



# REPORT

## SOLID WASTE STRATEGY

### **DERRY BRITANNIA DEVELOPMENTS LIMITED**

RWDI #2001574

April 14, 2020

#### **SUBMITTED TO**

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**TETRA TECH**



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## VERSION HISTORY

Index	Date	Description
1	January 17, 2020	Responding to Client comments
2	January 22, 2020	Revision to drawings (watermark) etc. and finalizing report
3	April 14, 2020	Incorporated revised North Draft Plan



# 1 INTRODUCTION

RWDI AIR Inc. (RWDI) was retained by Derry Britannia Developments Inc. (the Applicant) to prepare a solid waste plan (Plan) for the northern portion of a proposed Plan of Subdivision development located west of Ninth Line between Derry Road and Britannia Road, in the City of Mississauga (the development). Successful completion of the Plan of Subdivision-approval process requires the preparation of a Solid Waste Plan, for submission to the Region of Peel (Region) and the City of Mississauga (City), that will provide a clear outline of how solid waste (including green bin wastes, Blue Box Recyclables and garbage) will be stored, transferred and collected from the proposed community. The Plan, outlined herein, presents the estimated material quantity and characteristics that are anticipated to be generated from the development and presents a preliminary plan for the storage and collection of the generated waste materials.

## 1.1 Summary Description of Development Proposal

The Site consists of the 8.5-hectare northern portion, or Phase 1 of the development proposal located adjacent to the Ninth Line in the City of Mississauga. More specifically, the north properties are in Part of Lots 6,7,8 & 9, Concession 9 N.S., City of Mississauga, Region of Peel.

The northern properties consist of 60 proposed development Blocks as follows:

- Blocks 1 to 28 inclusive comprised of single-family, detached, rear-lane housing.
- Blocks 29 to 41 inclusive comprised of 69 rear-lane townhouse residences.
- Blocks 42 to 59 inclusive comprised of 101 street townhouse residences.
- Block 60 comprised of a mid-rise projected condominium apartment building with approximately 200 units.

The identification and distribution of the residences to be developed in the northern properties is attached as Appendix A to this report. The balance of the lands within the northern properties will consists of park land, walkways, buffers and internal streets. Access and egress to this component of the development will be provided at 2 locations on Ninth Line with internal roadways providing access to the residential Blocks.

## 1.2 Objectives of the Solid Waste Plan

The objectives of the Solid Waste Plan are as follows:

- To calculate the volume of Blue Box (BB) recyclables, organics, and garbage that will be collected from the community, once developed.
- To determine the number of containers required to provide for the curb-side collection of wastes and the number of bins required for the front-end collection of wastes.



- To develop an internal transfer plan and collection plans for the BB recyclables, organics and garbage that provide for the efficient and effective storage, transfer and transport of these materials on each collection day. A collection plan will illustrate the set-out locations for curb-side collection and the travel route for collection vehicles including direction which will comply with the Region's Waste Collection Design Standards Manual (WCDSM) requirements.

Material generation and composition data for comparable residential developments were obtained from the documents titled "Roadmap to a Circular Economy in the Region of Peel, Region of Peel Waste Management Division", and Continuous Improvement Fund (CIF) Project No.872: "Multi-Residential Audits & Superintendent Training, City of Toronto, 2016". These data were used to calculate anticipated volumetric requirements for the storage of generated materials, as well as the requirements for set out prior to collection.

## 2 MATERIAL QUANTITIES, COMPOSITION & VOLUME

As a first step in the design of the collection plans for the proposed community, the quantity of waste materials generated from the residences was calculated for BB recyclables, organics and garbage. This data was used to calculate the volume of materials requiring storage and collection to determine the size and number of containers needed to transport the materials from the community.

### 2.1 Material Quantities and Composition

The proposed development will create a medium-density community comprised of a mix of single-family, townhouse and condominium, apartment residences. The quantity of waste generated by each household in a multi-residential community was identified by the Region of Peel to be 620 kilograms (kg) per year<sup>1</sup>. The Region also identified that households in single-family, detached, residences generated about 1000 kg per year. For the purposes of this Plan, the following waste-generation quantities were assumed:

- Single-family, detached, rear-lane residences, 1,000 kg per year.
- Rear lane townhouse and street townhouse residences, 800 kg per year.
- Condominium apartments, 620 kg per year.

