

Memo re: Yonge North Subway Extension Intensification Study
May 8, 2020

This memo articulates the methodology and assumptions used to calculate total population and employment numbers and associated densities for the Steeles, Clark, Royal Orchard, Langstaff and Richmond Hill Centre Station Areas.

This work has been completed as input into Metrolinx's updated business case for the Yonge North Subway Extension. The Growth Plan for the Greater Golden Horseshoe identifies a minimum density per Major Transit Station Area of 200 residents and jobs per hectare to support subway level infrastructure.

1.0 Yonge North Subway Extension Station Area Density Review

The purpose of the Yonge North Subway Extension Station Area Density Review is to:

- Identify development potential for the Steeles, Clark, Royal Orchard, Langstaff and Richmond Hill Centre Station Areas under two scenarios – as-of-right and intensification – to project whether each station area can be supportive of subway-level densities; and
- Identify recommended changes to permitted density to achieve subway-level intensification within each station area.

A later stage of this work is to provide a high-level overview of the potential value of future development within each station area.

Projections included in this study identify potential people and jobs located within each station area at the 500 m and 800 m radii that would be expected to walk to a subway station. While the numbers indicate densities supportive of subway level infrastructure it should be noted that ridership is strongly influenced by other factors such as feeder transit. An example of other factors influencing ridership include significant development adjacent to Promenade Mall and planned bus service between Promenade Mall at Bathurst and Clark and the proposed Clark Station.

Under the intensification scenario each station area is expected to be able to achieve the following densities:

1. **Steeles**
 - a. **500 m:** 670 people and jobs per hectare
 - b. **800 m:** 365 people and jobs per hectare
2. **Clark**
 - a. **500 m (Option 1: Excluding Lands South of the Rail Corridor):** 275 people and jobs per hectare
 - b. **800 m (Option 1: Excluding Lands South of the Rail Corridor):** 190 people and jobs per hectare
 - c. **500 m (Option 2: Including Lands South of the Rail Corridor):** 280 people and jobs per hectare
 - d. **800 m (Option 2: Including Lands South of the Rail Corridor):** 230 people and jobs per hectare
3. **Royal Orchard**
 - a. **500 m:** 320 people and jobs per hectare

- b. **800 m:** 180 people and jobs per hectare
- 4. **Langstaff**
 - a. **500 m:** 580 people and jobs per hectare
 - b. **800 m:** 310 people and jobs per hectare
- 5. **Richmond Hill Centre**
 - a. **Recommendations Report (2010):** 450 people and jobs per hectare

Methodology:

Existing population density has been calculated using data from the **2016 Census of Population**. The 'dissemination block' contains population and household data. In cases where only partial blocks are considered in the study, estimations based on land use and percentage of coverage over total area have been made.

Existing employment is estimated using the **2018 York Region Employment Survey** and the **Toronto Employment Survey**. Data points revealed the 'Total Employment' at each surveyed establishment.

QGIS is a geographic information system application used in this study for geographic data creation, synthesis, and analysis. Parcel and block areas were calculated under the NAD83/UTM Zone 17 N projection, best suited for Ontario in terms of spatial accuracy. Microsoft Excel was used to carry out calculations and Adobe Illustrator to create maps.

Transitioning, Constrained, and Stable Properties

Transitioning properties are those expected to intensify or redevelop. These are generally low-density developments with zoning permissions that are higher than existing development, or large properties that have intensification capacity.

Constrained properties are considered to have intensification potential but are not expected to change in the short to medium term. These include newly constructed properties, places of worship, schools, institutions, golf courses.

Stable Properties are those considered highly unlikely to change. These are usually properties designated as Low Density Residential, parks and open spaces, cemeteries, rights-of-way, railway corridors.

Calculation Assumptions

- Assumptions for **Block IDs, Land Use, Building Type, Area** and **FSIs** are articulated under individual station area scenarios.
- **Proposed Gross Floor Area (GFA)** is based on the multiplication of block areas with their associated FSIs

- **Proposed Net to Gross Floor Area (NFA)**

- The NFA is calculated based on Building Type.
- Floor Plate Efficiency (Net to Gross Floor Area Efficiency):

Mid Rise (4-8 storeys)	
Mid Rise Residential (including mixed-use at grade)	80-85%
High Rise (9+ storeys)	
High Rise Residential (including mixed-use podium at grade) <29 storeys:	75-85%
High Rise Residential (including mixed-use podium at grade) >30 storeys:	70-80%

