



## Expanding Housing Options in Neighbourhoods – Multiplex Study – Design Research by University of Toronto School of Cities / Daniels School of Architecture

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### Overview

[ReHousing](#) is a collaborative study between the University of Toronto, Tuf Lab, and LGA Architectural Partners that explores how to convert single-family homes into multi-unit housing. The work, as seen on their website, includes a housing catalogue with over 50 plans for 13 of the most common house types in Toronto. This project is independent of the City of Toronto but complementary to the work of the Multiplex team.

In the fall of 2022, the Multiplex team engaged the ReHousing team to develop architectural plans for three case studies from the [housing catalogue](#) which demonstrated optimized interior layouts, including family-sized units, within existing building types and generally following current zoning regulations. The work was intended to:

- explore detailed designs for multiplexes,
- identify zoning barriers to their construction, and
- evaluate emerging zoning standards contemplated by the study team.

Toronto Building staff performed a full review of these plans to provide insight into how the scenarios would meet the City's zoning standards and Ontario Building Code. Their analysis showed the designs to be largely compliant, but did identify that in addition to harmonized standards, multiplex designs might require zoning variances from current performance standards to optimize feasibility and the liveability of units. This work helped the Multiplex team develop the proposed Multiplex zoning by-law amendments.

The following pages outline the three case studies chosen by the Multiplex team and simplified floor plans designed by the ReHousing team.

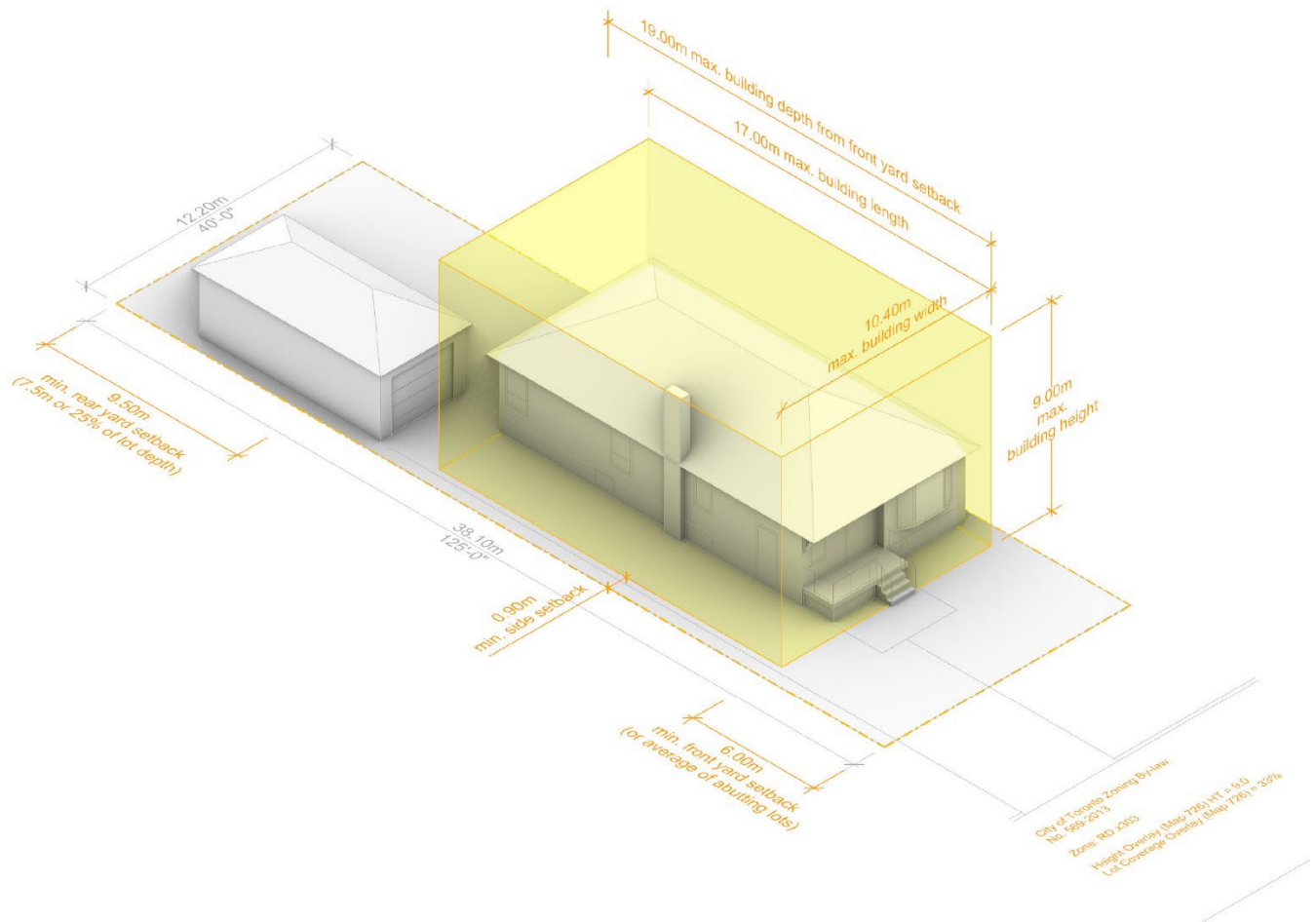
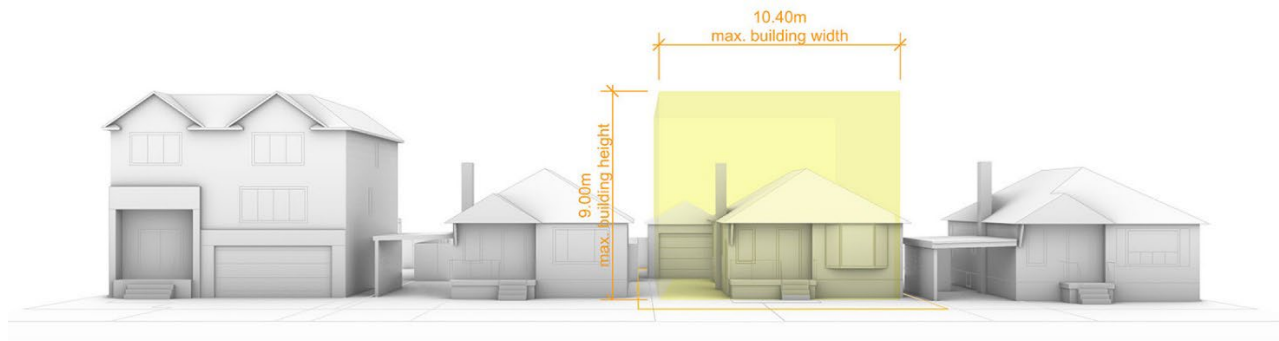


