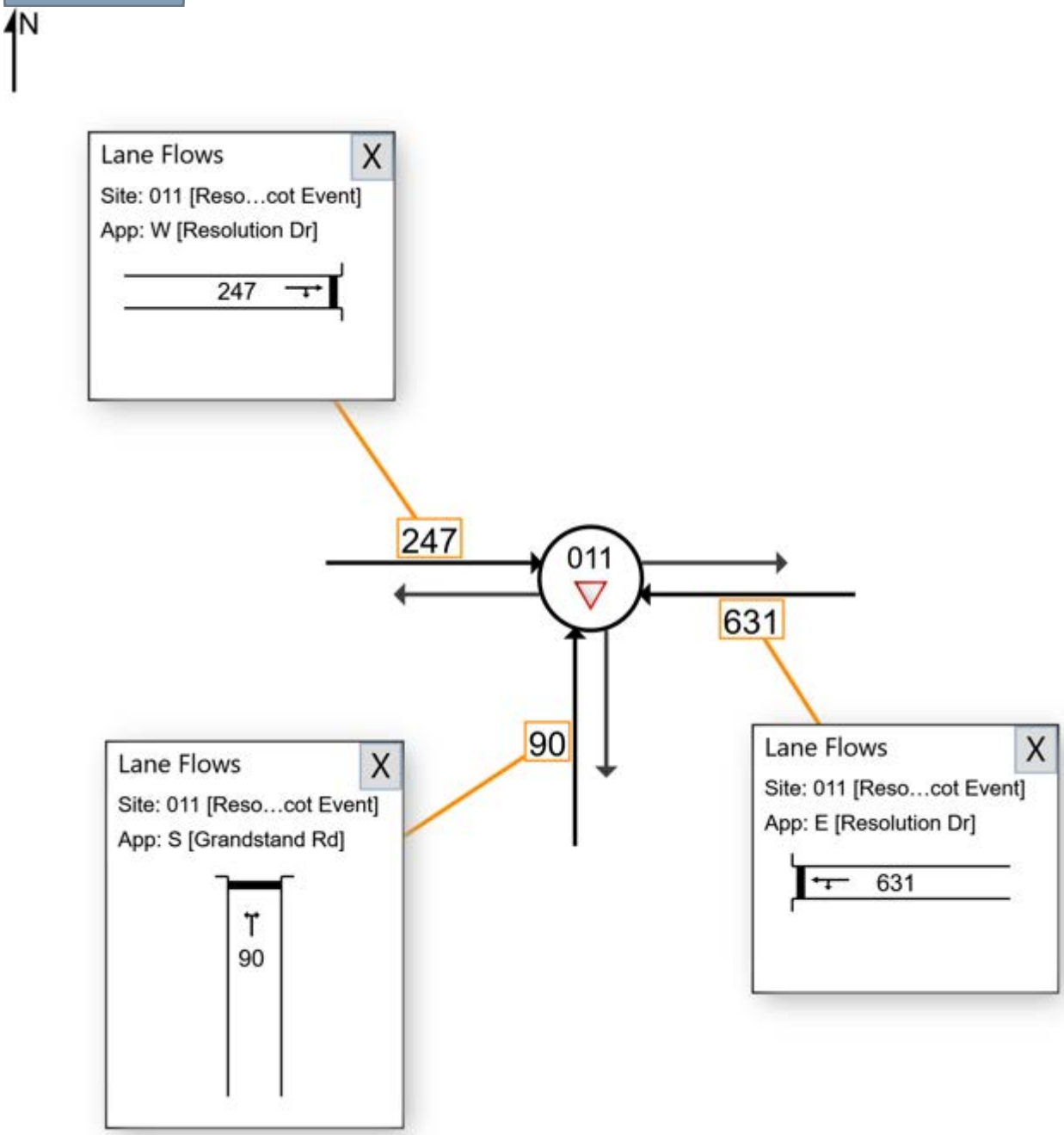

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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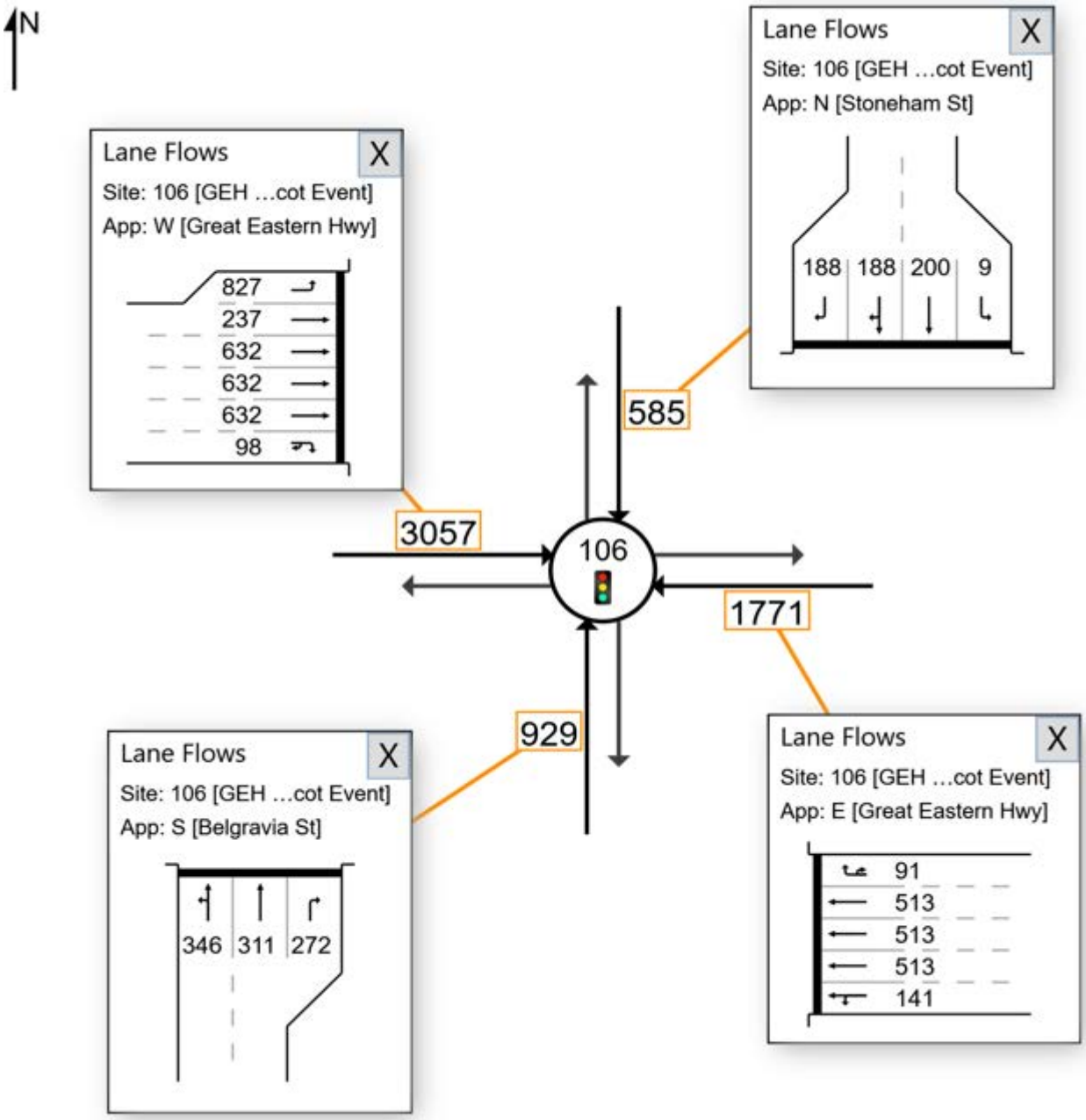

