8 Alternative Land Use Options

The City of Toronto and Oxford Properties developed two (2) separate block plans based on population and employment projections and land use assumptions on the Yorkdale Shopping Centre. The two proposed developments were assessed and compared to one another to examine the difference in the two land use options and their implications on the transportation network. A transportation assessment was completed to compare the two options in terms of trip generation and growth, trip destination and origin mode share distribution and trip assignment and demand based on various peak times, later discussed in **Section 8.4**. The purpose of this comparison was to determine if there are any major differences, benefits, and disadvantages to each option, which will help guide the recommended solutions.

8.1 Scenario 1: Oxford Proposed Development

Oxford Properties' proposed block plan for Yorkdale Shopping Centre (see **Figure 8-1)** is split into 12 blocks with 13 new high-rise, mixed-use buildings, four parks, and a variety of active transportation improvements, which include multi-use paths and bike routes. The proposed high-rise, mixed-use developments are found predominantly along Dufferin Street and Yorkdale Road with residential, retail, office and / or hotel use. Further land use breakdown can be found in **Section 8.3**.

Oxford's proposed building heights are grouped into five groups and increase in height as it reaches Yorkdale Road as shown in **Figure 8-2.** The high-rise building heights are grouped as follows:

- Dufferin Towers, six buildings found along Dufferin Street and South Service Road, are 12 to 23 floors;

- High Street Towers, two buildings south of Yorkdale Greenway, are 20 to 25 floors;

- North-West Towers, one building with three towers found at the intersection of Dufferin Street and Yorkdale Road, is 25 to 30 floors;

- North Gate Towers, two buildings along Yorkdale Road, are 32 floors; and,

- North-East Towers, two buildings found at the intersection of Yorkdale Road and Allen Road, are 30 to 40 floors.

With existing, future background conditions, and the proposed improvements to Yorkdale Shopping Centre, Oxford's Properties projects the total 2041 population demand to be 9,239 and 9,863 for employment, for total of 19,102 people.

Figure 8-1. Oxford Properties Proposed Block Master Plan

Figure 8-2. Oxford Properties Block Master Plan – Proposed Height and Massing
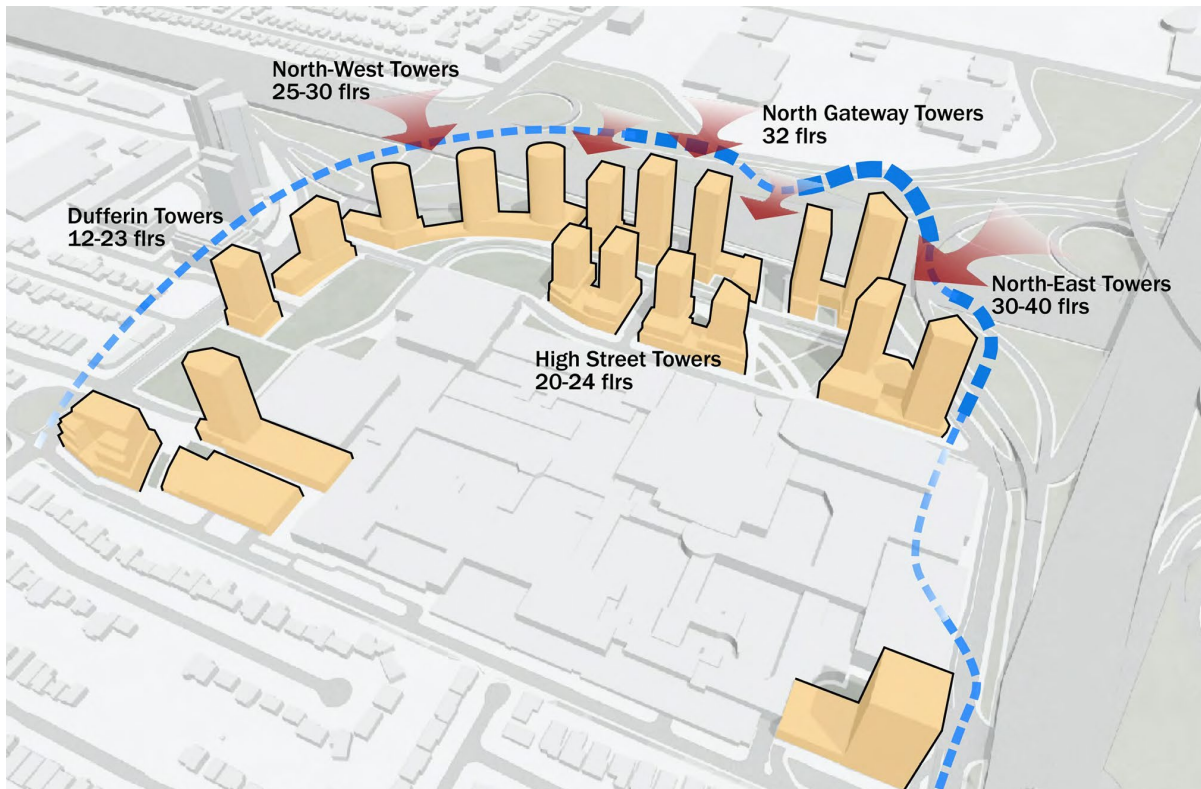

Source: Oxford Properties (May 2021)

*For visual purposes only. This has not been approved and is subject to change.

8.2 Scenario 2: City Proposed Development

The City's proposed block plan for Yorkdale Shopping Centre (see **Figure 8-3**) is split into 11 blocks with a mid or high-rise building. There are four proposed mid-rise buildings located along Yorkdale Road. The remaining seven buildings are high-rise developments and are located along Dufferin Street and adjacent to the proposed mid-rise buildings. The land use for each block is mixed use, office space or hotel. Further land use breakdown can be found in **Section 8.3**.

Compared to the Oxford Properties' projected demand, the City of Toronto's projected population and employment demand are 6,338 and 10,977, respectively, for their proposed improvements to Yorkdale Shopping Centre. This brings a total of 17,315 people to the area.