## Postwar Bungalow

The first typology the team selected is called the [Postwar Bungalow](#) by the ReHousing team. The Multiplex team selected this typology because it represents a common housing type in many of Toronto's low-rise neighbourhoods which may not currently have multiplexes. Staff wanted to understand what multiplex designs could look like in this context and how they would relate to these types of neighbourhoods.

### Existing Building and Zoning Envelope

The images below shows the existing bungalow on the site which was selected for the demonstration building plans. The yellow box over the house represents the maximum buildable area for a single-detached dwelling set out in the applicable zoning by-law.

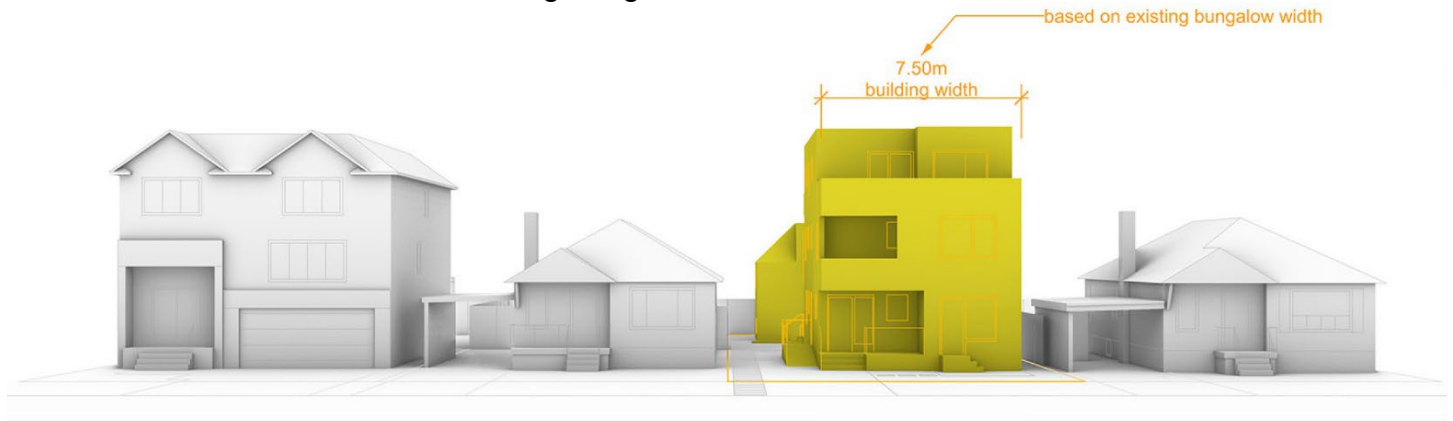




### Fourplex Design

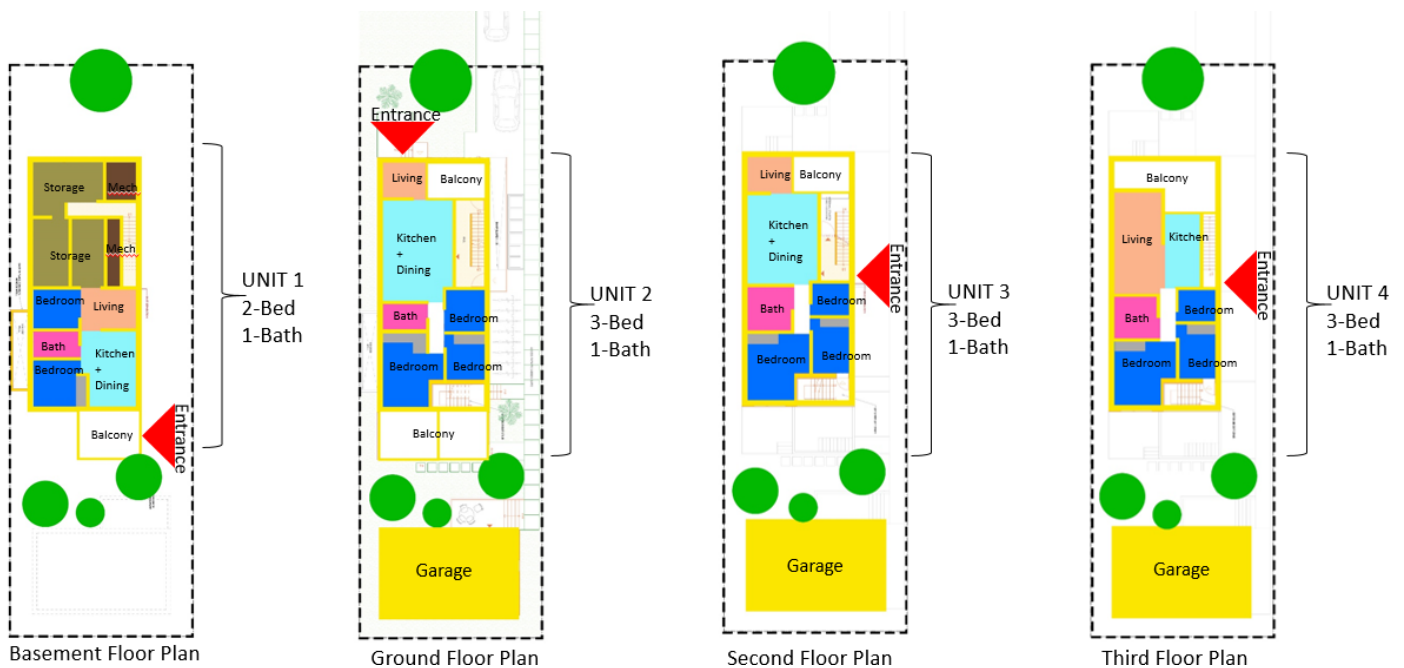
The ReHousing team designed a fourplex for this site which included 3 three-bedroom units and 1 two-bedroom unit.

In the image below, the design for the new fourplex is shown from the perspective of the street, to illustrate the scale as it relates to its neighbours. As indicated, the width of the fourplex was kept consistent with the width of the existing bungalow.



### Floor Plans

The fourplex design contains a two-bedroom unit in the basement, with a three-bedroom unit on each of the ground, second, and third floors. Each unit also has private outdoor space from a patio or balcony.