The composition of waste materials was determined based on the results of audits, undertaken in 2015, at multi-residential developments in the City of Toronto<sup>2</sup>. The breakdown of the composition of waste materials was assumed to be as follows:

- Residential mixed waste (garbage) at 45% by weight.
- BB recyclables at 31%: by weight.

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<sup>1</sup> Region of Peel, Waste Management Division, Roadmap to a Circular Economy in the Region of Peel, 2018-2041.

<sup>2</sup> City of Toronto, CIF Project No. 872: Multi-Residential Audits & Superintendent Training, January 2016, Figure 2, Total Waste Stream Composition (kg/hh/year) pg. 5.

- Organics (green bin waste) at 24% by weight.

The total amount of material collected from residential households for the 2015 audit was 582 kg. The quantity of BB recyclables in the garbage stream equaled 89 kg or 15%, with organics equaling 168 kg or 29% of the material audited. The BB recyclables that were diverted comprised 24% of the total with diverted organics comprising 9%. For the purposes of developing the subject waste Plan, it was concluded that higher diversion rates would be possible with an assertive information and communications strategy for residents. A diversion rate of 31% for BB recyclables and 24% for organics were identified as reasonable.

The Region collects BB recyclables and garbage on an alternating bi-weekly, basis with organics collected each week. The amount of each material type that would be generated on a weekly basis from each residence type in the proposed community was calculated by multiplying the annual total (in kg) by the projected % composition and dividing that by 52 weeks. For the mid-rise condominium apartment in Block 60, we have assumed that collection would be undertaken on a weekly basis for each of the three waste material types.

The calculations are as follows:

- Single family detached residences:
  - BB recyclables,  $(1000 \times 0.31/52) \times 2 = 12$  kg/hh/bi-weekly collection.
  - Organics,  $1000 \times 0.24/52 = 5$  kg/hh/weekly collection
  - Garbage,  $(1000 \times 0.45/52) \times 2 = 17$  kg/hh/bi-weekly collection
- Rear lane and street townhouse residences:
  - BB recyclables,  $(800 \times 0.31/52) \times 2 = 9$  kg/hh/bi-weekly collection.
  - Organics,  $800 \times 0.24/52 = 4$  kg/hh/weekly collection.
  - Garbage,  $(800 \times 0.45/52) \times 2 = 14$  kg/hh/bi-weekly collection.
- Condominium apartments:
  - BB recyclables,  $620 \times 0.31/52 = 3.6$  kg/hh/weekly collection.
  - Organics,  $620 \times 0.24/52 = 3$  kg/hh/weekly collection.
  - Garbage,  $620 \times 0.45/52 = 5.4$  kg/hh/bi-weekly collection.

## **2.2 Material Volume Calculations**

The volume requirements for storage/collection containers for each waste material type were calculated by dividing the bi-weekly or weekly amounts for each type by the applicable density factor ( $\text{kg/m}^3$ ) then multiplying by 1000 to generate a required volume in litres (L). The calculations are as follows:

- Single family detached residences:
  - BB recyclables,  $(12/70) \times 1000 =$  171 L/hh/bi-weekly collection.
  - Organics,  $(5/500) \times 1000 =$  10 L/hh/weekly collection.
  - Garbage,  $(17/130) \times 1000 =$  131 L/hh/bi-weekly collection.
- Rear lane and street townhouse residences:
  - BB recyclables,  $(9/70) \times 1000 =$  129 L/hh/bi-weekly collection.
  - Organics,  $(4/500) \times 1000 =$  8 L/hh/weekly collection.
  - Garbage,  $(14/130) \times 1000 =$  108 L/hh/bi-weekly collection.



- Condominium residences
  - BB recyclables,  $(3.6/70) \times 1000 =$  51 L/hh/weekly collection.
  - Organics,  $(3/500) \times 1000 =$  6 L/hh/weekly collection.
  - Garbage,  $(5.4/130) \times 1000 =$  41 L/hh/weekly collection.