Figure 8-3. City Proposed Block Plan (looking south)
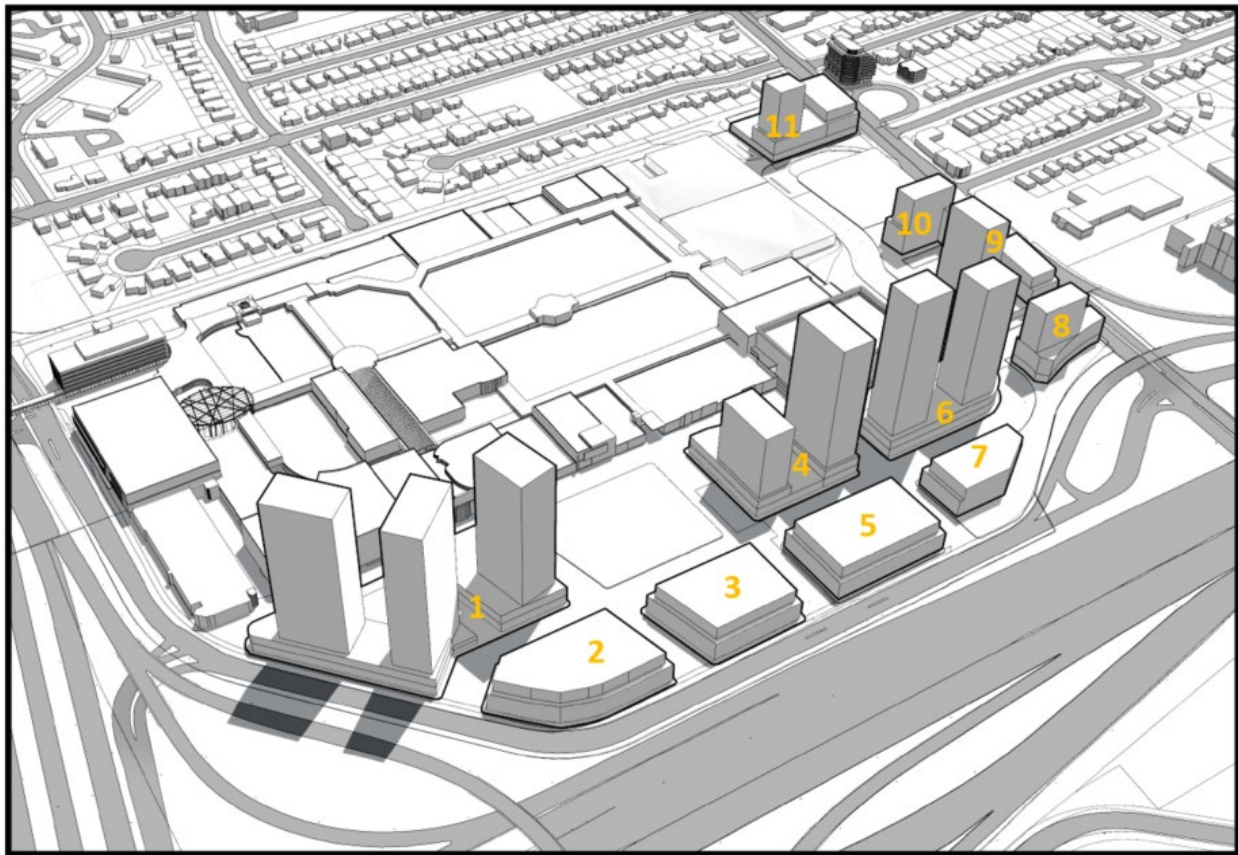
Source: City of Toronto (May 2021)

*For visual purposes only. This has not been approved and is subject to change.

8.3 Comparison of Land Use Alternatives

The 2016 existing and 2041 Base, City, and Oxford population and employment demands are illustrated in **Figure 8-4**. The study area's 2016 demand is predominantly employment with a low population of 29 people. The 2041 base demand from the City of Toronto OP, which was initially calculated without the proposed Yorkdale Shopping

Centre improvements, projects that the study area will have 6,595 employment and 1,935 population demands, bringing 8,530 people to the area. Comparing the 2041 projected demands:

- The City and Oxford projected demands are both two times higher than the base demand;

- Oxford's proposed improvements are projected to bring more people and jobs to the Yorkdale Shopping Centre compared to the City's; and,

- With the City's proposed improvements, the Yorkdale Shopping Centre is projected to bring in more employment demand, while Oxford's are equal in population and employment.

Figure 8-4. Yorkdale – Population and Employment Demand Projections
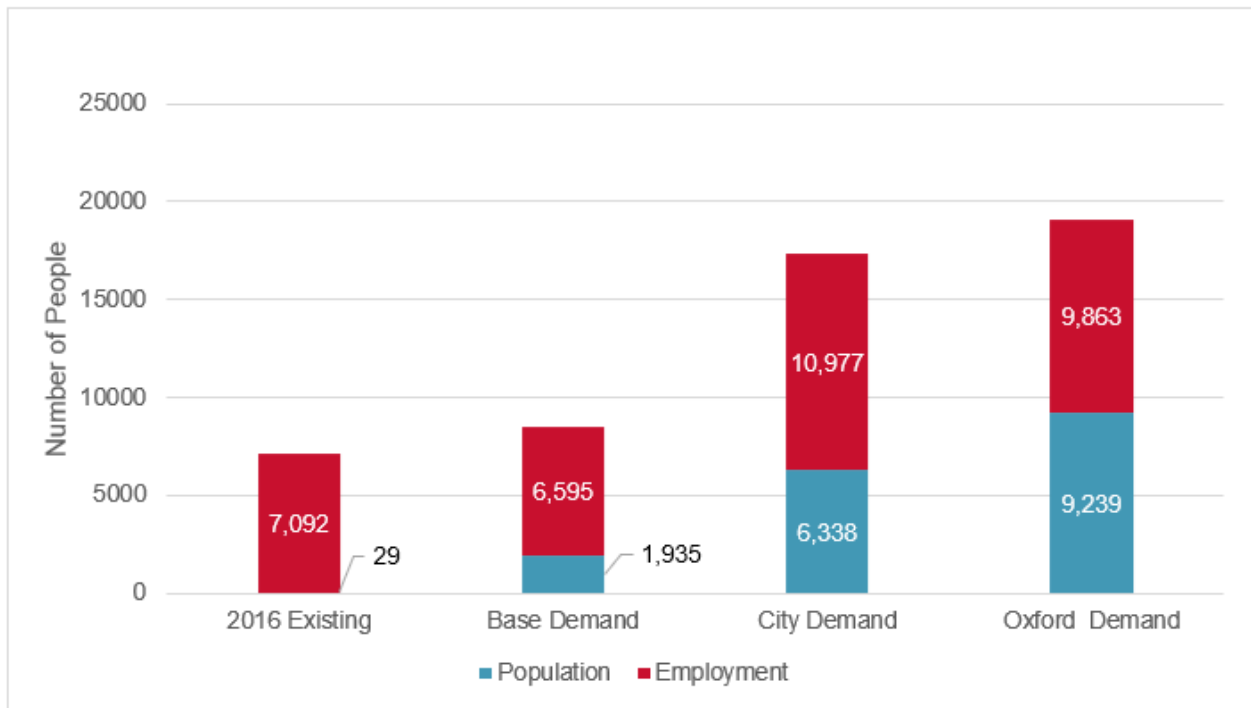

The 2041 projected demands for the City and Oxford Properties are determined by the land use assumptions for the proposed block plan. The land use assumption breakdown for the City and Oxford is shown in **Figure 8-5**. The City's land use assumptions are 64% residential and 36% commercial: 12% retail, 19%, office, and 5% hotel. For Oxford, the land use assumptions are 84% residential and 16% commercial: 8% retail, 5% office, and 3% hotel. Comparing the proposed land use assumptions for the City and Oxford:

- Oxford's proposed block plan provides two times more housing compared to the City's;

- The retail proposed GFA for both the City and Oxford is relatively the same;

- The City provides almost three times more office space than Oxford Properties;

- The City provides almost two times more hotel space than Oxford Properties;

- Oxford focuses most of their land use to provide more housing to the Yorkdale Shopping Centre while the City focuses on providing a balance of both residential and commercial land use; and,

- Oxford Properties provide more total GFA: The City's proposed total GFA is 447,000 sq.m compared to Oxford Properties total GFA of 640,000 sq.m.