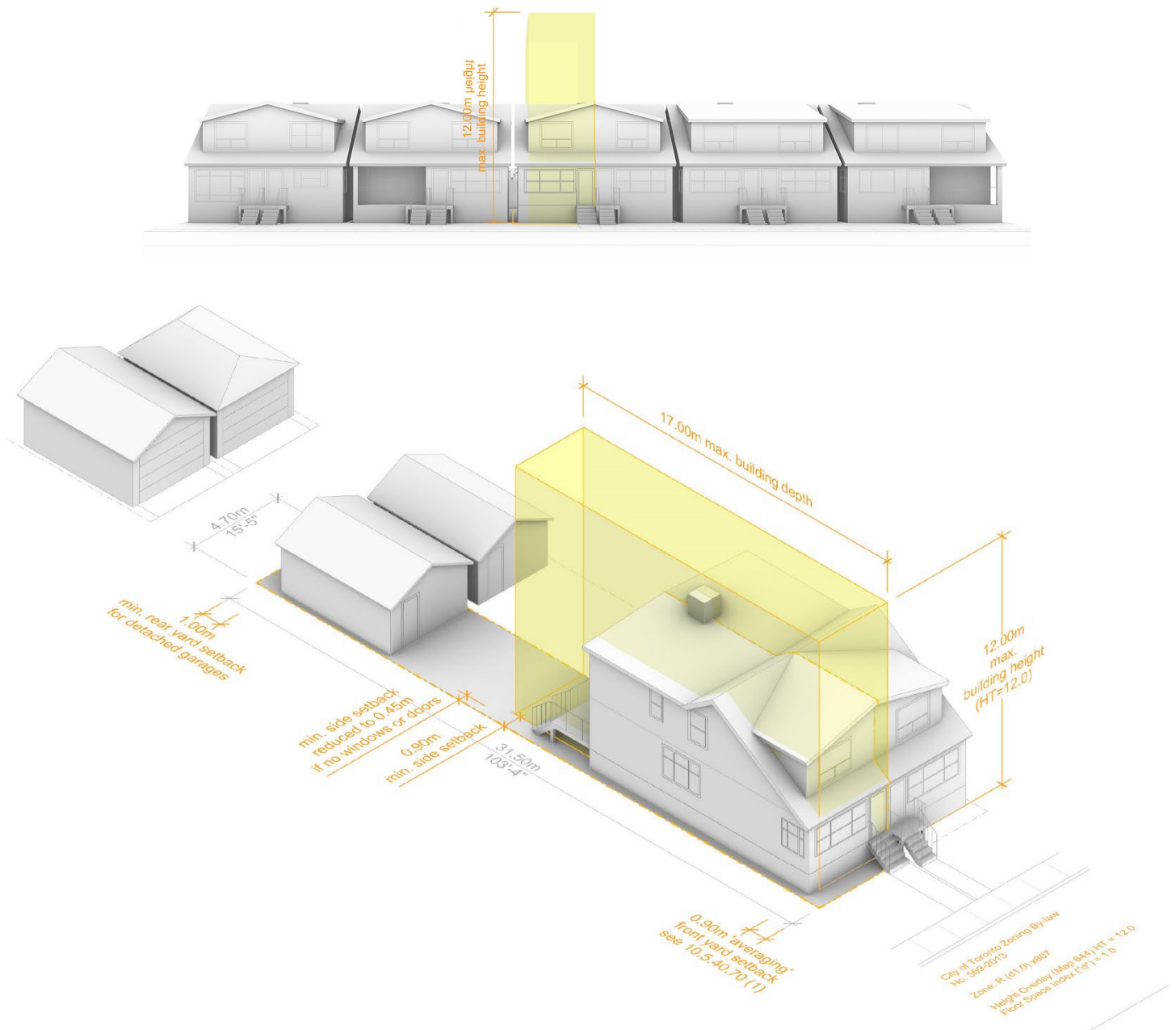


## Interwar Semi

The next typology the team selected is called the [Interwar Semi](#) by the ReHousing team. Semi-detached multiplexes are common in the older parts of Toronto and in many cases, one half of a semi-detached building may be a multiplex, while the other half may be a single unit. Many of these existing semi-detached multiplexes are three storeys; the Multiplex team selected this typology because staff wanted to understand how a multiplex conversion could look in a two storey semi-detached house.