- The higher range for all categories (80%, 85%, 80%) has been applied in our study
- **Non-Residential: Mid Rise: 20%, High Rise: 15%, Low Rise: 35%**
 - Assumption is based on an average of 1-2 storeys for Mid Rise and 2-3 storeys for High rise of commercial at grade of Mixed Use buildings
- **Residential: Mid rise: 80%, High Rise: 85%, Low Rise: 65%**
 - **GFA Less than 2 bed (33%) and GFA > 2 bed (67%)**
 - These ratios were adopted from an NBLC report dated June 30 2018 (Unit Mix and Type for Condo Apartments and Stacked Towns – Condo Apartments Reclassified by Halton DC study Residential Unit Category)
 - **# units less than 2 bed (62.57 m²) and # units more than or = 2 bed (95.28 m²)**
 - Source: N. Barry Lyons Consultants Study as of June 30, 2018 (data was reclassified into categories informed with Halton Region's 2017 DC Background Study)
 - The above breakdown in units is considered equivalent to the assumption in York Region's DC Charges Study whereby PPUs for apartments <700 square feet are based on observed PPUs in 1 bedroom or less apartments and PPUS for apartments >= 700 square feet are based on observed PPU's in 2+ bedroom apartments (Source: York Region 2018 Development Charge Background Study and Bylaw Amendment)
- **Total People**
 - People Per Unit (PPU) 1.60 less than 2 bedroom (equivalent to < 700 ft²)
 - People Per Unit (PPU) 2.19 more than or equal to 2 bedroom (equivalent to >= 700 ft²)
 - Source: 2018 Development Charges Background Study, Region of York (Table 2.3: Persons per unit Assumptions for Development Charge Calculations pg. 18)
- **Total Jobs**
 - 39.95 m² per employee retail (430 ft²/employee)
 - 25.55 m² per employee office (275 ft²/employee)
 - Source: 2018 Development Charges Background Study, Region of York (Table 2.7: Non-Residential GFA per Employee Assumptions pg. 24)

1.2 Steeles

1.2.1 As-of-Right Scenario



In the As-of-Right Scenario, the intensification boundary for Markham and Vaughan was based on the intensification corridor delineated by the York Region Major Transit Station Area (MTSA) analysis. Employment lands to the north were additionally considered for minimal intensification potential.

Stable neighbourhoods consist of single-family homes approximately within an 800 m radius from the proposed station.

Land uses and FSIs replicated applicable planning policy: for Markham the 2014 Official Plan designations and FSIs were applied; for Vaughan the Yonge Steeles Corridor Secondary Plan designations and FSIs were applied, and; for Toronto the Official Plan Land Use designations along with FSIs from Zoning By-Law 569-2013 were applied. Blocks A and O (Markham) represent approved site-specific development applications.

Existing Station Area density is estimated at **70 and 95 people and jobs per hectare** within the 500 m and 800 m radii respectively. Existing numbers are based on 3800 (500 m) and 13,400 (800 m) total people and jobs. Under the As-of-right scenario, projected densities increase to **340 and 200 people**

and jobs per hectare. These projections are based on an estimate of 19,000 (500 m) and 28,000 (800 m) total people and jobs respectively.