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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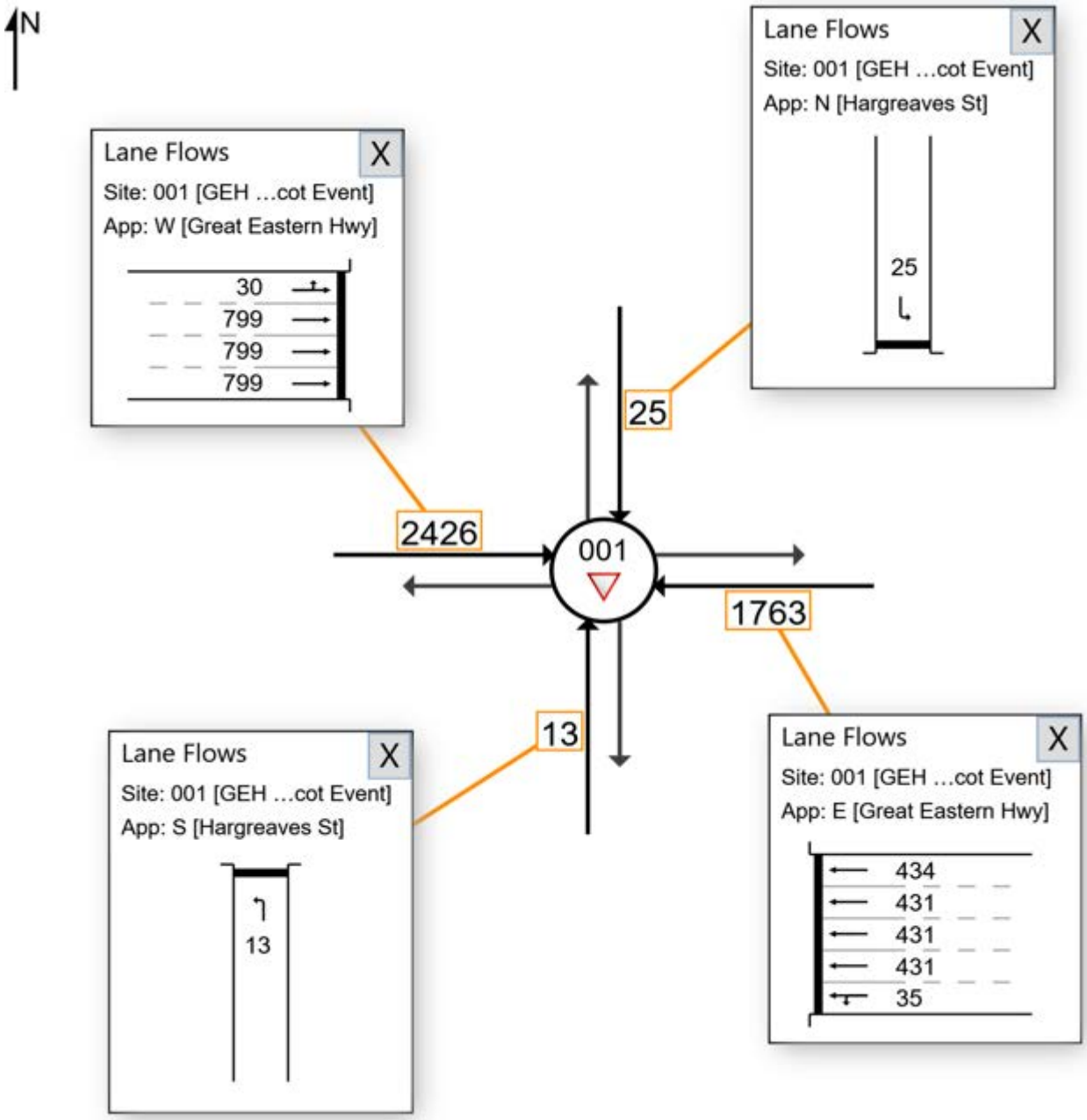

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 002 [GEH Daly PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Daly St
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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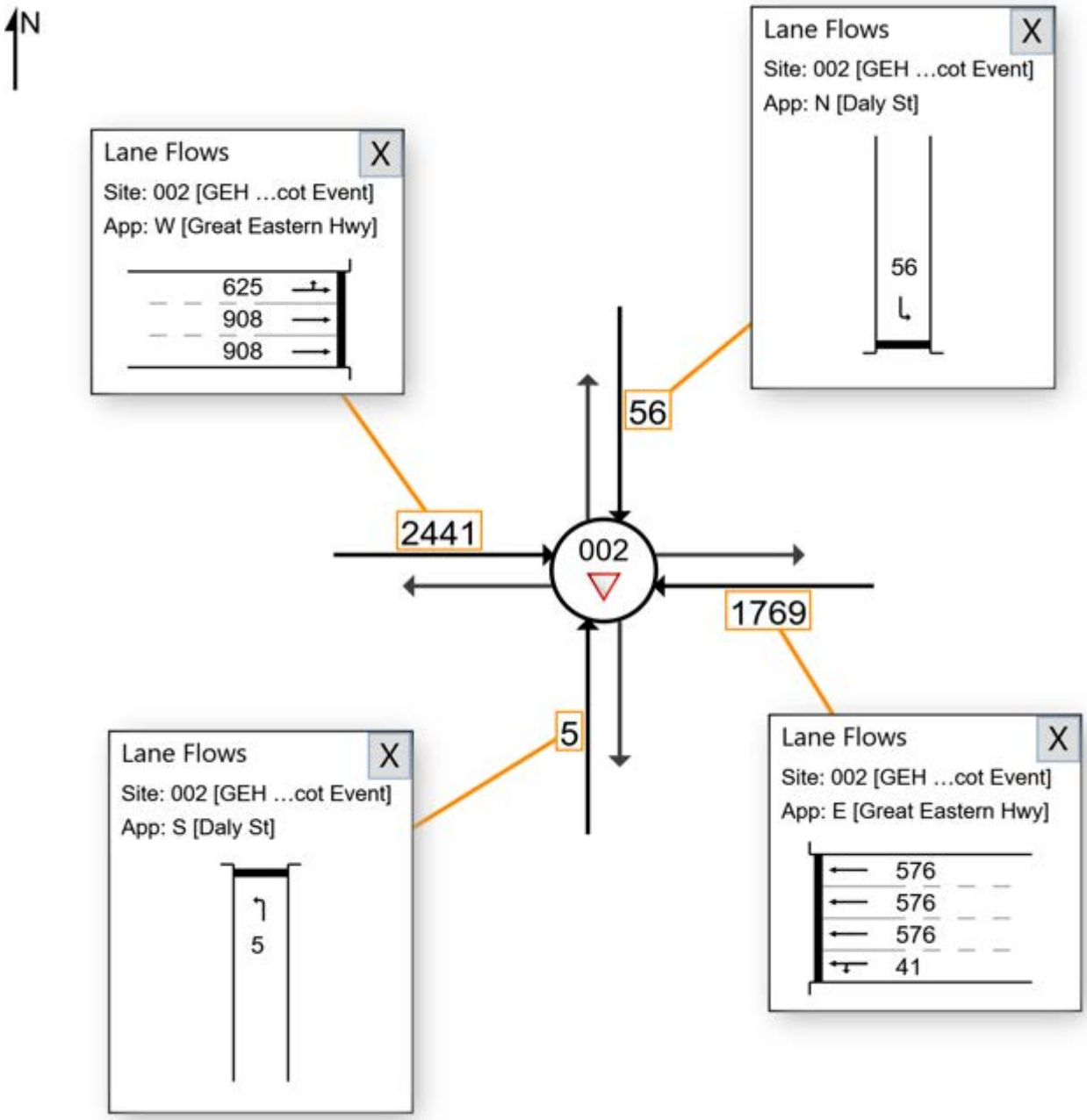