### Existing Building and Zoning Envelope

The images below shows the existing semi-detached house on the site which was selected for the demonstration building plans. The yellow box over the house represents the maximum buildable area set out in the zoning by-law.

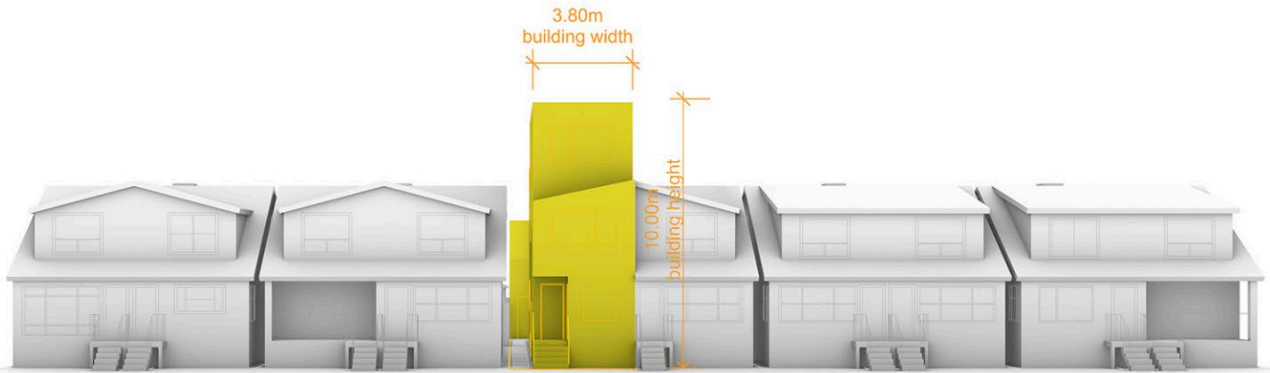




**Triplex Design**

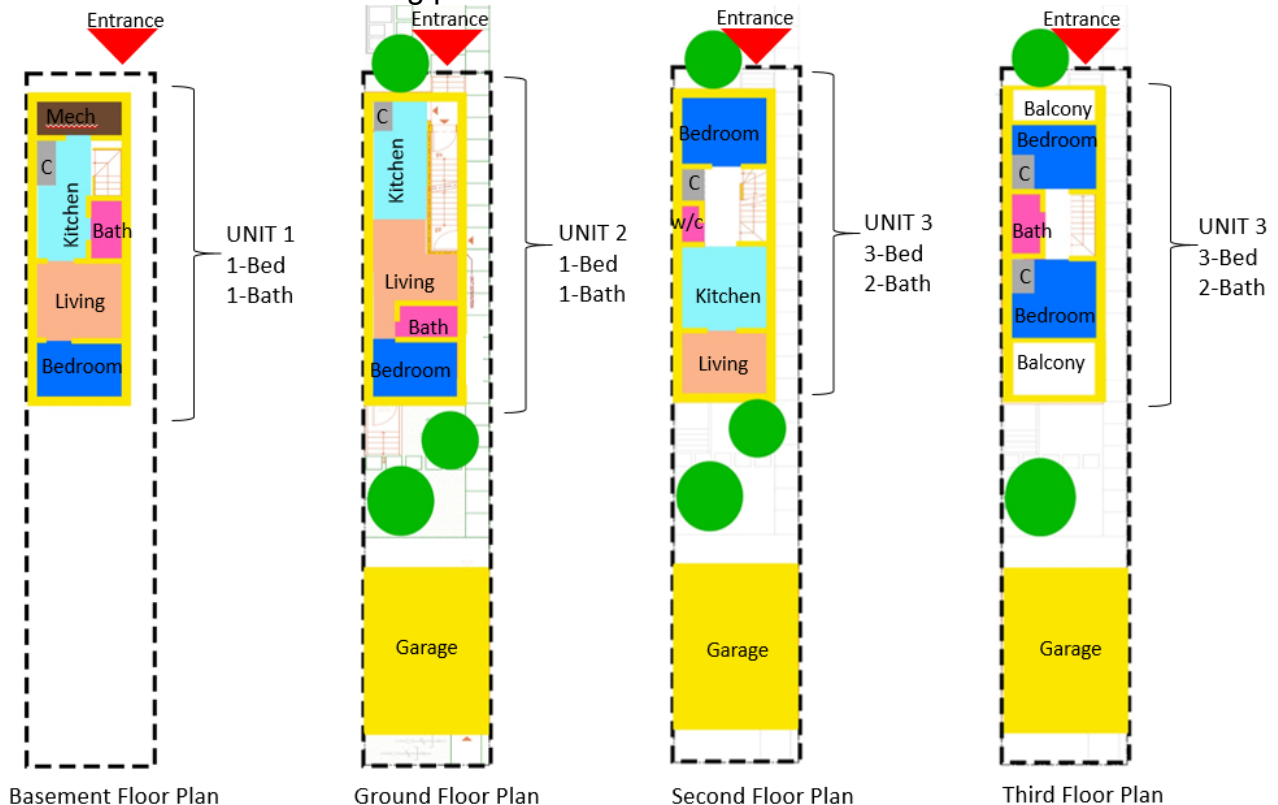
The ReHousing team designed a triplex for this site which included 1 three-bedroom units and 2 one-bedroom units.