1.2.2 Intensification

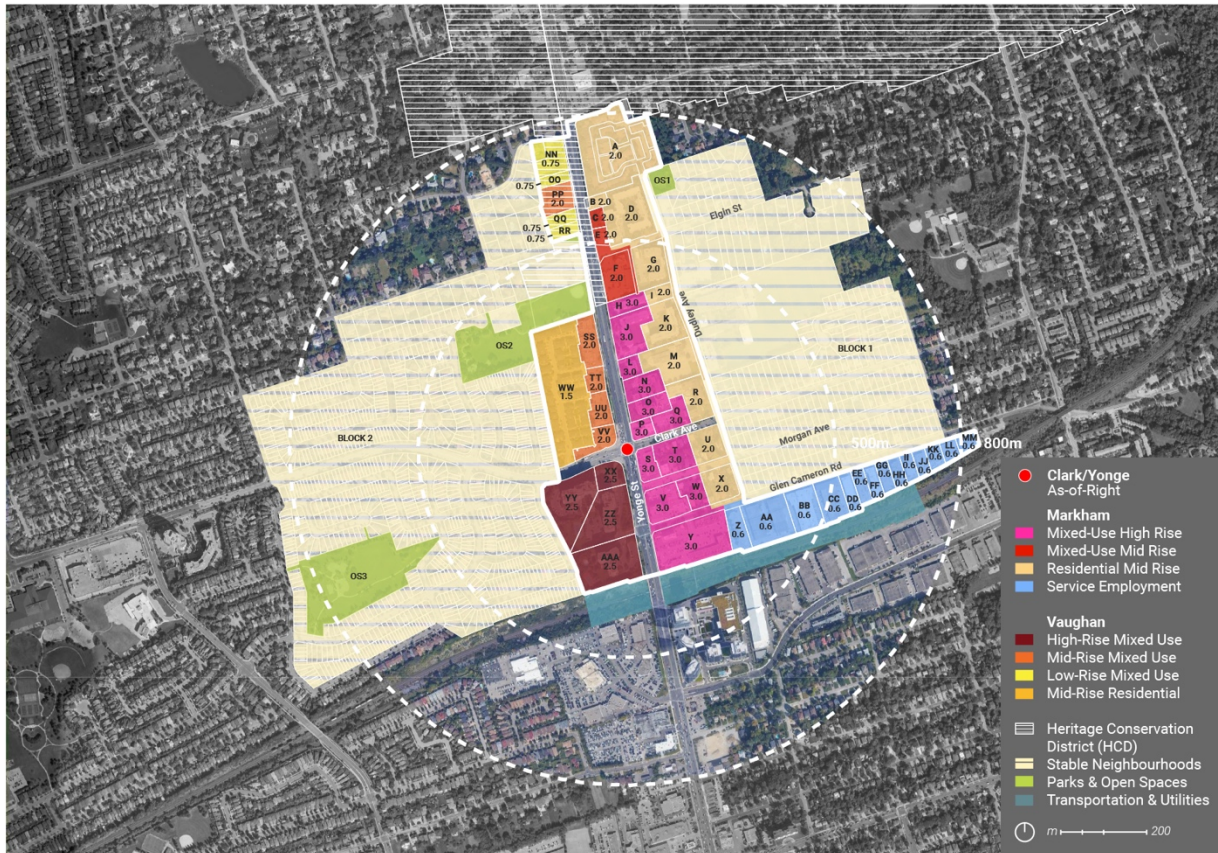


In the Intensification scenario, blocks and their land use and FSIs in Markham reflect the Draft Yonge Steeles Corridor Study. Within Toronto's FSIs reflect full build out of the Draft Yonge Street North Secondary Plan. Assumed FSIs within Vaughan remain the same as in the As-of-Right Scenario. Employment FSIs have increased to 1.0 from 0.6 reflecting moderate intensification potential.

Density projections for the Intensification Scenario for the Steeles Station Area are **670 and 365 people and jobs per hectare** for the 500 m and 800 m radii boundaries. These projections are based on an estimate of 37,500 (500 m) and 51, 500 (800 m) total people and jobs respectively.