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 003 [GEH Grandstand PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Grandstand Rd
Left in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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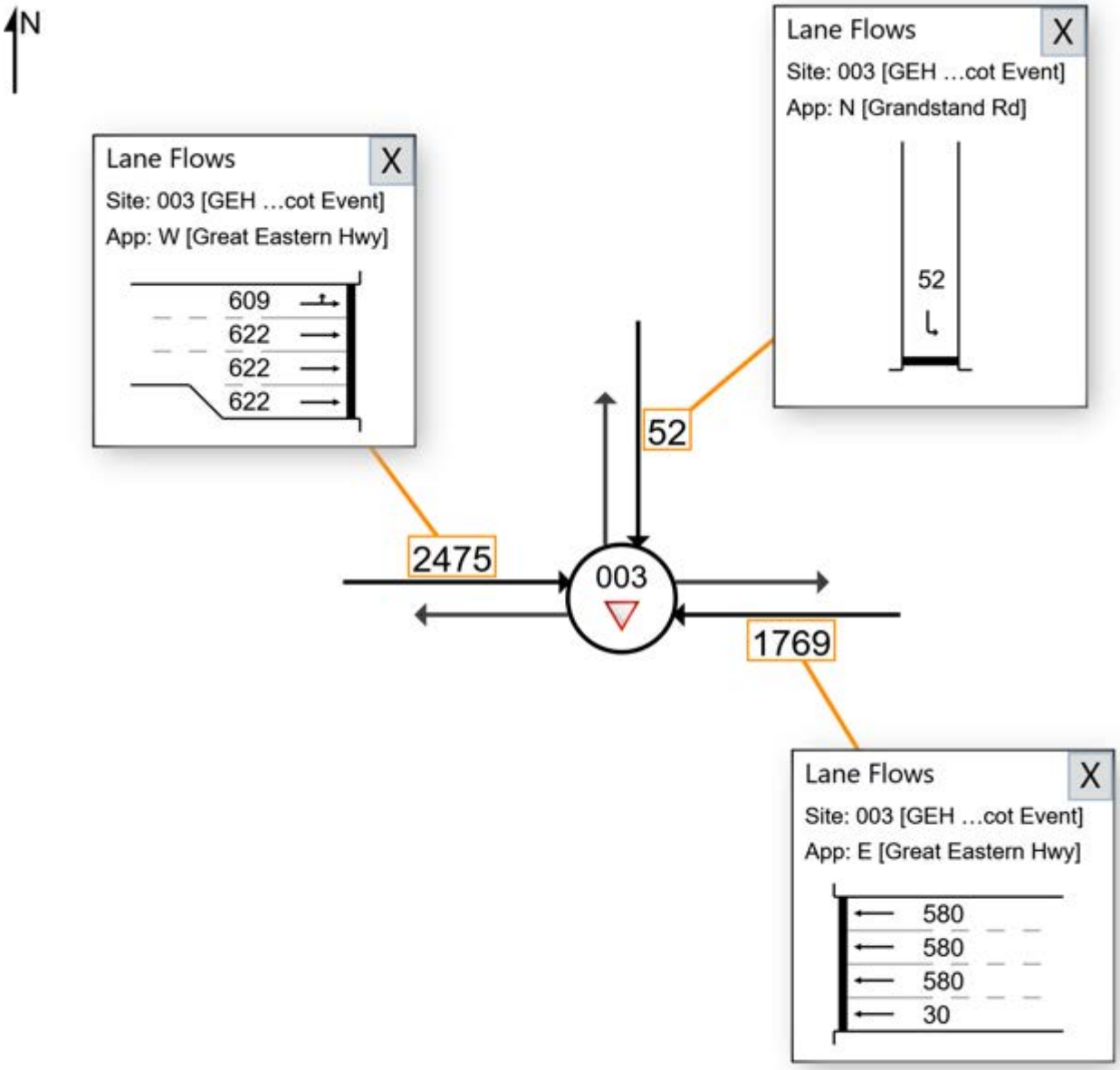

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 96 [GEH Resolution Hardey PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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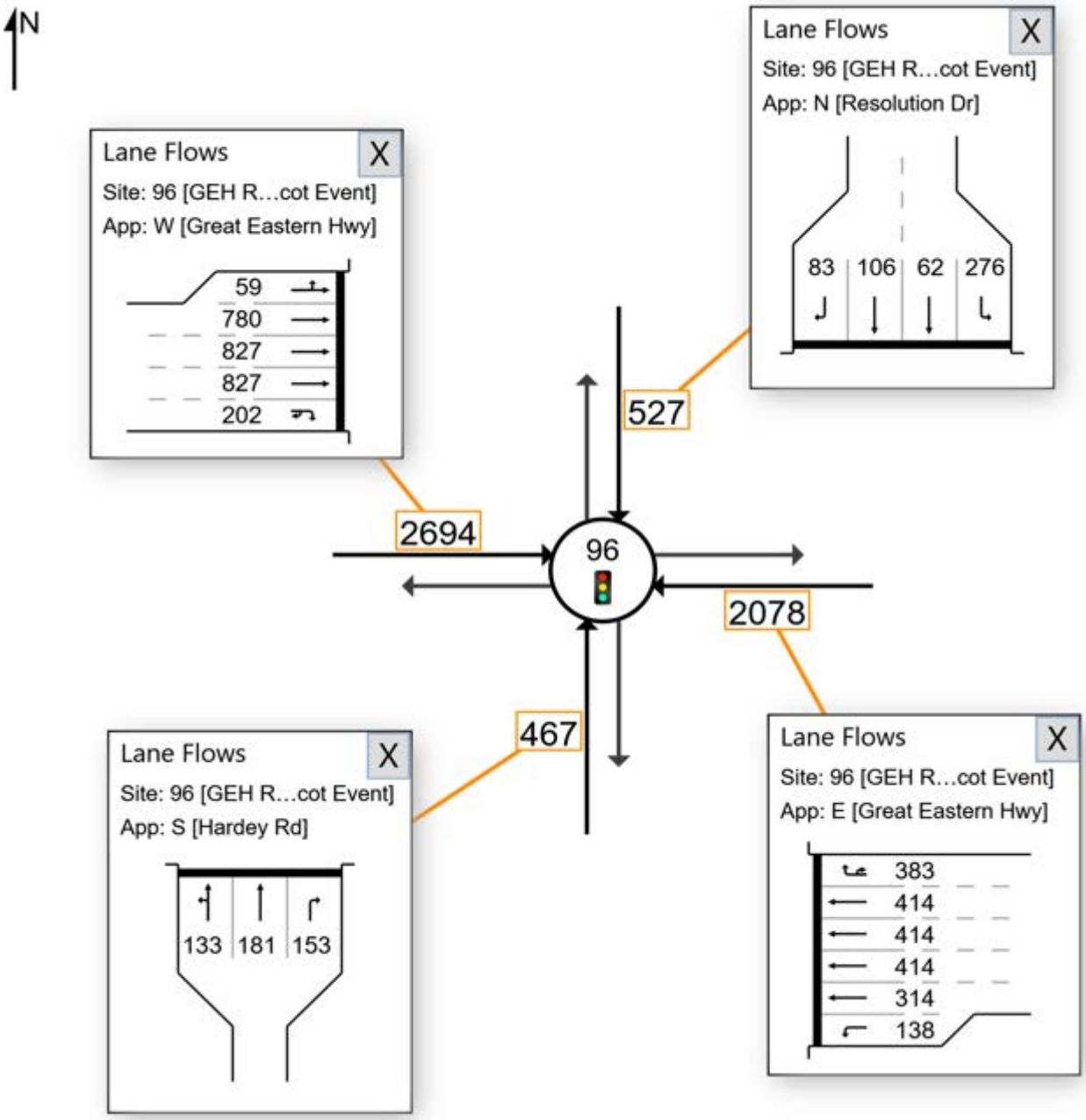

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 004 [Stoneham Hargreaves PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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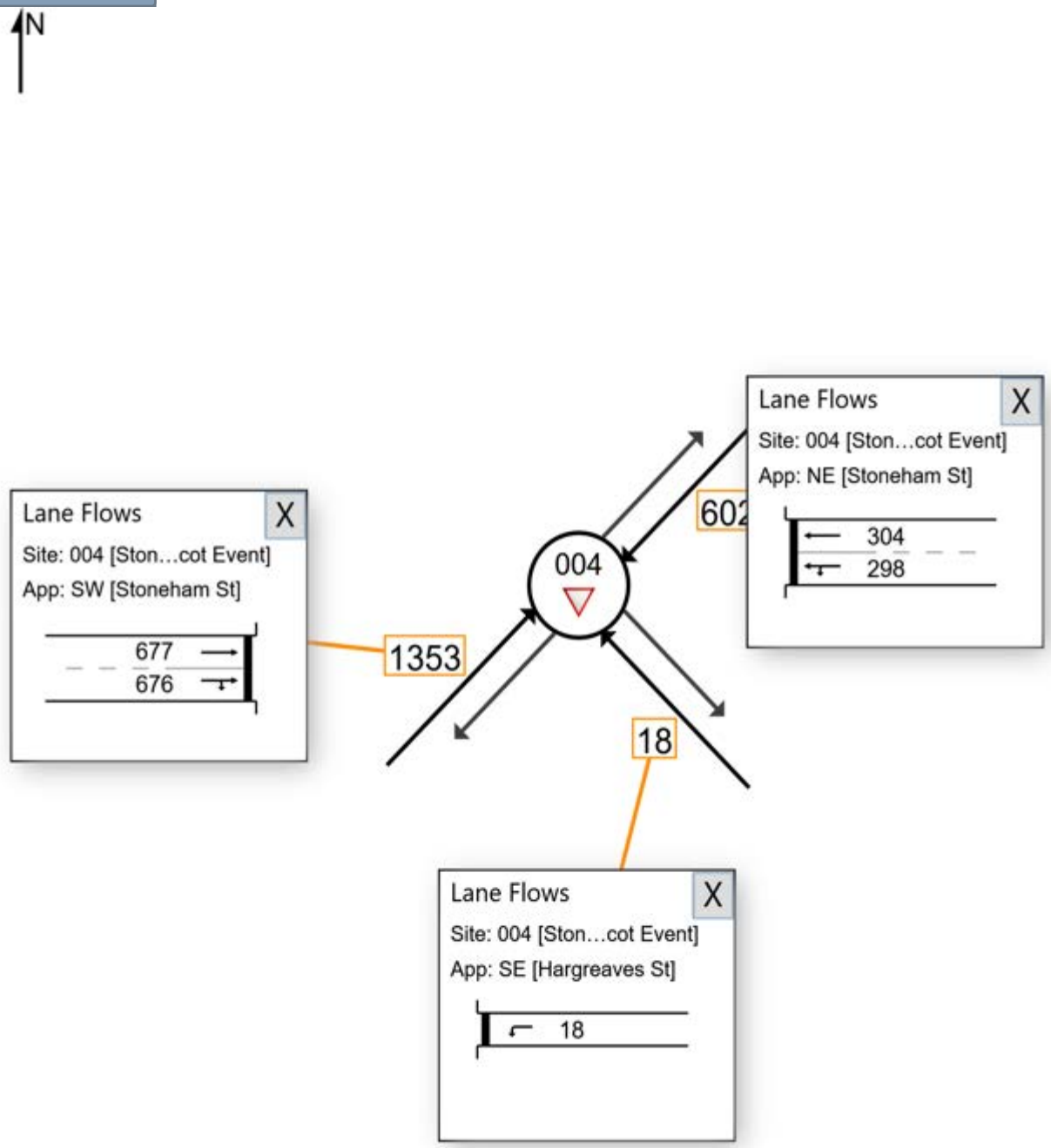