In the image below, the design for the new triplex is shown from the perspective of the street, to illustrate the scale as it relates to its neighbours. The design includes an additional storey to increase the space for housing on this small site.



**Floor Plans**

The triplex design contains one-bedroom units in the basement and on the ground floor, with a three-bedroom unit on the second and third floors. In this example, the back yard space could be shared, with the third floor accommodating private balconies for the three-bedroom unit.



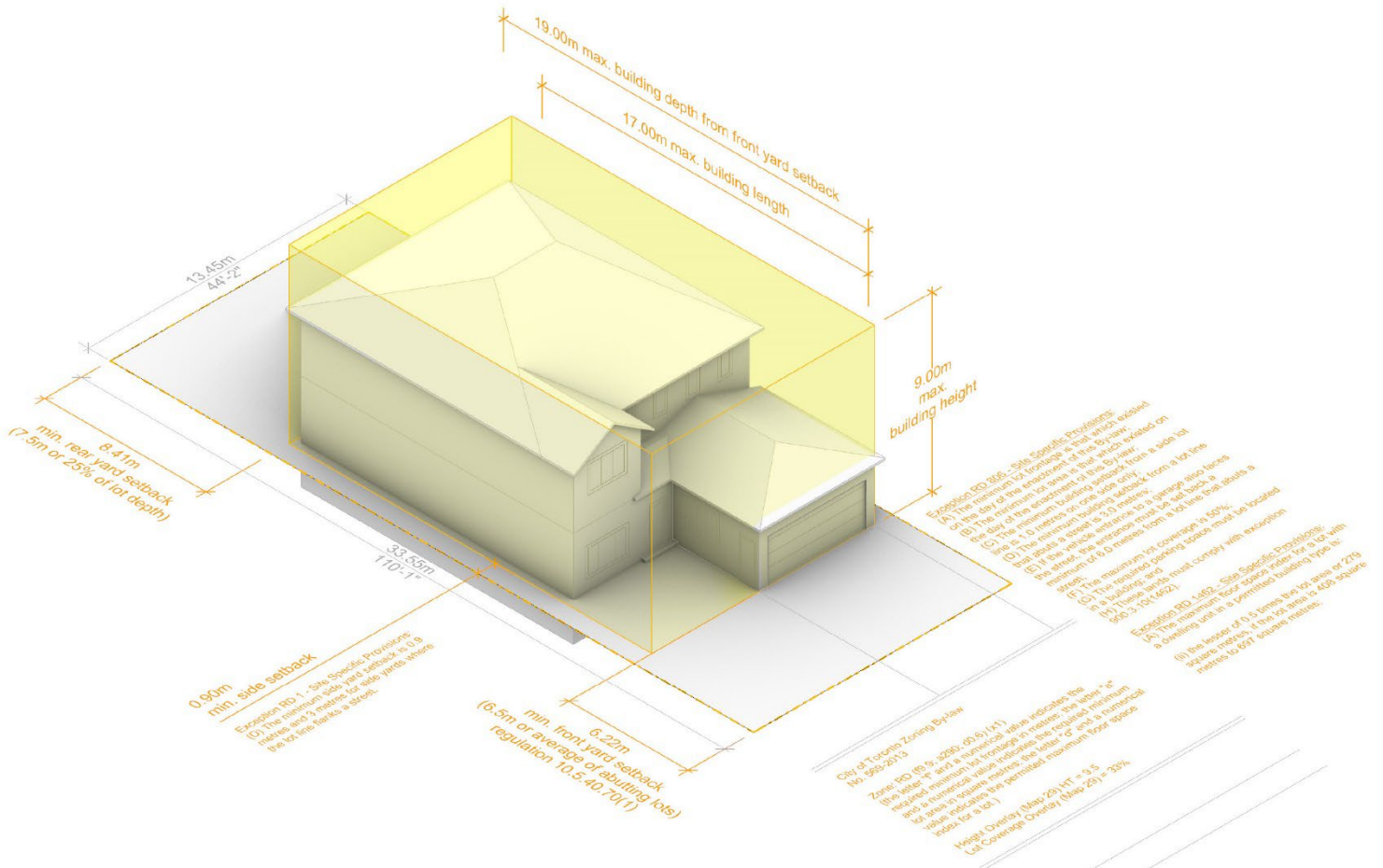
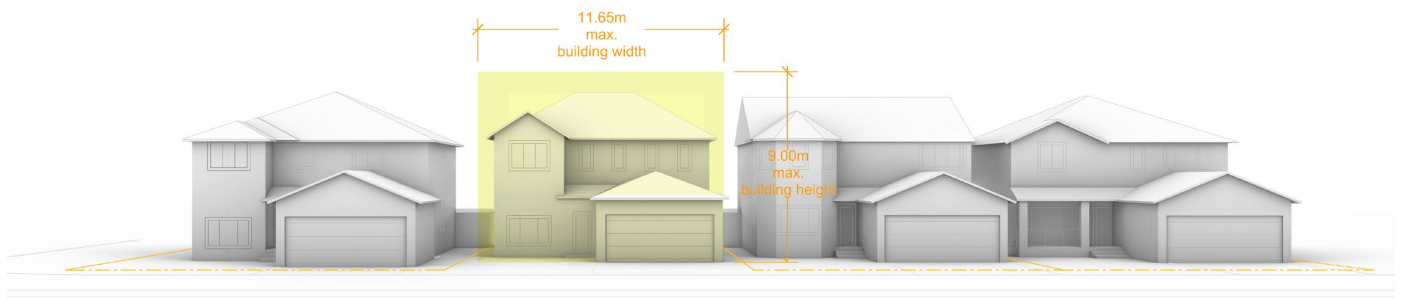