Figure 8-5. City vs. Oxford Land Use Assumptions Based on Proposed GFA
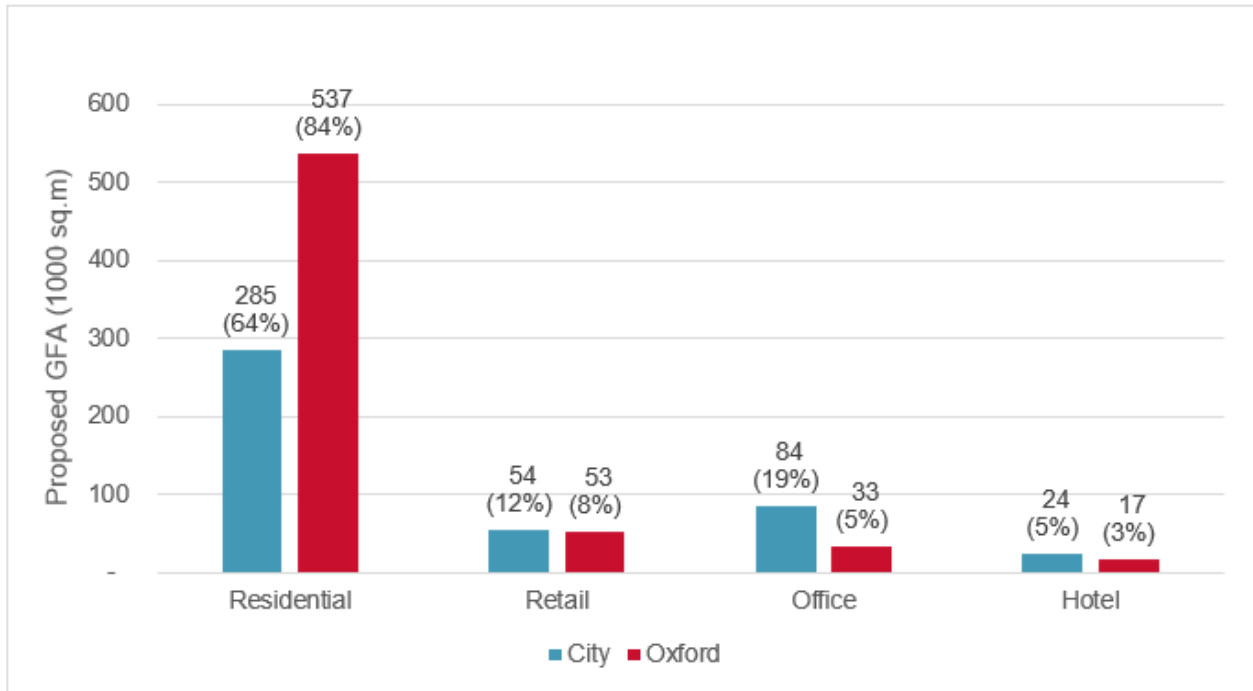

8.4   Transportation Assessment of Land Use Alternatives

8.4.1   Active Transportation

Based on the alternative land use options presented in **section 8**, projected pedestrian and cyclist volumes are anticipated to be almost equal within the larger study area as illustrated in **Figure 8-6.** Within the Yorkdale Zone only, pedestrian and cyclist volumes are projected to be slightly higher under Oxford's proposed land use scenario and is illustrated in **Figure 8-7**. Under both land use scenarios, approximately twenty (20) percent of pedestrians and cyclists originate from the Yorkdale Zone only.

**Figure 8-6. City vs. Oxford Pedestrian and Cyclist Volumes within the Larger Study Area**

Estimated Peak Hour Pedestrian and Cyclist Volumes by Direction
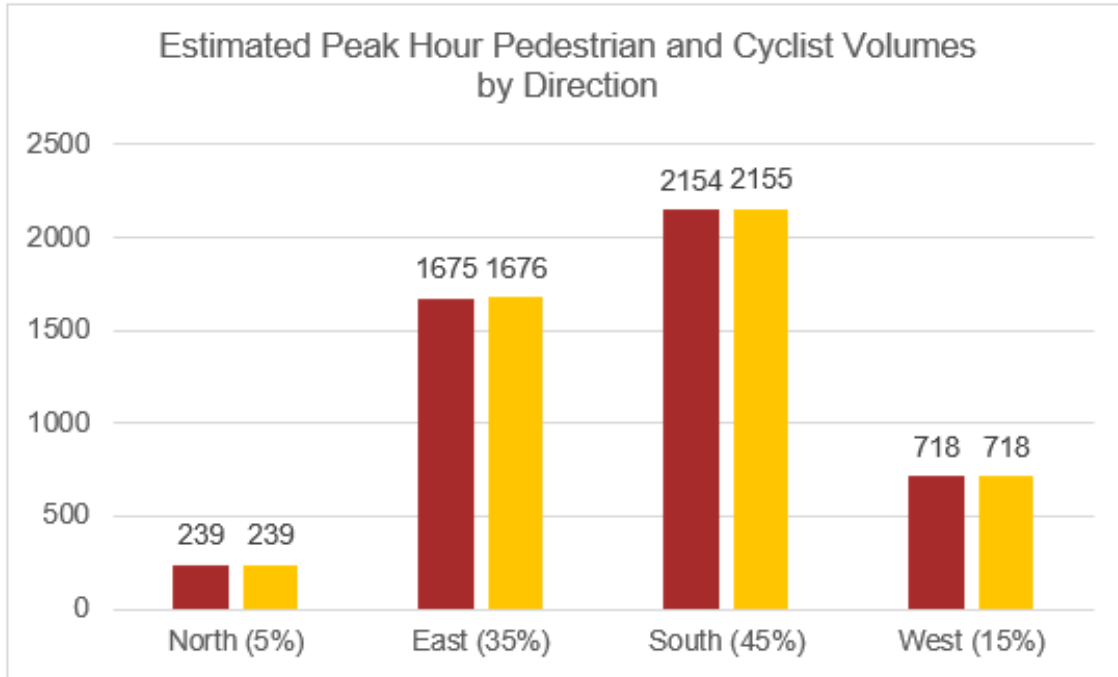
Figure 8-7. City vs. Oxford Pedestrian and Cyclist Volumes within the Yorkdale Zone Only