1.3 Clark

1.3.1 As-of-Right Scenario



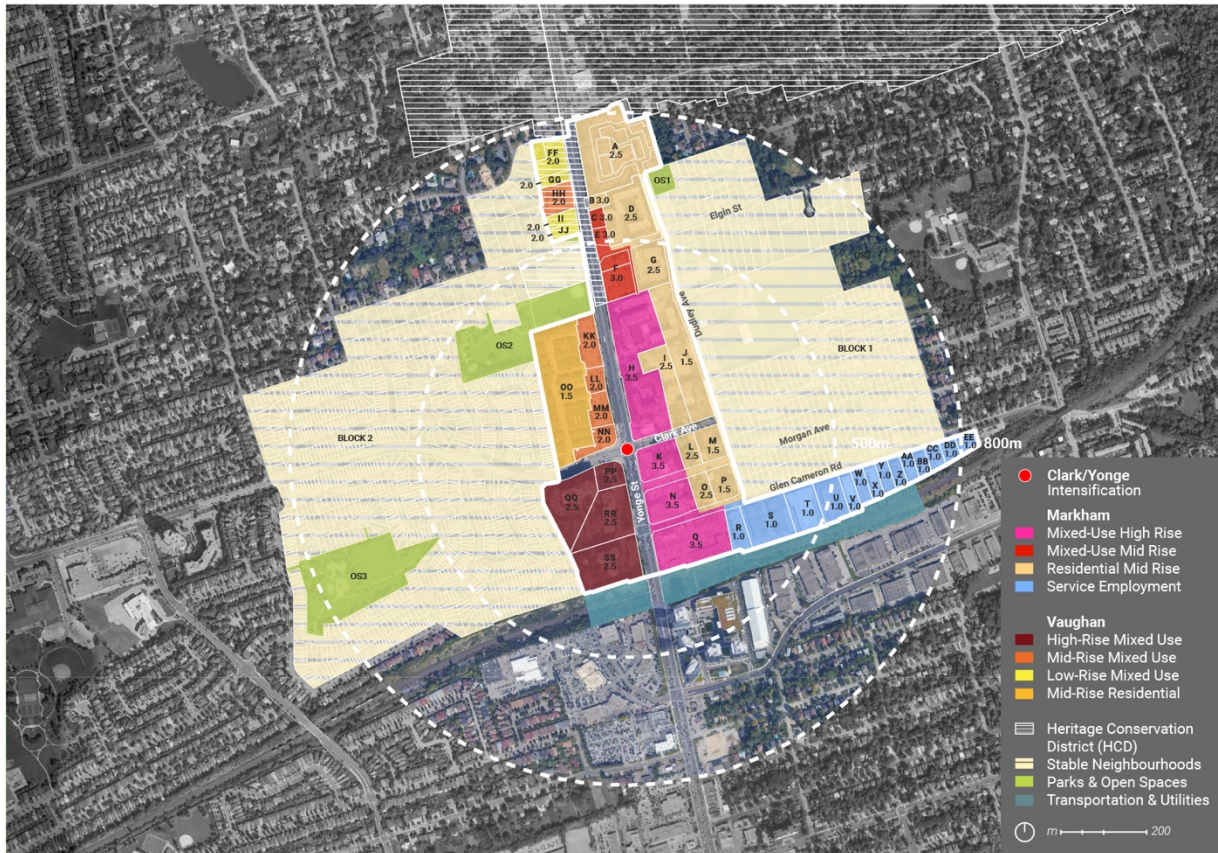
For the As-of-Right scenario the intensification boundary is based on the York Region MTSA outline, with the exception of the Thornhill Public School in Markham. Additionally, townhouses north of the 500 m boundary, employment lands directly north of the rail corridor, and lands within Vaughan's Yonge Steeles Corridor Secondary Plan are included.

Stable lands consist of single-family homes, places of worship, and a school in Markham.

Land uses and FSIs replicated applicable planning policy: for Markham the 2014 Official Plan designations and FSIs were applied, and; for Vaughan the Yonge Steeles Corridor Secondary Plan designations and FSIs were applied.

Existing density is estimated at **115 and 100 people and jobs per hectare** within the 500 m and 800 m radii, respectively. Existing numbers are based on 5700 (500 m) and 9500 (800 m) total people and jobs. Under the As-of-right scenario, densities are projected at **240 and 170 people and jobs per hectare**. These projections are based on an estimate of 12,000 (500 m) and 17,000 (800 m) total people and jobs respectively.