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 007 [Stoneham Grandstand Resolution PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

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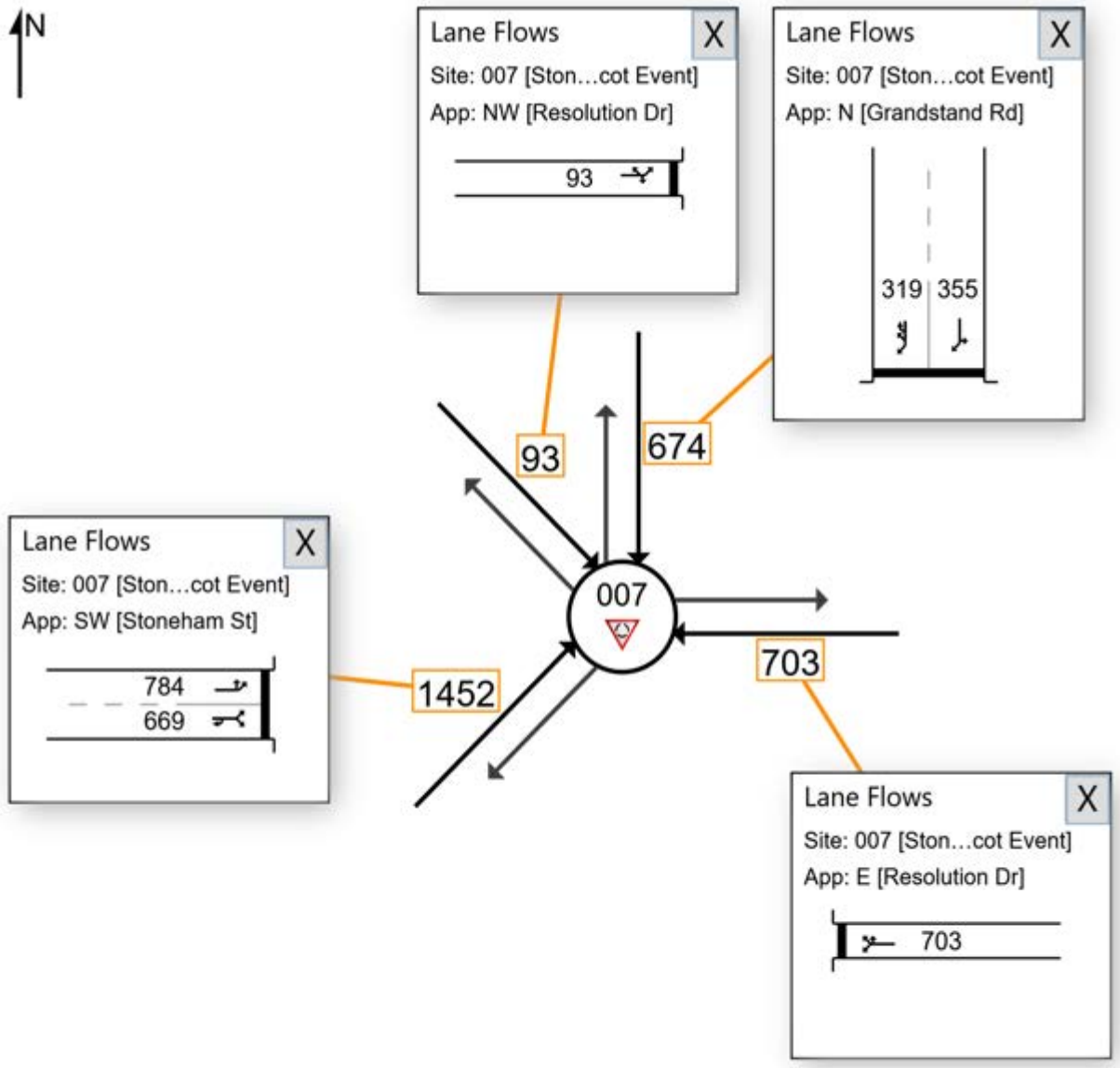

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2031 Ascot Event (Site Folder: 2031 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2031 PM Peak Proposed Networkand Land Use Ascot Weekday Event (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2031 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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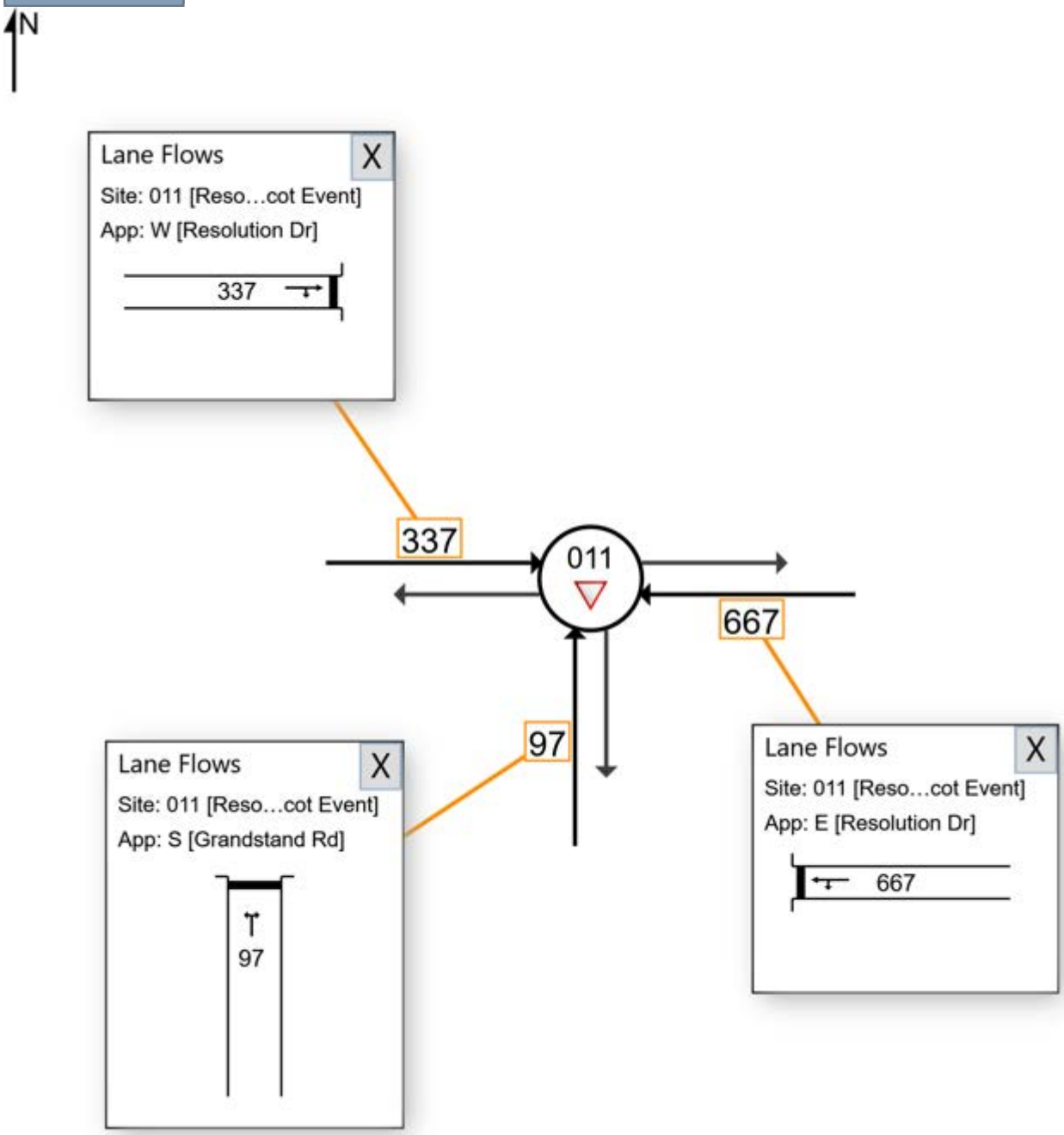