Estimated Peak Hour Pedestrian and Cyclist Volumes by Direction

HDR
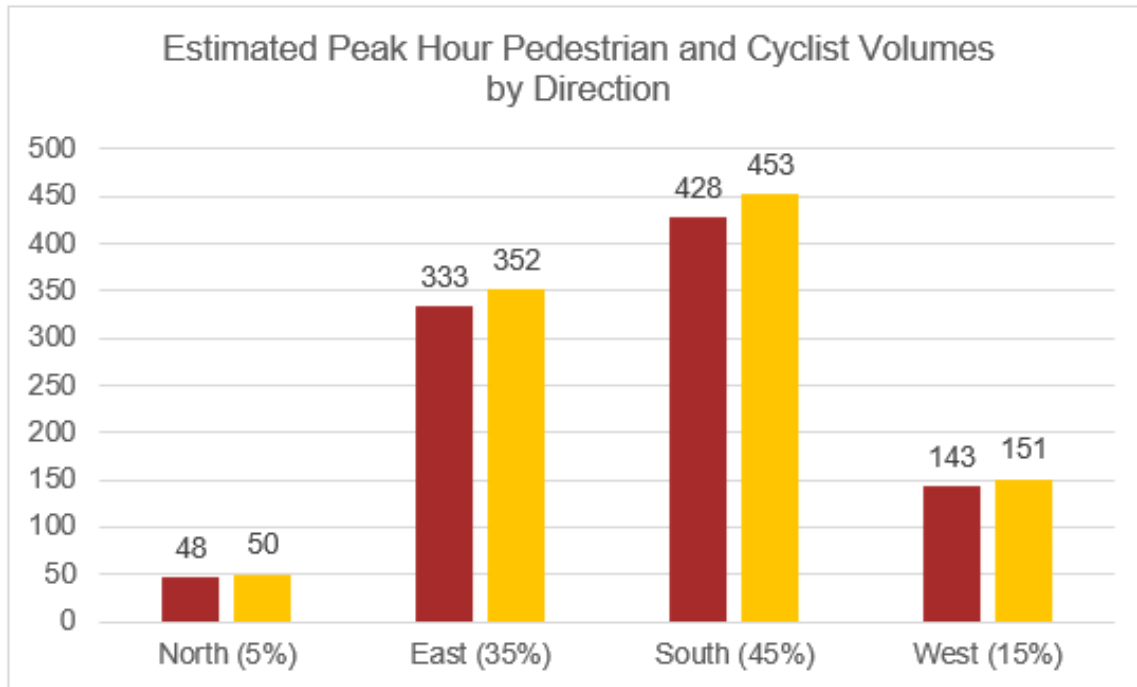
8.4.2   Transit

Projected transit user volumes are anticipated to be slightly higher under Oxford's proposed land use scenario within the larger study area as illustrated in **Figure 8-8**. Under both land use scenarios, approximately twenty (20) percent of transit users originate from the Yorkdale Zone only.
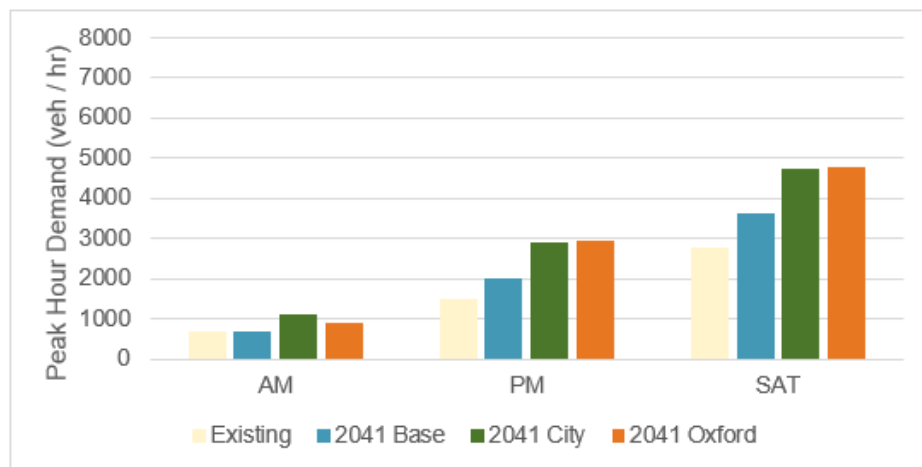
**Figure 8-8. City vs. Oxford Transit User Volumes within the Larger Study Area**
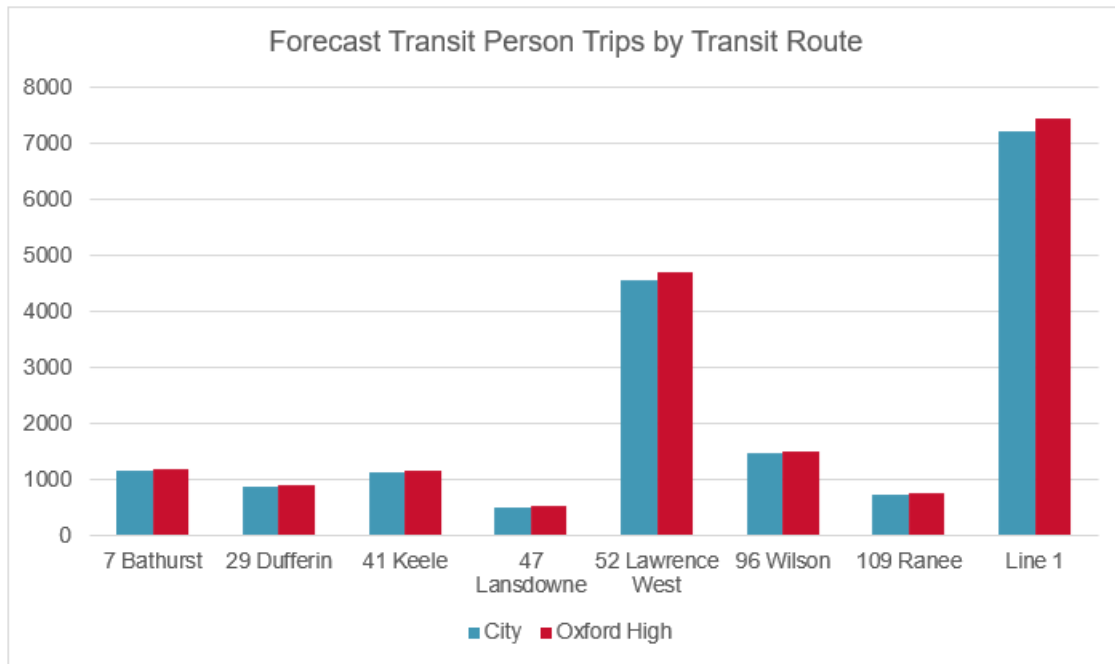
8.4.3   Auto

The trip generation for the peak hour of the analyzed period based on the proposed population and employment demand are illustrated in **Figure 8-9** through **Figure 8-11**.
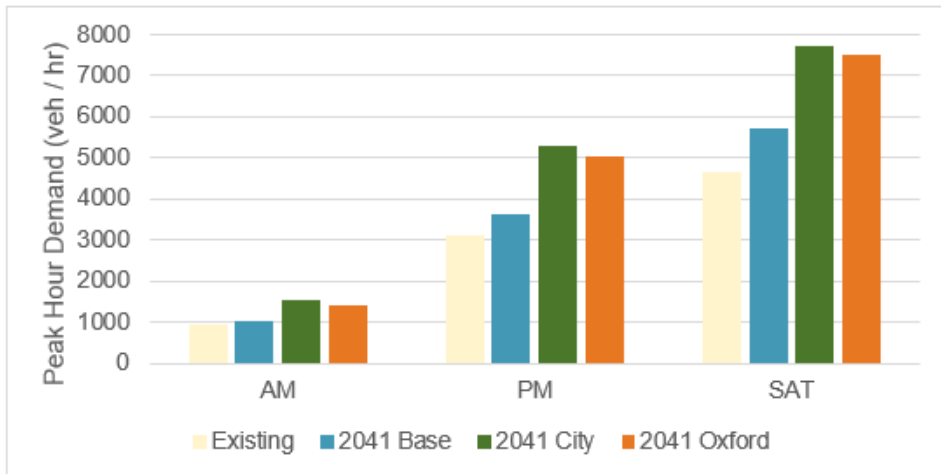
Figure 8-9. 2041 Horizon – Trips to Yorkdale Shopping Centre

Figure 8-10. 2041 Horizon – Trips from Yorkdale Shopping Centre
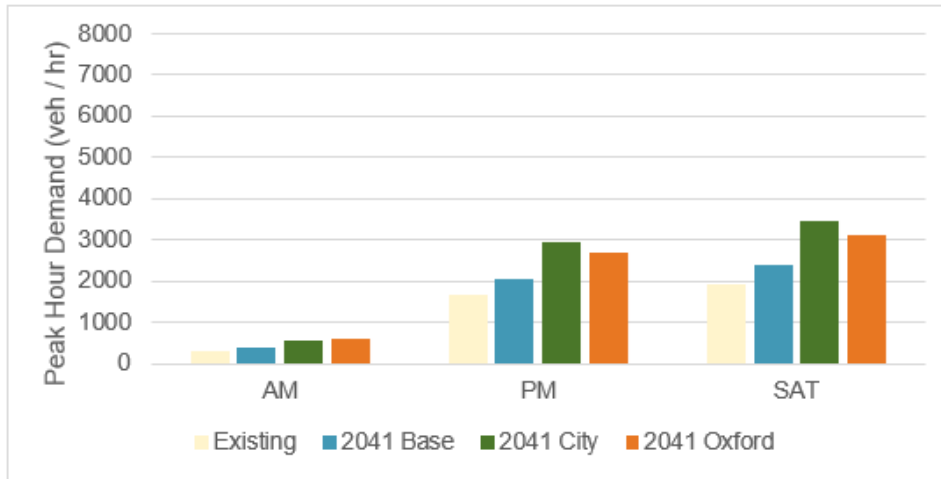
Figure 8-11. 2041 Horizon – Total Trips to/from Yorkdale Shopping Centre

Table 8-1 summarizes the demand growth in terms of the number of vehicles as well as the associated percentage growth. As shown, the city-proposed plan will generate slightly more traffic to and from the Yorkdale Shopping Centre compared to the oxford-proposed plan during all peak periods. This is primarily due to higher trips generated by the proposed office component.