### 3 MATERIAL HANDLING – DESIGN CONSIDERATIONS

The material handling options for the proposed development were evaluated based on the material volume calculations outlined in Section 2.2 of this report as well as the associated requirements set forth in the Region's WCDSM. It was also assumed that the single family and townhouse residences would receive curb-side, cart-based collection services and that the multi-residential, condominium apartment residences in Block 60 would receive bin-based collection services provided by the Region.

#### 3.1 Applicable Waste Collection Standards

The Region's Waste Management Division has stated that the subject development should comply with sections 2,3,4,5 and 7.2 of the Region's WCDSM. Since the "north properties" development does not include a mixed land use component, we have assumed that section 5 (Mixed Use Buildings) of the Standards will not apply. The proposed school site is not included in the current draft plan of the development; therefore, section 7.2 "Schools" is no longer applicable.

**Section 2** of the WCDSM provides the general design standards to accommodate the set out and collection of waste materials. The subject waste Plan has been devised based on these requirements as follows:

- All internal roads will have a minimum width of 6 metres and will be constructed of a hard-surface material designed to support a minimum 35 tonnes which is the weight of a fully loaded waste collection vehicle.
- Access routes for waste collection vehicles will have a grade of no more than 8 percent.
- Waste collection vehicles will not be required to back-up onto a municipal road allowance.

**Section 3** of the WCDSM applies to the subdivision Blocks consisting of single-family detached as well as rear lane and street townhouse residences. The standards are as follows:

- The set area for each residence must be at least 3 square metres to provide enough space for the placement of 1 garbage cart or 1 recycling cart and 1 cart for organic (green bin) waste as well as overflow waste (i.e., additional bags), yard waste, and bulky items as may be required.
- A set out area for each residence will be identified on the Collection Plan.
- The set-out area will be located along a curb and will be directly accessible to the waste collection vehicle.



**Section 4** of the WCDSM applies to Block 60 of the Plan of Subdivision. This Block will consist of a 6-floor, mid-rise condominium apartment building consisting of approximately 200 residential suites. The solid waste from the condominium apartments will be collected at a dedicated room at the parkade level and transferred to an at-grade, concealed, bin-based waste collection facility. The receipt, storage, transfer and collection of BB recyclables, organics, and garbage will be undertaken in compliance with the following WCDSM standards.

- BB recyclables will not be compacted after received via the materials chutes.
- Separate chutes will be provided for BB recyclables, organics, and garbage. These materials will be received in 3 separate front-end bins in the dedicated “waste” room located in the parkade of the mid-rise condominium apartment building.
- A concealed collection area will be provided on the condominium apartment property which will be designed and constructed in compliance with the following requirements:
  - The provision of a minimum 18 metre straight, head-on approach to the collection point with a clear height of 4.4 metres from the access laneway to accommodate access and egress for the collection vehicle.
  - A minimum clear height of 7.5 metres from the concrete pad is required. The collection pad will be designed with enough area to eliminate the need for property management staff to jockey front-end bins to make them accessible to the collection vehicle.
  - A minimum width of 3 metres for each front-end bin is required and a minimum depth of 2 metres is required for 3 cubic yard bins and 3 metres is required for 4 cubic yard bins.
  - A minimum of 10 square metres is required for the set out of bulky items.
- Additional design specifications are provided in Section 4.1.2 of the Region’s WCDSM

## **3.2 Material Sources**

The development is to include approximately 398 residences consisting of: 28 rear lane detached homes; 69 rear lane townhouses, 101 street townhouses; and, approximately 200 condominium suites. Direct access to the detached and townhouse residences will be via either a rear laneway or an internal street.

## **3.3 Material Collection**

### **3.3.1 Detached and Townhouse Residences**

Each of the detached and townhouse residences will receive a dedicated cart for each material stream. Each residence will receive a BB recyclable material (240 L), organics (100 L), and garbage (240 L) cart from the Region. Materials generated at each of the residences would be placed directly into the dedicated carts.

The waste materials from the detached and townhouse residences will be placed at the curb, as identified on the Collection Plan (**Appendix B**), before 7:30 am on the designated waste collection day. The Region collects BB recyclables and garbage on a rotating, bi-weekly, basis with organics collected on a weekly basis. The set-out areas identified on the attached Collection Plan provide enough space for the respective collection carts as well as to provide enough space for the placement of overflow waste (i.e., additional bags), yard waste, and bulky items as may be required.