## Metroburb Wide

The final typology the team selected is called the [Metroburb Wide](#) by the ReHousing team. The Multiplex team chose this typology because it represents a common form of housing in the areas of Toronto which were developed in more recent decades. In many cases, these houses are located on wide lots which have significant potential to accommodate more housing but typically neighbourhoods with this typology would not have multiplex housing today. This typology was chosen to demonstrate what accommodating more housing could look like in these areas.

### Existing Building and Zoning Envelope

The images below shows the existing semi-detached house on the site which was selected for the demonstration building plans. The yellow box over the house represents the maximum buildable area set out in the zoning by-law.

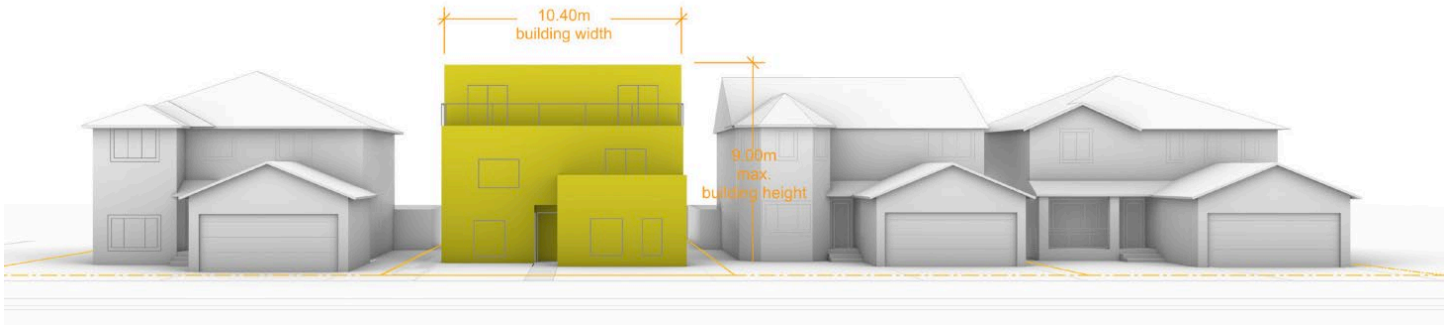




**Fourplex Design**

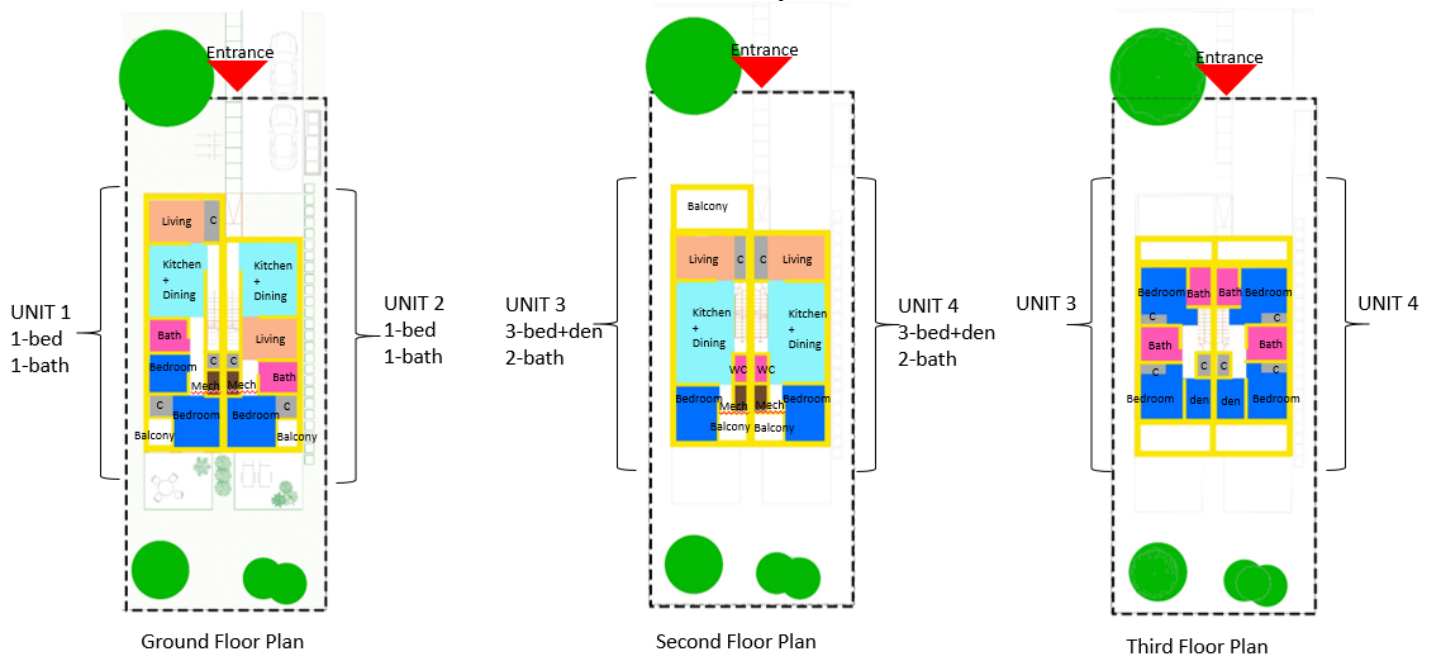
The ReHousing team designed a fourplex for this site which included 2 three-bedroom units and 2 one-bedroom units.