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 106 [GEH Stoneham Belgravia PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Stoneham St / Belgravia St
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

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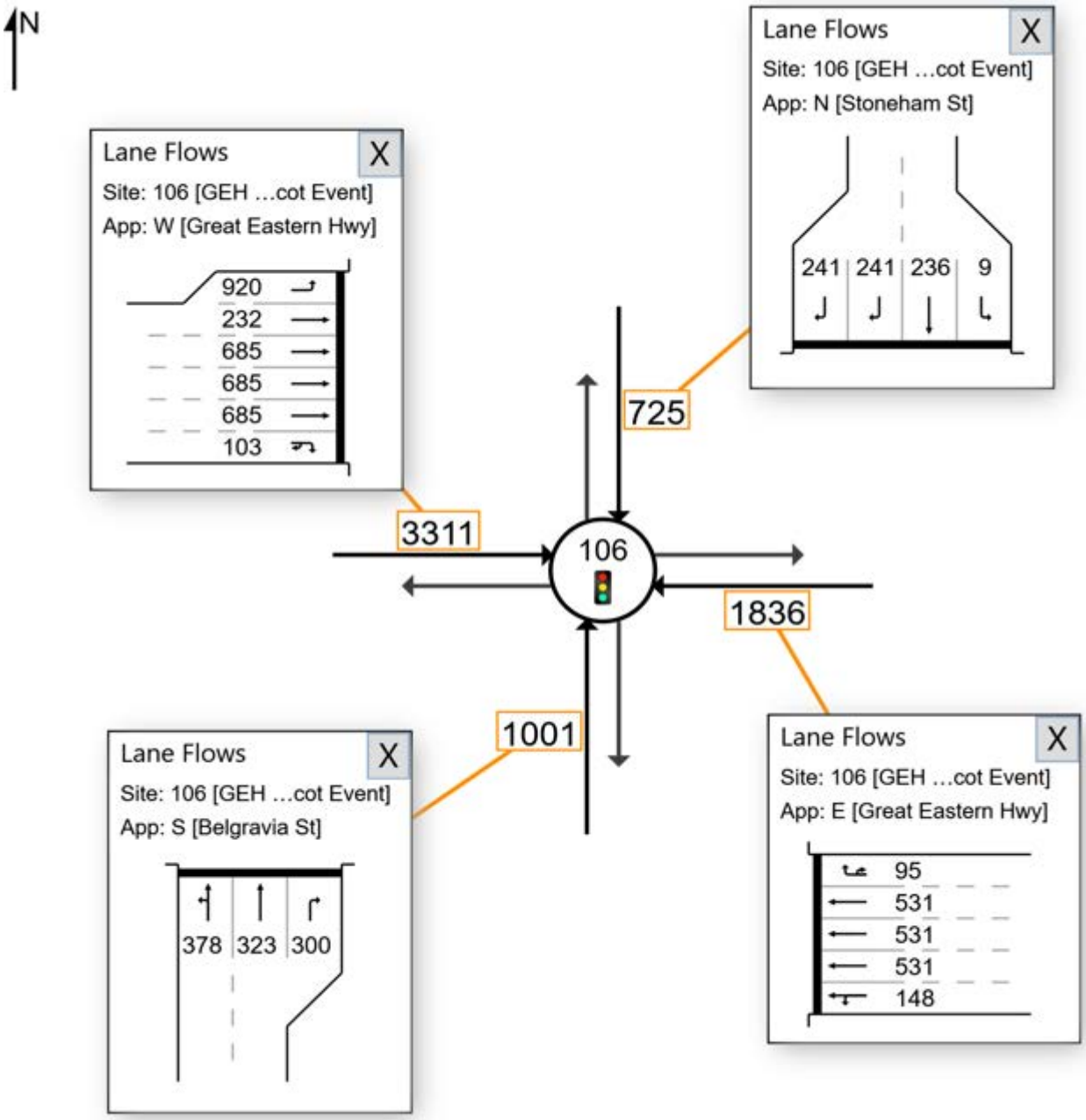

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 001 [GEH Hargreaves PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Hargreaves St
Left in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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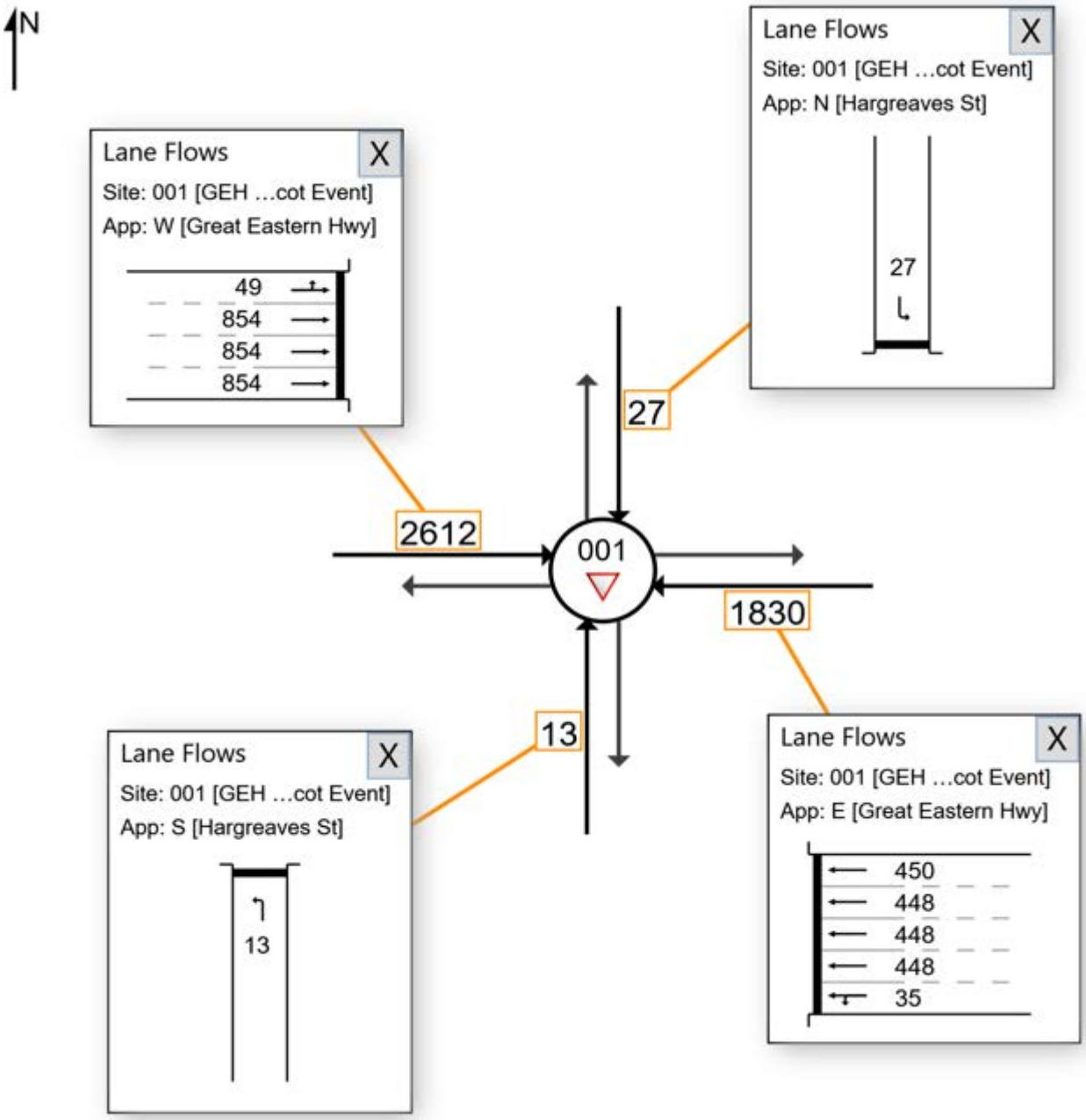