### **3.3.2 Mid-Rise Building (Block 60)**

Residents in the mid-rise condominium apartment building, located in Block 60, will use a 3-chute system available on each floor to transfer their BB recyclables, organics, and garbage to a dedicated waste room located in the building's parkade level. The material will be stored and collected using a front-end loader bin-based system. The number of bins required to service these residences are as follows:

- *BB Recyclables:* Each household or residence in the building would generate 51 L of BB recyclable material each week for a total of 10,200 L, or 13.3 cubic yards, of material from the approximately 200 residences in the building.
- *Organics:* Each household in the building would generate 6 L of green bin, or organic, waste each week for a total of 1,200 L, or 1.6 cubic yards of material from the building.
- *Garbage:* Each household in the building would generate 41 L of garbage each week for a total of 8,200 L, or 10.7 cubic yards of material from the building.

The Site Plan for the mid-rise condominium apartment building identifies a waste room, located in the sub-grade parkade. The Site Plan includes an at-grade area identified as "Garbage & Recycle", with direct access for a front-loader collection vehicle, which will be the facility's "concealed collection area".

The outside measurements for a 3-cubic yard waste bin are 2.03 m wide x 1.07 m deep x 1.26 m tall. Those for a 4-cubic yard bin are 2.03 m x 2.01 m x 1.29 m. Images and dimensions of each type of bin/cart are provided in **Appendix C**, for reference. The outside dimensions of a 1-yard bin or tote for the organics would be about 30% of these dimensions. To effectively service the weekly waste-generation requirements, building management would likely need to keep five (5) 3-yard bins or four (4) 4-yard bins for recyclables, four (4) 3-yard bins or three (3) 4-yard bins for garbage, and two (2) 1-yard bins for organics. If the garbage is compacted on-site, the volume requirements for these materials would be reduced to about 40% of the uncompacted materials volume.

Additional work will be required to confirm how wastes from the condominium apartment will be most-effectively managed. This will entail: confirmation of whether Peel Region would provide the collection service; the detailed design parameters for the waste room in the building's parkade including whether the compaction of garbage would occur on site; the frequency for the transfer of either bins or containers from the waste room to the at-grade collection facility; and, the area required to accommodate the storage and collection of bulky items. These elements will determine the area required to accommodate the receipt, transfer and collection of waste materials.



## 4 IN CLOSING

We trust that this Solid Waste Plan is satisfactory. Please do not hesitate to contact the undersigned with any questions you may have.

Yours very truly,

**RWDI AIR Inc.**

A handwritten signature in black ink, appearing to read 'Tim Boc'.