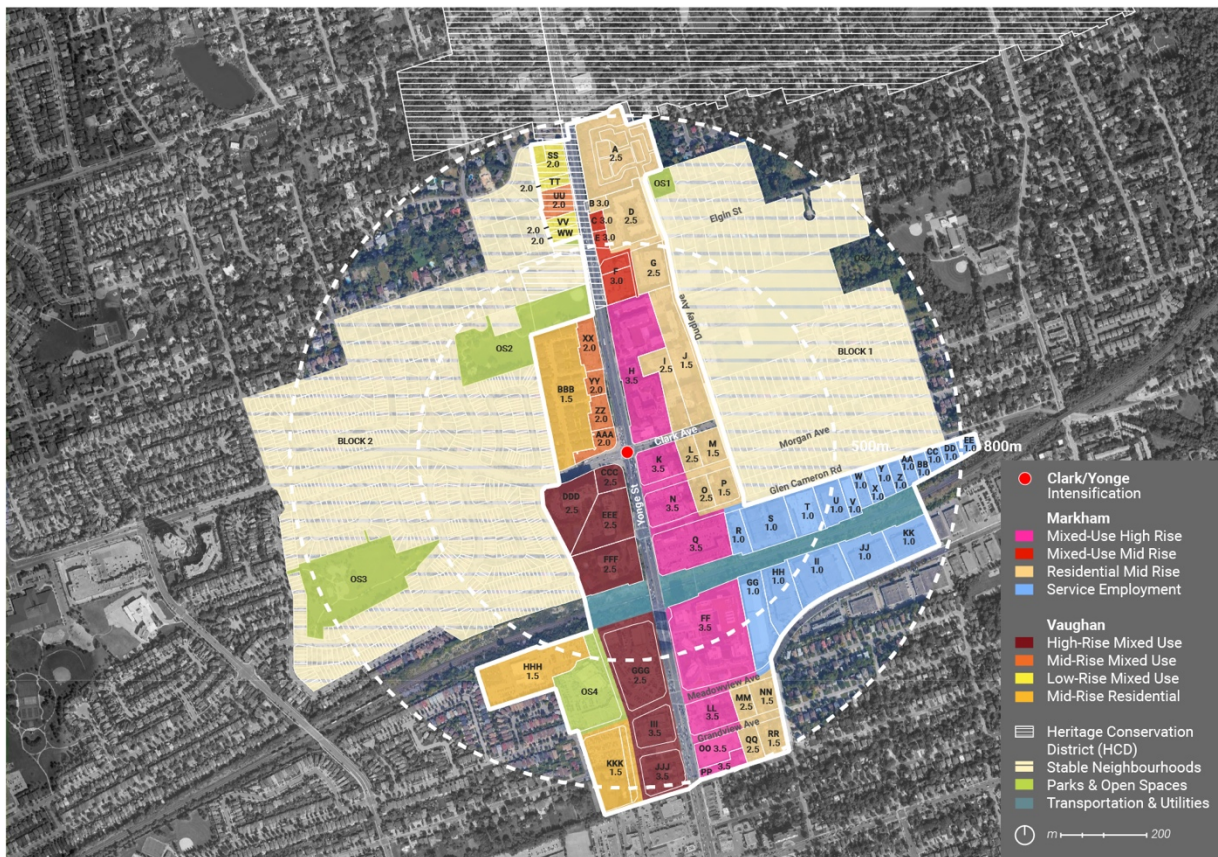
1.3.2 Intensification Scenario



Option 1: Exclusive of Lands South of the Rail Corridor

In this Intensification scenario, blocks and their land use and FSIs in Markham were adjusted to reflect the Draft Yonge Steeles Corridor Study. Blocks to the north between Yonge St frontages and the stable areas represent an in-between transitional FSI. FSIs for Employment lands have been increased moderately to 1.0 from 0.6. FSIs within Vaughan's remain the same as those for the As-of-Right Scenario.

Density projections for Intensification Option 1 for the Clark Station Area are **275 and 190 people and jobs per hectare** for the 500 m and 800 m radii boundaries. These projections are based on an estimate of 13,500 (500 m) and 18,500 (800 m) total people and jobs respectively.



Option 2: Inclusive of Lands South of the Rail Corridor

Option 2 includes lands south of the rail corridor within the 800 m boundary. Land uses and FSIs replicate applicable planning policy: for Markham the Draft Yonge Steeles Corridor Study designations and FSIs have been applied, and; for Vaughan the Yonge Steeles Corridor Secondary Plan designations and FSIs have been applied. Employment lands to the south have been included and their FSIs have been set to 1.0 to reflect minimal intensification potential.

Density projections for Intensification Option 2 for the Clark Station Area are **280 and 230 People and Jobs Per Hectare** for the 500 m and 800 m radii boundaries. These projections are based on an estimate of 15,000 (500 m) and 28,000 (800 m) total people and jobs respectively.

1.4 Royal Orchard

1.4.1 As-of-Right Scenario



In the As-of-Right scenario the intensification boundary for Markham is influenced by Markham's Official Plan Land Use designations, inclusive of Mixed Use High-Rise, Mixed Use Mid-Rise, Residential High-Rise, and Residential Mid-Rise. In addition, four townhouses included in Block C, adjacent Mixed Use Mid-Rise parcels and separated by a street from Residential Low-Rise, have been identified for their development potential. Vaughan's boundary is consistent with the Council approved Yonge Steeles Corridor Secondary Plan. Royal Orchard's 800 m Station Area boundary overlaps with Langstaff's 800 m Station Area boundary.

Stable lands consist of single-family homes, places of worship, and schools.