In the image below, the design for the new fourplex is shown from the perspective of the street, to illustrate the scale as it relates to its neighbours. The design includes a third storey and a flat roof, with a front step back at the third storey as required by the zoning by-law. A basement was not needed to accommodate four units into this design.



**Floor Plans**

The fourplex design contains 2 one-bedroom units on the ground floor, and 2 three-bedroom plus den units on the second and third floors. In this example, each unit has private outdoor space in the form of terraces or balconies and the remainder of the back yard could be shared.





## Zoning Compliance Analysis

The following page contains an analysis of the zoning compliance for each of the typologies presented. The analysis was prepared by the University of Toronto team and reviewed by Toronto Buildings.

For each element of zoning, the text is colour coded to indicate whether a design complied with the existing zoning by-law or not. Grey text indicates compliance and orange text indicates non-compliance.

Some of the findings from this analysis included:

- In some cases, while the design met applicable regulations for single-detached dwellings, they exceeded the maximum existing regulations for a triplex or fourplex, e.g. side setbacks and building depth;
- Designs triggered a variance for maximum number of storeys, despite compliance with the maximum height limit;
- Designs with more than one deck or balcony at or above the second storey of the building, and greater than 4.0 square metres would require a variance;
- While generally meeting lot coverage, setback and height regulations, two of the proposed designs exceeded the applicable maximum Floor Space Index (FSI)

The results of this analysis were used to help identify potential zoning barriers and consider appropriate standards in developing the proposed Multiplex zoning by-law amendment.



**ISSUE DATE:**

01	NOV 4, 2022	ZONING REVIEW
NO.	DATE	DESCRIPTION

**HOUSING OPTION:**
**DRAWING TITLE:**
**COMPLIANCE CHART**

PROJECT: REHOUSING THE YELLOWBELT  
 SCALE:

**DRAWING NO:**

# A999

Housing Option	<b>INTERWAR SEMI</b> 3 STOREY SEMI-DETACHED MULTIPLEX (3 UNITS)	<b>POSTWAR BUNGALOW</b> 3 STOREY DETACHED MULTIPLEX (4 UNITS)	<b>METROBURB WIDE</b> 3 STOREY DETACHED MULTIPLEX (4 UNITS)
Address	7 MARIGOLD AVE TORONTO, ON M4M 3B1	54 JOANNA DRIVE SCARBOROUGH, ON M1R 4J3	20 DAWN MIST CRESCENT SCARBOROUGH, ON M1V 4K5
ZONING LABEL	<b>R (d1.0) (x807)</b>  <b>Height Overlay (Map 644) HT = 12.0</b> <b>Floor Space Index ("d") - 1.0</b>	<b>RD (x303)</b>  <b>Height Overlay (Map 726) HT = 9.0</b> <b>Lot Coverage Overlay (Map 726) = 33%</b>	<b>RD (x806)</b>  <b>Height Overlay (Map 678) HT = 9.0 / ST 2 (2 STOREYS)</b> <b>Lot Coverage Overlay (Map 678) = 40%</b>
Lot Coverage	<b>LOT COVERAGE = 36.60%</b>	<b>LOT COVERAGE = 25.86%</b>	<b>LOT COVERAGE = 33.4%</b>
Floor Space Index	<b>FSI = 1.03</b>  <b>ZBL 10.10.40.40 Floor Area</b> <u>(1) Floor Space Index</u> The design has a floor space index of 1.03, exceeding the zone label maximum floor space index of 1.0 by a factor of 0.03, as well as exceeding the standard zoning by-law FSI of 0.6 by a factor of 0.43	<b>FSI = 0.69</b>  <b>ZBL 10.20.40.40 Floor Area</b> <u>(1) Floor Space Index</u> In the RD zone, the permitted maximum floor space index is: (A) the numerical value following the letter "d" in the zone label on the Zoning By-law Map; and (B) if the zone label on the Zoning By-law Map does not include a "d" value on the Zoning By-law Map, the floor space index is not limited by this regulation.	<b>FSI = 0.82</b>  <b>ZBL Exception 900.3.10(1462)(a)(ii)</b> The design does not comply with Site Specific Provisions (A)(ii) the maximum floor space index is greater than the lesser of 0.5 times the lot area or 279 square metres, if the lot area is 408 square metres to 697 square metres;
Building Height	<b>BUILDING HEIGHT = 10.0m</b>	<b>BUILDING HEIGHT = 9.20m</b>	<b>BUILDING HEIGHT = 9.20m</b>
Main Wall Height	<b>ZBL 10.10.40.10 Height</b> <u>(2) Maximum Height of Specified Pairs of Main Walls</u> The design follows the permitted maximum building height for a building in the R zone, as well as the Height Overlay Map at 12.0m. The design does not comply with the main wall height restriction of 9.50m, determined by subtracting 2.5m from the 12.0m Height Overlay Maximum Building Height.	<b>ZBL 10.20.40.10 Height</b> <u>(2) Maximum Height</u> The design does not comply with the Height Overlay Map at 9.0m. <b>(4) Restrictions for a Detached House with a Flat or Shallow Roof</b> (A) The design also does not comply with the permitted maximum building height of 7.2m for a detached house with a flat roof. (C) The design does not comply with maximum two storeys.	<b>ZBL 10.20.40.10 Height</b> <u>(2) Maximum Height</u> The design does not comply with the Height Overlay Map at 9.0m as well as the additional limit of two storeys. <b>(4) Restrictions for a Detached House with a Flat or Shallow Roof</b> The design also does not comply with the permitted maximum building height of 7.2m for a detached house with a flat roof.
Flat Roof Restrictions			
Main Pedestrian Entrance Height	<b>MAIN PEDESTRIAN ENTRANCE HEIGHT = 1.0M</b>	<b>MAIN PEDESTRIAN ENTRANCE HEIGHT = 0.6M</b>	<b>MAIN PEDESTRIAN ENTRANCE HEIGHT = 0.1M</b>
Building Length	<b>BUILDING LENGTH = 17.0m</b>	<b>BUILDING LENGTH = 17.0m</b>	<b>BUILDING LENGTH = 17.0m</b>
Building Depth	<b>ZBL 10.10.40.30 Building Depth</b> <u>(1) Maximum Building Depth</u> The design follows the permitted maximum building depth of 17.0m for a semi-detached/detached house and does not comply with the 14.0m maximum building depth for a triplex.	<b>ZBL 10.20.40.20 Building Length</b> <u>(1) Maximum Building Length if Required Lot Frontage is in Specified Range</u>  The design follows the permitted maximum building depth of 17.0m for a detached house.	<b>ZBL 10.20.40.20 Building Length</b> <u>(1) Maximum Building Length if Required Lot Frontage is in Specified Range</u>  The design follows the permitted maximum building depth of 17.0m for a detached house.
Setbacks	<b>SIDE YARD SETBACK = 0.9m</b>  <b>ZBL 10.10.40.70 Setbacks</b> <u>(3) Minimum Side Yard Setback</u> The design follows the minimum side yard setback of 0.9m for a semi-detached/detached house and does not comply with the 1.2m side yard setback for a fourplex.	<b>SIDE YARD SETBACK = 1.2m AND 3.5m</b>  <b>ZBL 10.20.40.70 Setbacks</b> <u>(3) Minimum Side Yard Setback</u> The design complies with the minimum side yard setback of 0.9m if the required minimum lot frontage is 6.0m to less than 12.0m	<b>SIDE YARD SETBACK = 1.55m AND 1.5m</b>  <b>ZBL 10.20.40.70 Setbacks</b> <u>(3) Minimum Side Yard Setback</u> The design complies with the minimum side yard setback of 1.2m if the required minimum lot frontage is 12.0m to less than 15.0m
Landscaping	<b>FRONT YARD SOFTSCAPE = 65%</b>  <b>ZBL 10.5.50.10 Landscaping</b> <u>(1) Front Yard Landscaping</u> The design does not comply with the requirement for 75% of the front yard landscaping to be soft landscaping. The design provides 65% soft landscaping.	<b>FRONT YARD SOFTSCAPE = 76% (75% REQUIRED)</b> <b>REAR YARD SOFTSCAPE = 43.3% (50% REQUIRED)</b>  <b>ZBL 10.5.50.10 Landscaping</b> <u>(3) Rear Yard Soft Landscaping for Residential Buildings Other Than an Apartment Building</u> The design does not comply with the requirement for 50% of the rear yard landscaping to be soft landscaping. Alternative compliance with a green roof or resizing of the sunken court, patio and decks could accommodate this.	<b>FRONT YARD SOFTSCAPE = 79% (75% REQUIRED)</b> <b>REAR YARD SOFTSCAPE = 75.8% (50% REQUIRED)</b>
Other		<b>ZBL 10.20.40.50 Decks, Platforms and Amenities</b> <u>(1) Platforms at or Above the Second Storey of a Detached House</u> (A) The design does not comply with the requirement for there to be no more than one platform on each of the front, rear and each side of the detached house; and (B) The design does not comply with the requirement that the maximum area of each platform is 4.0 square metres.	<b>ZBL 10.20.40.50 Decks, Platforms and Amenities</b> <u>(1) Platforms at or Above the Second Storey of a Detached House</u> (A) The design does not comply with the requirement for there to be no more than one platform on each of the front, rear and each side of the detached house; and (B) The design does not comply with the requirement that the maximum area of each platform is 4.0 square metres.

**COMPLIANT WITH ZBL 569-2013**   
**NON-COMPLIANT WITH ZBL 569-2013**