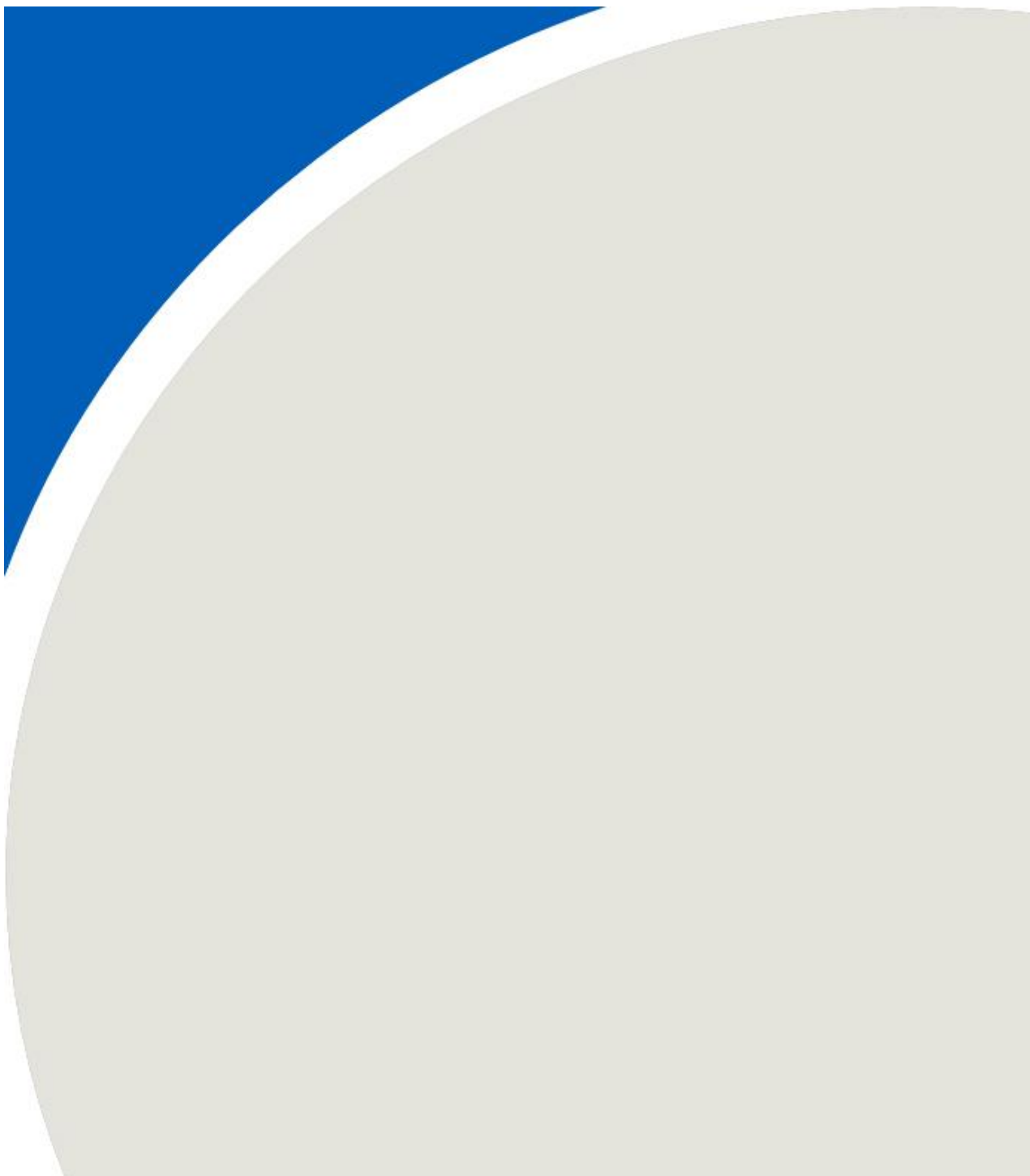
Timothy Boc, B.E.S.  
Senior Scientist

A handwritten signature in black ink, appearing to read 'Peter-James Mauro'.

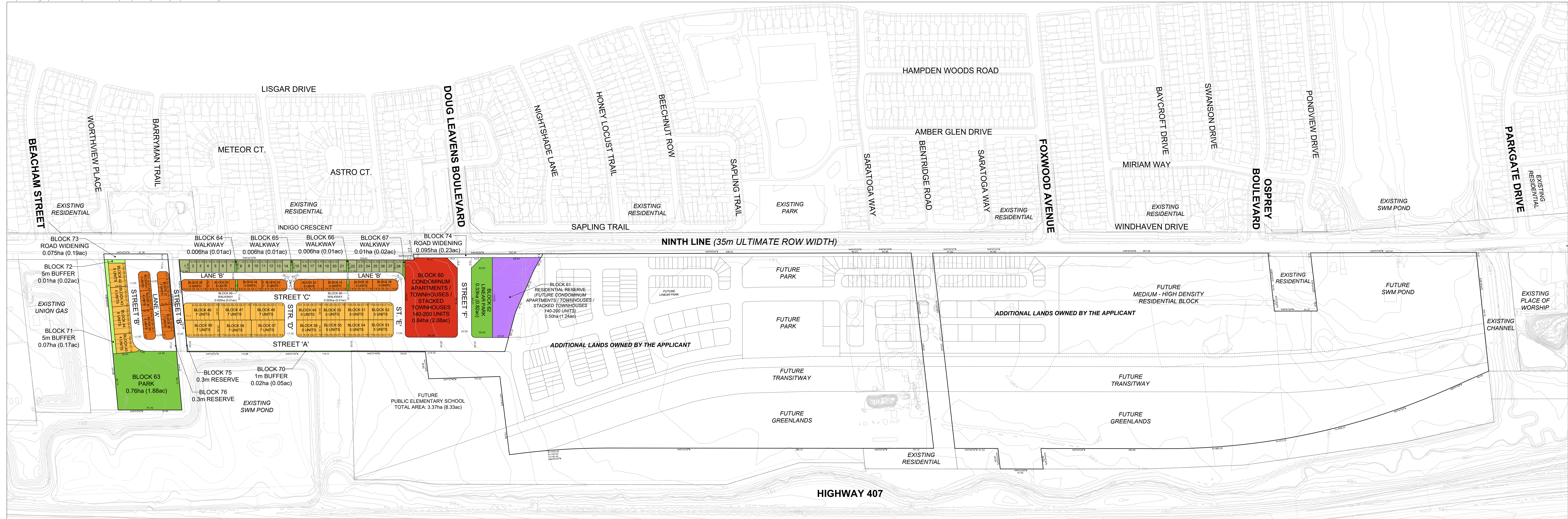
Peter-James Mauro, P. Eng., QP<sup>ESA</sup>  
Technical Director | Practice Area Leader – Geosciences