Table 8-1. Trip Growth Comparison - Yorkdale Shopping Centre

	2041 Base		City Proposed		Oxford Proposed	
AM	+90veh	+9%	+620veh	+64%	+490veh	+50%
PM	+920veh	+30%	+2650veh	+86%	+2530veh	+82%
SAT	+1370veh	+30%	+3480veh	+75%	+3240veh	+70%

Mode Share

Based on the 2041 Base analysis, some busy intersections will experience demand at or beyond their available capacity leading to congestion that encourages use of alternative modes where this is practical. Enhancements to the transit network serving the study area may also lead to mode shifts, although there are limited planned enhancements directly affecting travel to and from (as opposed to through) the study area.

The long-term trends have been investigated using the City of Toronto's macro demand model (GTAModelv4), with model outputs provided by the City. The traffic assignment outputs were subjected to some local calibration adjustments for traffic based on comparisons of modelled and observed data for existing conditions, but no adjustments were made to the mode share model.

The model identifies some areas of increased congestion in the future network, but the EMME network assignment allows for volumes above capacity; it also reflects only link capacities and not the turning movement and queuing delays that are captured by Aimsun. When such levels of congestion are present, it is expected that mode shifts or travel demand patterns will change. While this travel pattern is partially accounted for in the GTA v4 EMME model, the EMME macro network is less sensitive to turning movement and queuing delays compared to Aimsun. Therefore, Aimsun shows a more significant issue that is expected to better reflect the on-street conditions if such a level of demand is loaded into the network.

In order to compare and refine the high-level modal split projections produced by the city-wide model's forecasts, data from the 2016 Transportation Tomorrow Survey and recent City of Toronto secondary and master plans have also been reviewed. **Table 8-2** lists the mode split data from each of these sources.

Table 8-2. Mode Share Comparison of Various City of Toronto Studies

Scenario	Horizon	AM Mode Share			PM Mode Share		
		Auto	Transit	Active	Auto	Transit	Active
Transportation Tomorrow Survey	2016	73%	23%	4%	73%	23%	4%
Yorkdale Shopping Centre Zone (EMME GTA v4)	2011	-	18%	-	-	15%	-
	2041	-	26%	-	-	21%	-
Yorkdale Study Area (EMME GTA v4)	2011	-	27%	-	-	23%	-
	2041	-	33%	-	-	28%	-
Dufferin Street Secondary Plan[7]	2011	In - 80% Out – 63%	In - 17% Out – 21%	In – 3% Out – 16%	In - 69% Out – 77%	In - 28% Out – 22%	In – 2% Out – 1%
	2031	In - 74% Out – 57%	In - 23% Out – 37%	In – 3% Out – 6%	In - 57% Out – 74%	In - 37% Out – 23%	In – 6% Out – 3%
Golden Mile TMP[8]	2016	62%	34%	5%	62%	34%	5%

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[7] Dufferin Street Avenue Study (Appendix C Tables 7 and Table 8)

[8] https://www.toronto.ca/wp-content/uploads/2019/11/97a2-CityPlanning_GoldenMile_TMPDraft_Part3.pdf (Table 9-2)

Scenario	Horizon	AM Mode Share			PM Mode Share		
		Auto	Transit	Active	Auto	Transit	Active
	2041	53%	38%	9%	53%	38%	9%
ConsumersNext TMP[9]	2011	84%	14%	2%	84%	14%	2%
	2031	69%	21%	10%	69%	21%	10%
Scarborough Centre TMP[10]	2011	78%	19%	3%	81%	17%	2%
	2041	61%	36%	3%	77%	21%	2%

From a comparison of these sources and studies, we can highlight the following:

- Based on the City's GTA v4 model, the Yorkdale Shopping Centre's transit mode split is projected to rise by 8% in the AM peak in 2041, relative to 2011. Similarly, the larger study area around Yorkdale Shopping Centre's transit mode split is expected to rise by 6%.

- For the Golden Mile TMP, the projected auto mode share dropped by approximately 9% for the Future Do Nothing scenario, with the transit and active modes accommodating the difference.

- For the ConsumersNext TMP, the auto mode shares dropped by approximately 15% for a Future Do Nothing scenario.

- For Scarborough Centre TMP, the auto mode share dropped by 17% and 4% during the AM and PM peaks, respectively (with discretionary travel presumably more of a factor in the PM) for the Do Nothing scenario.

Based on these previous studies, the general trends for the Do-Nothing scenarios (before any specific transportation improvements such as transit or active transportation facilities are introduced for the subject master plan / secondary plan area) in recent TMP studies are observed to be at least a 10% reduction in auto demand in the AM peak, in most cases. There is a significant variation between studies indicating that each study area has its own unique characteristics.

Although the City's current GTAModel scenario incorporates some shift to transit, it is quite likely based on an assessment of traffic conditions that the 6-8% reduction for auto for Yorkdale will not be sufficient to accommodate background growth on the network, and the resulting congestion may drive a further shift to alternative modes. As a result, the proposed measure assumes an additional auto demand adjustment of 5% on the neighborhoods that can benefit from access to transit improvements in the future, as illustrated in **Figure 8-12**. The adjusted neighborhoods are mainly west and east of Dufferin Street, including Yorkdale Shopping Centre, where the planned / proposed transit improvements could benefit and help to encourage more transit share. The origin and adjusted mode shares are summarized in **Figure 8-13** through **Figure 8-16**.

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[9] https://www.toronto.ca/legdocs/mmis/2017/pg/bgrd/backgroundfile-103947.pdf (Table 9-8)

[10] https://www.toronto.ca/wp-content/uploads/2018/05/903b-cityplanning_scarboroughcentreonthemove_current-andfutureconditions.pdf (Table 2.3)