Land uses and FSIs are consistent with existing planning policy: for Markham the 2014 Official Plan designations and FSIs have been applied; for Vaughan the Yonge Steeles Corridor Secondary Plan designations and FSIs have been applied. Block MM in Vaughan has an adjusted FSI of 3.8 based on an approved LPAT decision for that site.

Existing density is estimated at **90 and 55 people and jobs per hectare** within the 500 m and 800 m radii respectively. Existing numbers are based on 4000 (500 m) and 6000 (800 m) total people and jobs. Under the As-of-Right scenario, densities are projected at **230 and 125 people and jobs per**

hectare. These projections are based on an estimate of 10,500 (500 m) and 14,000 (800 m) total people and jobs respectively.

1.4.2 Intensification Scenario



Under the intensification scenario FSIs have been increased on the Markham side of the Station Area. Lands within Vaughan retain the same FSIs as the As-of-Right Scenario aside from Block GC2 – FSI:3.0). Further a section of the Ladies Golf Course has been anticipated for development.

Density projections for the Intensification Scenario for the Royal Orchard Station Area are **320 and 180 people and jobs per hectare** for the 500 m and 800 m radii boundaries. These projections are based on an estimate of 15,000 (500 m) and 21,000 (800 m) total people and jobs respectively.

1.5 Langstaff

1.5.1 As-of-Right Scenario



In the As-of-Right scenario the intensification boundary is based on the York Region MTSA outline. This includes the eastern portion of the Langstaff Gateway Planning District. In addition, four townhouses included in Block D, adjacent Mixed Use Mid-Rise parcels and separated by a street from Residential Low-Rise, have been identified for their development potential. Lands within Vaughan's Yonge Steeles Corridor Secondary Plan are included. Langstaff's 800 m Station Area boundaries overlap with Royal Orchard's 800 m Station Area boundaries.

Stable lands consist of single-family homes, places of worship, and utility properties. Parks and Open Spaces, including a cemetery and utility corridor, are not considered due to lack of development potential.

Land uses and FSIs replicate applicable planning policy: for Markham the 2014 Official Plan designations and FSIs were applied; for Vaughan the Yonge Steeles Corridor Secondary Plan designations and FSIs were applied. The Secondary Plan for the Langstaff Gateway Planning District specified an overall growth target for the area, articulated as "...up to 32,000 people and at least 15,000 employees", which was pro-rated for our estimations.

Existing density for the Langstaff Station Area is estimated at **20 and 30 people and jobs per hectare** within the 500 m and 800 m radii respectively. Existing numbers are based on 460 (500 m) and 2100 (800 m) total people and jobs. The density projection for the As-of-right Scenario is **545 and 290 people and jobs per hectare**, respectively for the 500 m and 800 m Station Area. These projections are based on an estimate of 13,500 (500 m) and 23,000 (800 m) total people and jobs respectively.

1.5.2 Intensification Scenario



In the Intensification scenario, blocks and their land use remained mostly consistent. Block D's land use was changed to Residential Mid-Rise from Residential Low-Rise, and its FSI recommended at 2.5 to provide a transition to the stable lands. FSIs have been increased on Markham's side to take into account considerable anticipated development in the area and a nearby development's (Block MM in Royal Orchard) LPAT approved FSI of 3.8. Vaughan's portion of the station area remains the same between the scenarios.

Density projections for the Intensification Scenario for the Langstaff Station Area are **580 and 310 people and jobs per hectare** for the 500 m and 800 m radii boundaries. These projections are based on an estimate of 14,000 (500 m) and 24,500 (800 m) total people and jobs respectively.

1.6 Richmond Hill Centre

1.6.1 Recommendations Report (2010)



The Richmond Hill Station area density estimates are based on the “**Richmond Hill Regional Centre Design & Land Use Study Final Recommendations Report**” (January, 2010) by Urban Strategies Inc, iTrans and Morrison Hershfield. The density calculations are based on the recommended block patterns, land uses and FSIs, over a 70 hectare total area specified in the report.

Existing population density is **35 people and jobs per hectare**. This estimate is based on population as no data was available with regards to employment.

Based on Report recommendations, the density estimation is **370 people and jobs per hectare** for the Richmond Hill Centre study area.

Note: The Report estimates the density at 450 people and jobs per hectare. This difference arises from differences in calculation assumptions. If we were to apply similar calculation assumptions (1:1 resident to employee coverage and 27 m² per employee), Station Area density projections are directly comparable at 446 people and jobs per hectare.