Attach.

## APPENDIX A







**DRAFT PLAN OF SUBDIVISION  
DERRY BRITANNIA  
DEVELOPMENTS LIMITED  
(NORTH PROPERTIES)**

PART OF LOTS 6,7,8 & 9, CONCESSION 9, N.S.  
CITY OF MISSISSAUGA  
REGIONAL MUNICIPALITY OF PEEL

## OWNERS CERTIFICATE

I HEREBY AUTHORIZE GLEN SCHNARR & ASSOCIATES INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CITY OF MISSISSAUGA FOR APPROVAL.

SIGNED  DATE MAY 9, 2019  
TIM WARNER, A.S.O.  
DERRY BRITANNIA DEVELOPMENTS LIMITED

### SURVEYORS CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED  DATE MAY 23, 2019

SUNIL PERERA, O.L.S.  
J.D. BARNES LIMITED

### ADDITIONAL INFORMATION

(UNDER SECTION 51(17) OF THE PLANNING ACT) INFORMATION REQUIRED BY CLAUSES A,B,C,D,E,F,G,J & L ARE SHOWN ON THE DRAFT AND KEY PLANS.

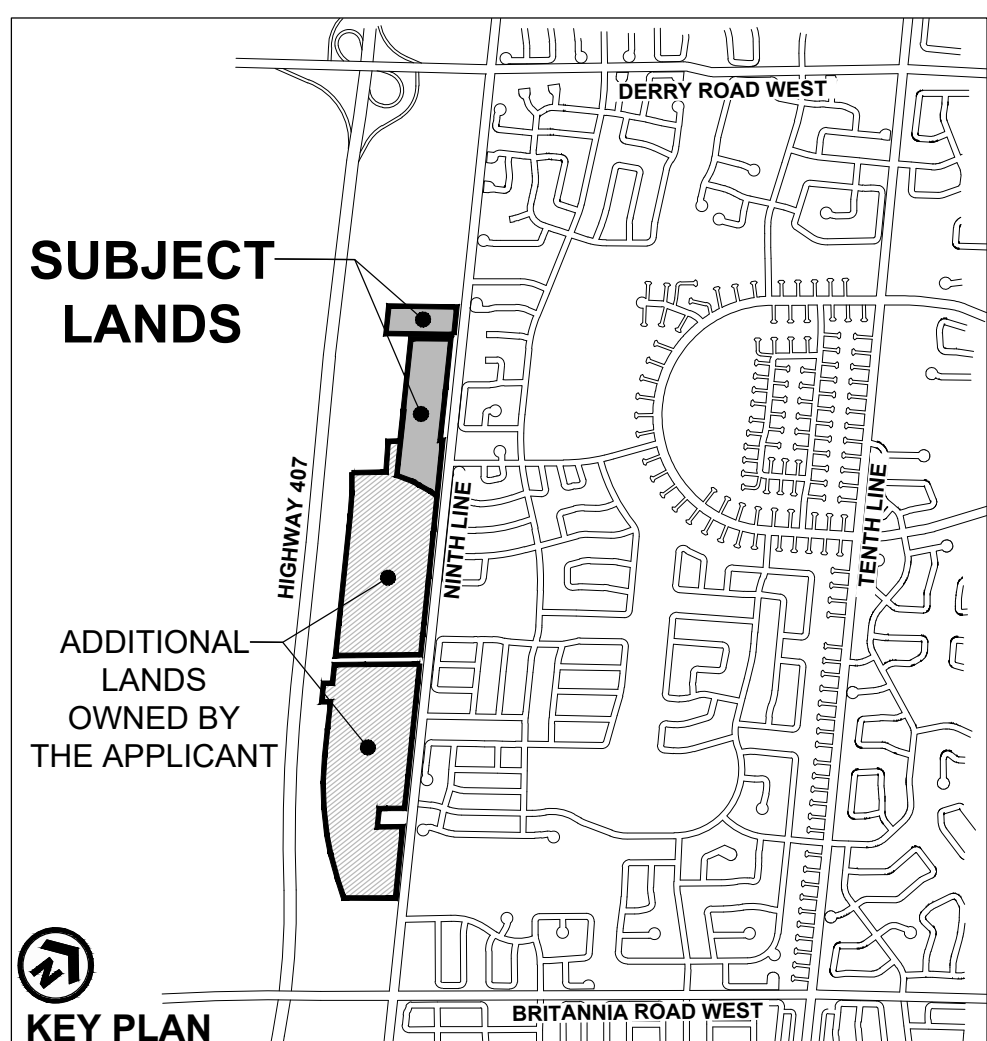
H) MUNICIPAL AND PIPED WATER TO BE PROVIDED  
I) SANDY LOAM AND CLAY LOAM  
K) SANITARY AND STORM SEWERS TO BE PROVIDED

## NOTES

- ALL DAYLIGHT ROUNDINGS ARE 5m UNLESS OTHERWISE NOTED

## LAND USE SCHEDULE

LAND USE	LOTS / BLOCKS	AREA (ha)	AREA (ac)	TOTAL UNITS	DENSITY (UPNHA)
REAR LANE DETACHED - 10.7m (35')	1-28	0.56	1.38	28	50.0