Figure 8-12. Neighborhood for 5% Auto to Transit Mode Shifting Adjustments
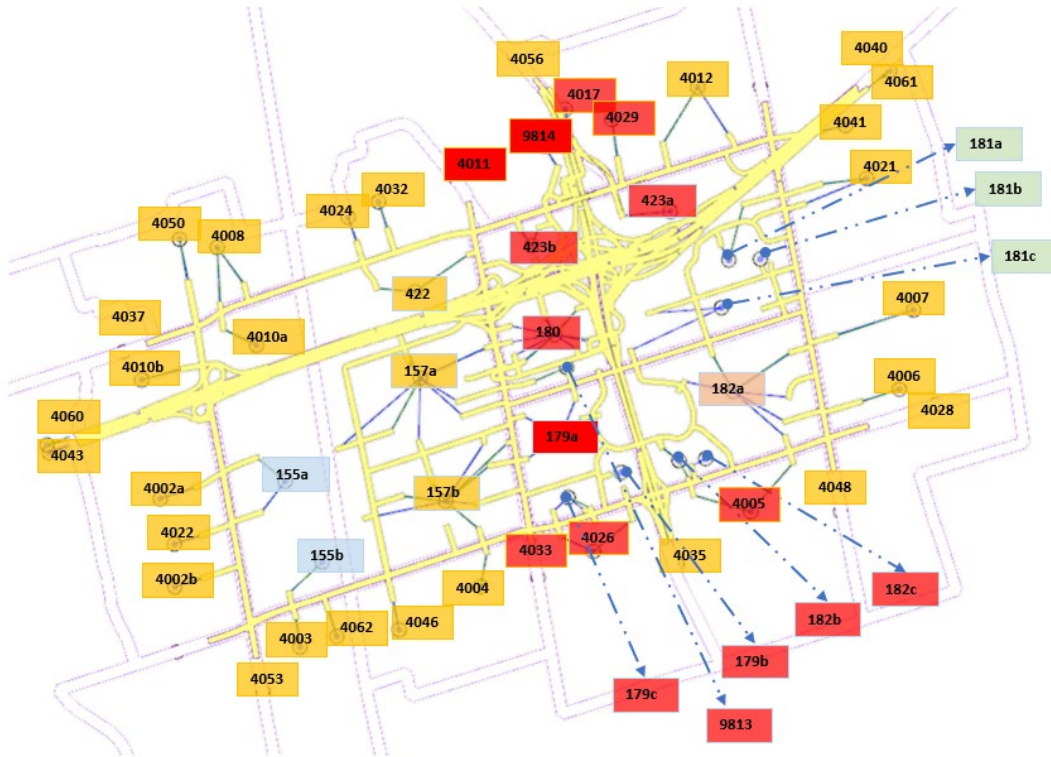
*Red zones – 5% car trips reduction on the origin and destination trips
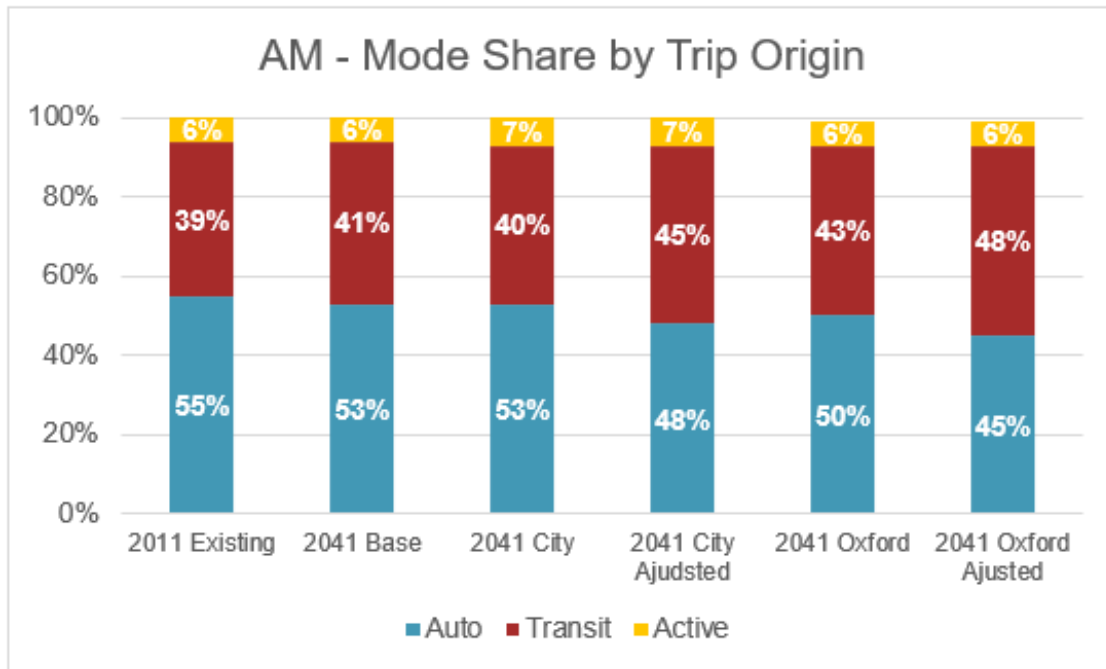
Figure 8-13. AM Peak – Mode Share by Trip Origin