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Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

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GEH / Daly St
Left in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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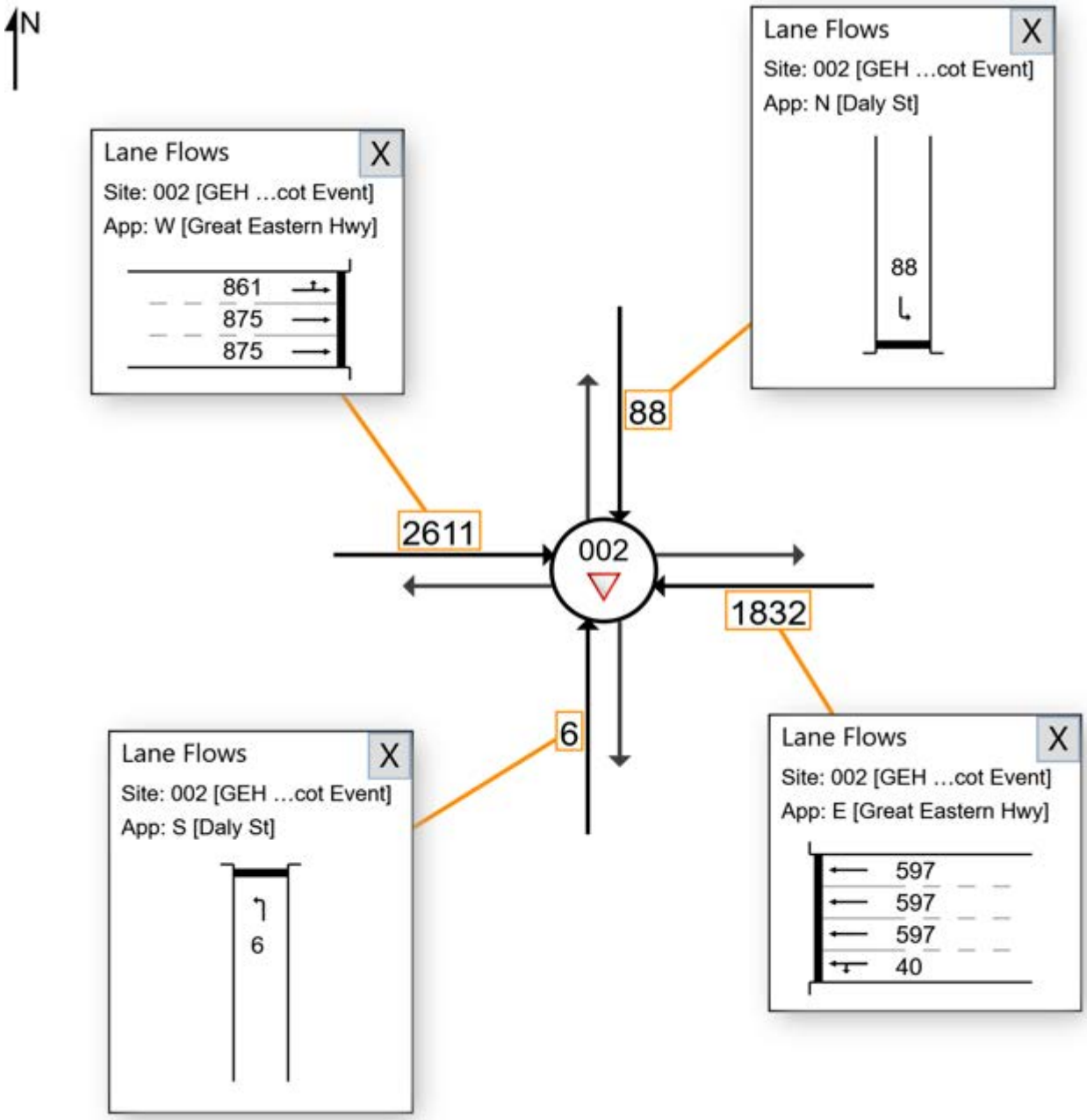

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Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

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GEH / Grandstand Rd
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2041 PM Peak with proposed road network and land uses
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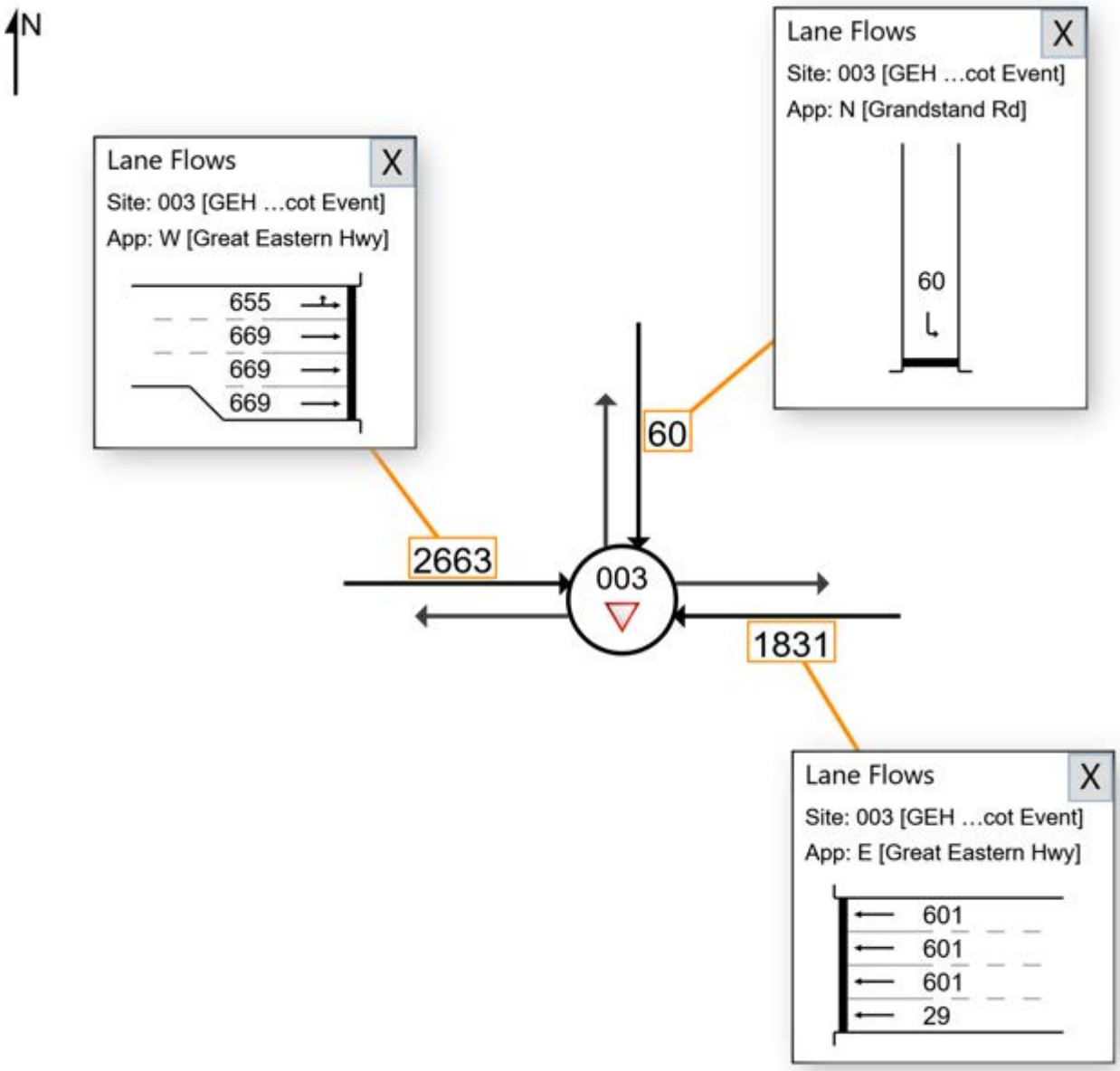
Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