Figure 8-14. AM Peak – Mode Share by Trip Destination
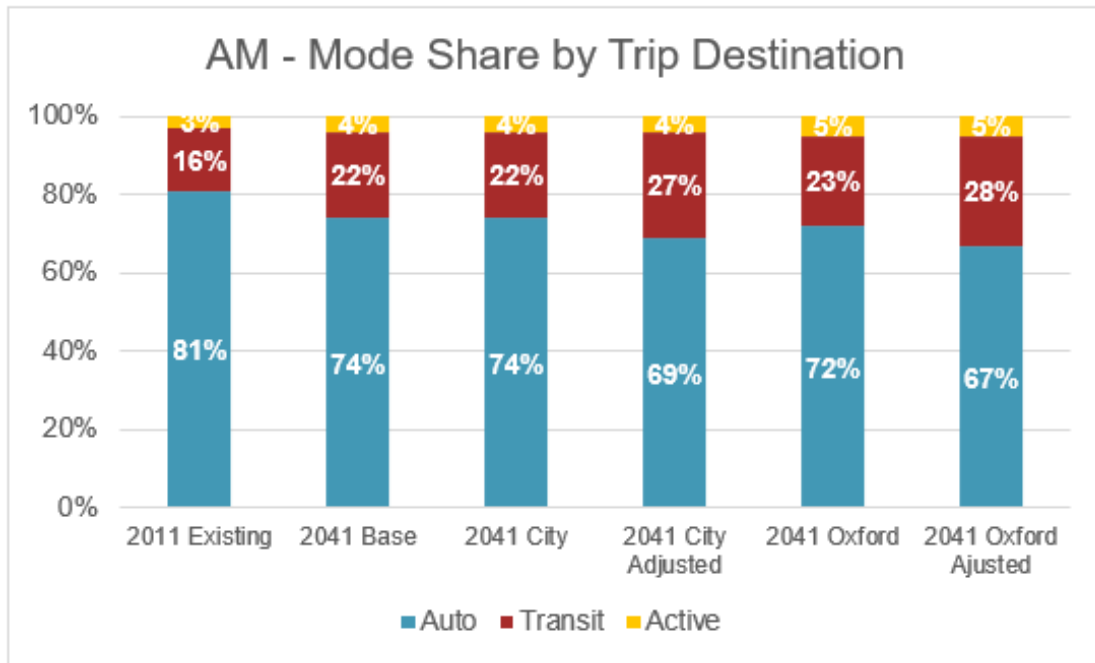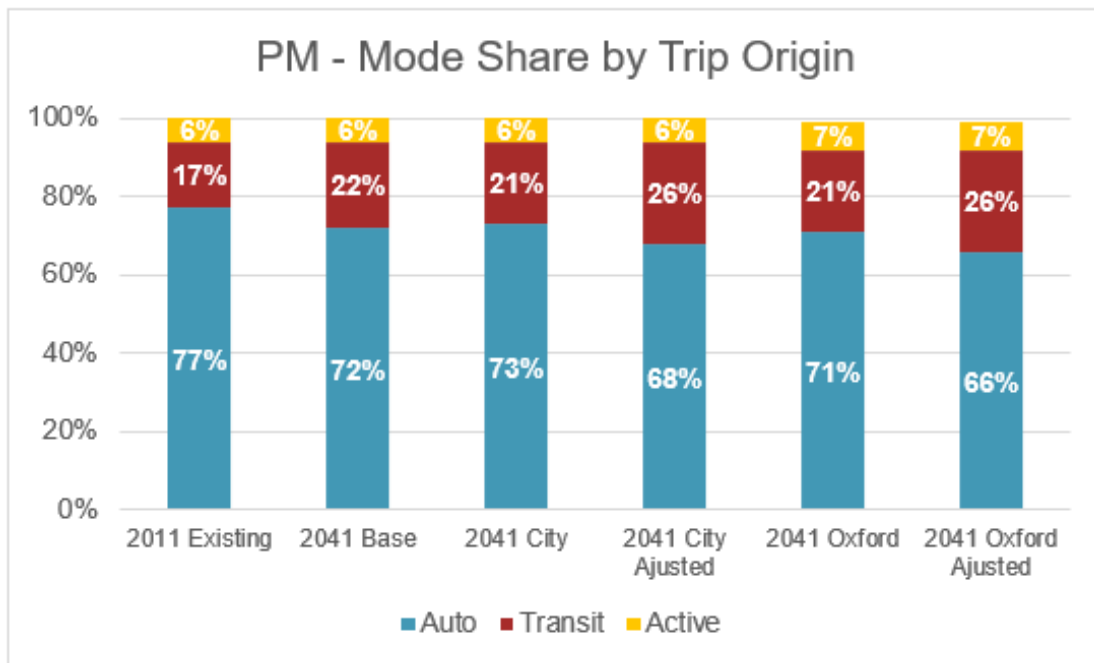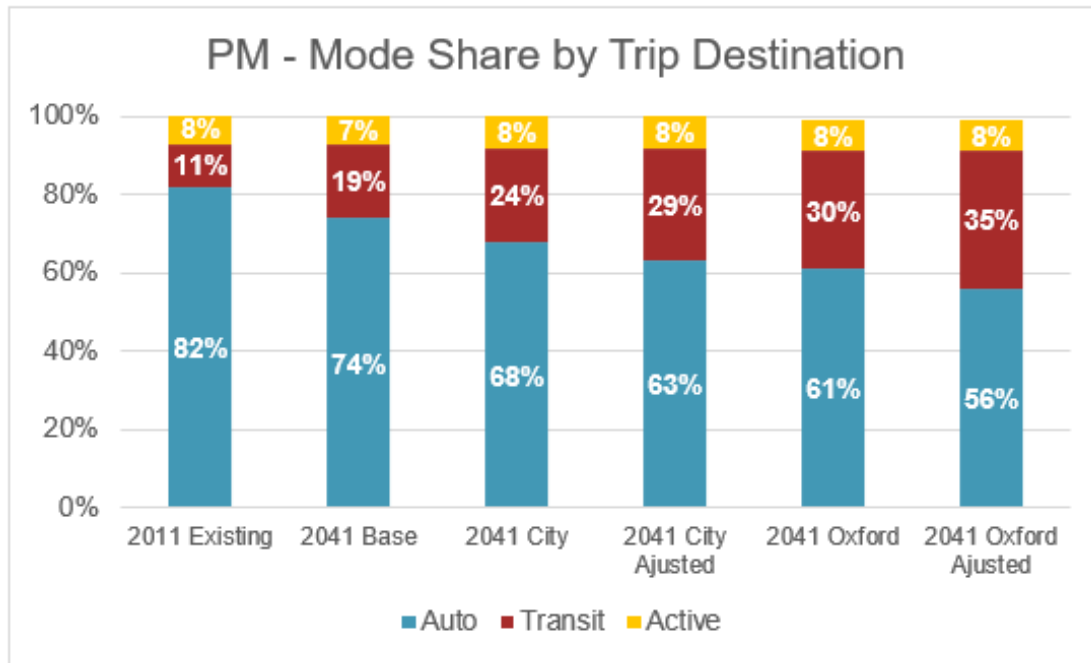

Figure 8-15. PM Peak – Mode Share by Trip Origin

Saturday peak mode share assumed to be similar to that of PM peak

Figure 8-16. PM Peak – Mode Share by Trip Destination

Saturday peak mode share assumed to be similar to that of PM peak

Trip Assignment and Analysis

The background traffic growth together with the Yorkdale development will bring significant traffic to the study area. Even with the mode shift adjustments based on the available data, the network will still operate at / near the capacity at some major-major intersections causing significant queue back-up and blocking vehicles from entering the network, especially during the peak hour. When a significant portion of the traffic cannot be served due to the capacity limitations, changes on the peak period profile / distribution can be expected, such that vehicles that originally entered the network during the peak hour will enter the network prior and / or post peak hours. Therefore, the existing peak period profile has been refined to consider a 5% peak hour spreading for the PM and Saturday periods.

Based on the congestion level and peak period characteristics, different strategies were applied for the Weekday AM, Weekday PM, and Saturday Midday periods as shown in **Table 8-3**.

Table 8-3. Trip Assignment Refinement Strategies

| Peak Period	Trip Assignment Refinement Strategies
AM Peak	• 5% mode share shift on selected zones
PM Peak	• 5% mode share shift on selected zones • 5% peak hour spreading (from the peak hour into the following 2-hours, 2.5% each)
Saturday Peak	• 5% peak hour spreading (from the peak hour into shoulder hours before and after, 2.5% each)

The post-adjustment demand profile can be illustrated in **Figure 8-17** through **Figure 8-19**. These profiles were loaded into Aimsun for the alternative analysis.

Figure 8-17. Post-Adjustment Demand Profile – Weekday AM Peak
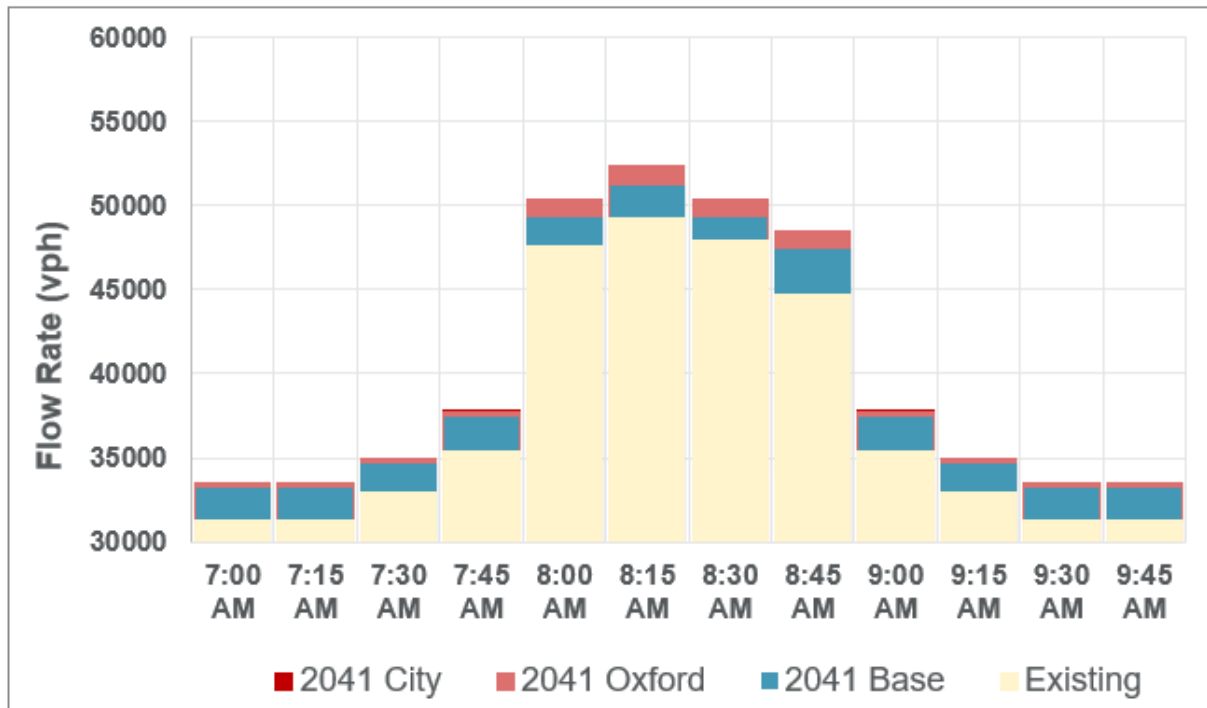
The total City-proposed demand is very similar to the total 2041 Oxford-proposed demand for the weekday AM peak, such that the differences are not obvious on the above scale.

Figure 8-18. Post-Adjustment Demand Profile – Weekday PM Peak
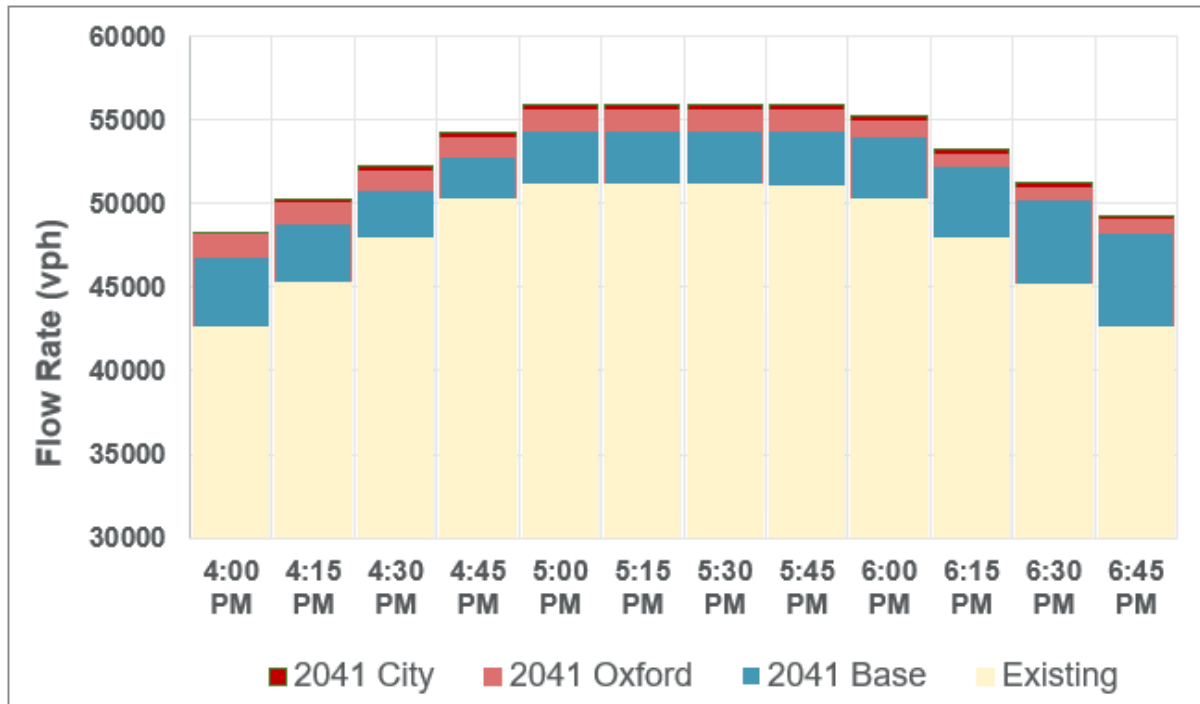
Figure 8-19. Post-Adjustment Demand Profile – Saturday Midday Peak
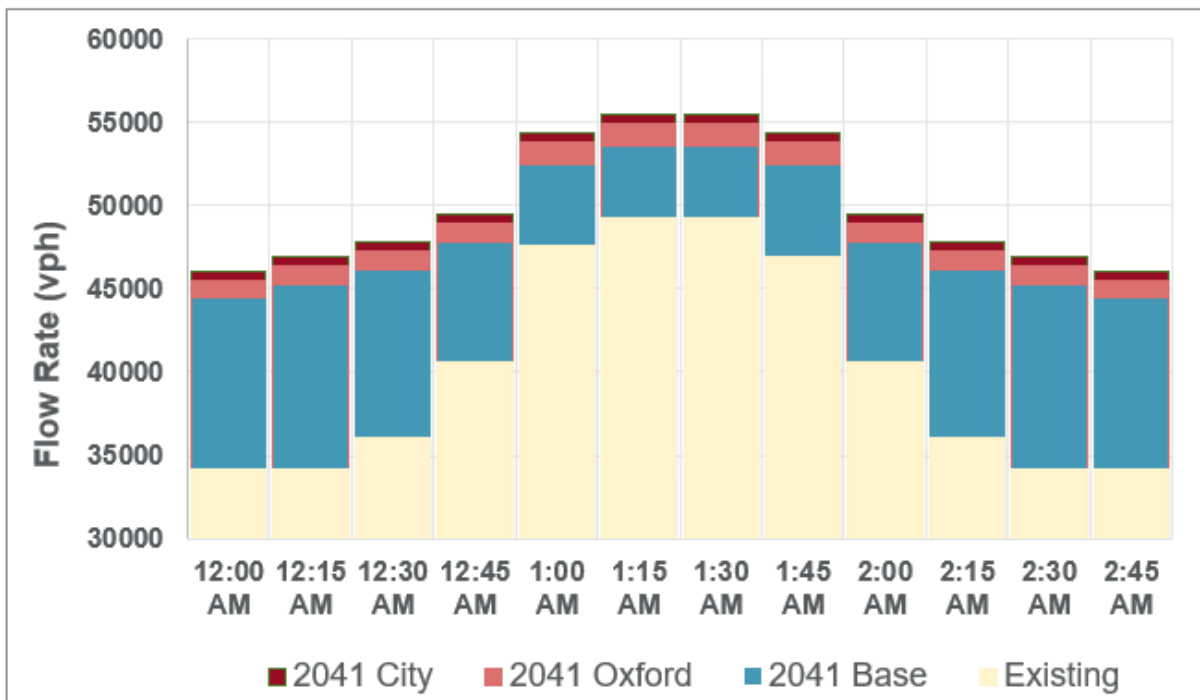
It is worth noting that the Base Condition described in **Section 7.3** has adopted the above adjustments on mode share and peak spreading. Even with the planned road improvements plus the mode share and the profile adjustments, there were still noticeable bottlenecks inside the network preventing vehicles from being served during the Weekday PM and Saturday Midday peaks, which is reflected by the Virtual Queue

and Vehicles Waiting to Enter Study Area measurements. Furthermore, most of the major-major intersections and the Yorkdale Shopping Centre accesses will be operating at LOS D or worse in the Base Condition.

The proposed Yorkdale development plan will bring additional 2000-3000 auto trips to the study area during the Weekday PM and Saturday Midday peaks. This will add more pressure to the network capacity, especially on the intersections within the focus study area around the Yorkdale Shopping centre. Therefore, additional improvements needed to be explored to increase the network capacity and reduce traffic congestion within the study area.