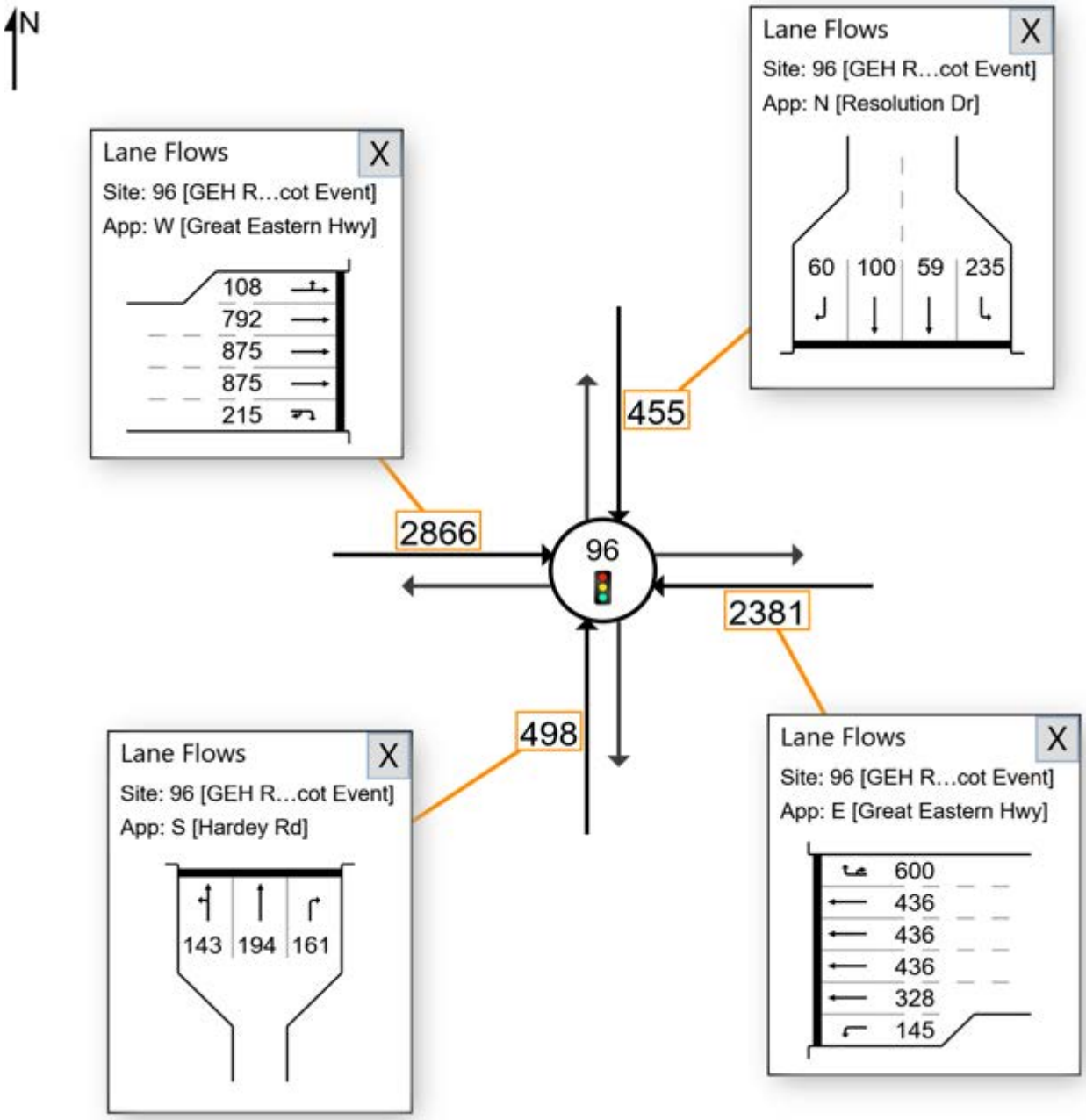
Site: 96 [GEH Resolution Hardey PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

GEH / Resolution Dr / Hardey Rd
Traffic signals
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site User-Given Phase Times)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

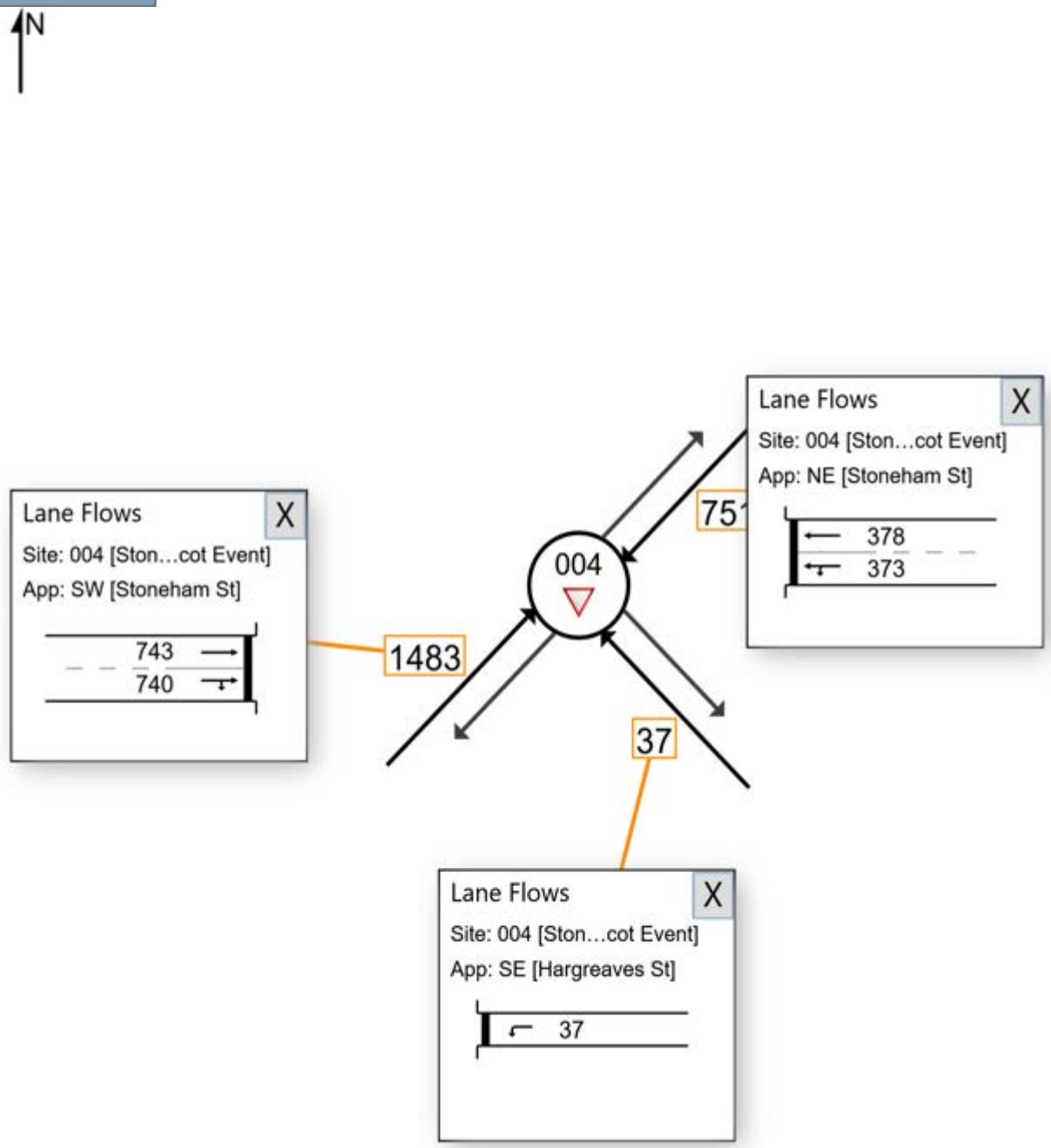
Site: 004 [Stoneham Hargreaves PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Hargreaves St
All in Left out, Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

Use the button below to open or close all popups boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

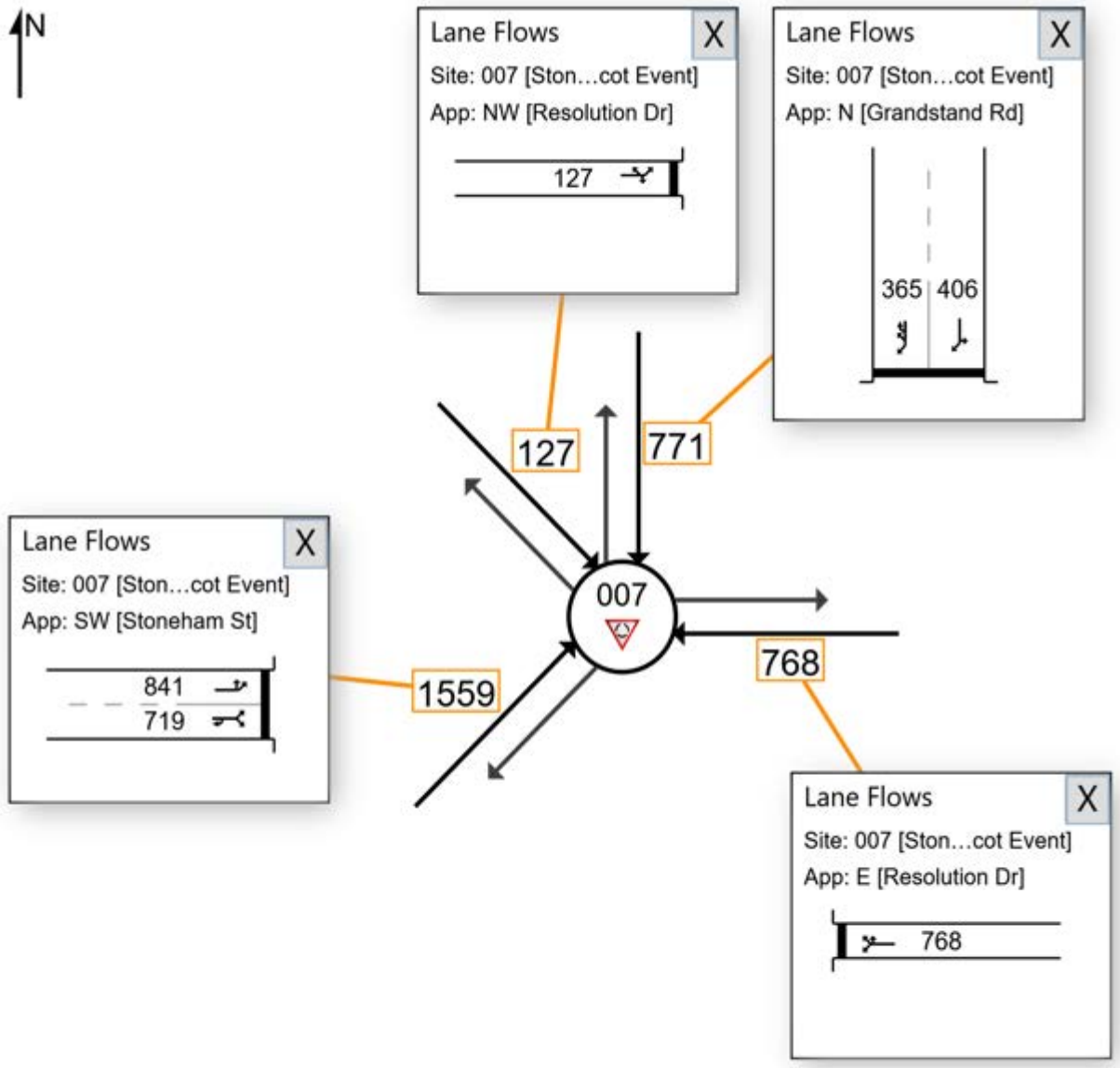
Site: 007 [Stoneham Grandstand Resolution PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

Stoneham St / Grandstand Rd / Resolution Dr
Roundabout
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups



Some reduced upstream exit flow rates exist due to capacity constraint applied to oversaturated approach lanes. See Arrival Flows in Lane Summary reports.

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APPROACH LANE FLOWS

Lane flow rates based on arrival flows including the effect of capacity constraint in Site analysis (veh/h)

All Movement Classes

Site: 011 [Resolution Grandstand PM 2041 Ascot Event (Site Folder: 2041 PM Peak Proposed Network and Land Uses ASCOT TEST)]

Network: N101 [2041 PM Peak Proposed Network and Land Use Ascot Weekday Event (Network Folder: General)]

Resolution Dr / Grandstand Rd
Give Way
2041 PM Peak with proposed road network and land uses
Site Category: Existing Design
Give-Way (Two-Way)

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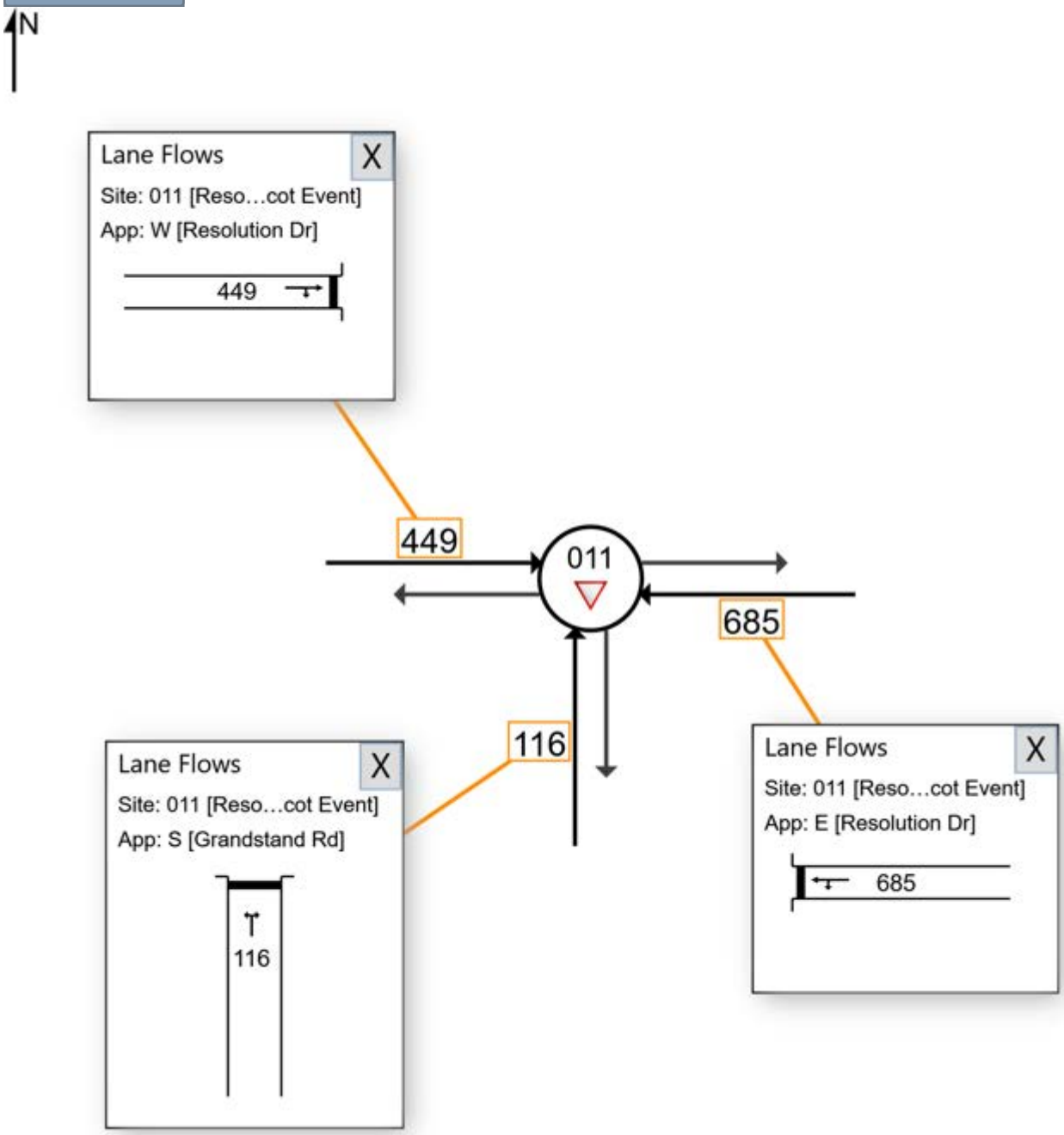
Click and drag popup boxes to move to preferred positions.

Close All Popups



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