REAR LANE TOWNHOUSE - 6.05m (20')	29-41	0.80	1.98	69	86.3
STREET TOWNHOUSE - 6.0m (20')	42-59	1.70	4.20	101	59.4
CONDO APARTMENTS / TOWNS / STACKS	60	0.84	2.08	140-200	166.7-238.1
RESIDENTIAL RESERVE	61	0.50	1.24		
PARK / WALKWAY	62-69	1.13	2.79		
BUFFERS	70-72	0.10	0.25		
ROAD WIDENINGS	73,74	0.17	0.42		
0.3m RESERVES	75,76	0.00	0.00		
10.0m LANEWAY (447m LENGTH)		0.46	1.14		
17.0m LOCAL ROW (634m LENGTH)		1.10	2.72		
20.0m LOCAL ROW (572m LENGTH)		1.17	2.89		
<b>TOTAL</b>	<b>76</b>	<b>8.53</b>	<b>21.08</b>	<b>338-398</b>	<b>86.7-102.1</b>



SCALE: 1:2000  
(24" x 45")  
APRIL 3, 2020







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**Mid-Rise Building Site "A" - Grade Level**  
**9TH LINE YIELD STUDY**

BLDG. AREA: 2,324 SM  
GROSS AREA (6 STOREY): 13,945 SM.

**SITE AND BUILDING STATISTICS**

SITE AREA 10,697.00  
F.S.I. 1.30

TOTAL GFA 13,945.00  
TOTAL NSA 2,099.57  
TOTAL SELLABLE 11,845.43  
EFFICIENCY 85%

FLOORS	NO. FLRS.	FLOOR AREA	NON-SELLABLE AREA							
			ELEVTRS.	STAIRS	CORR.	G. CHUTE	M/E	LOCKERS	MOV. RM.	AMENITY
FLR 3-6	4	9,296.0	62.7	232.3	815.6	13.6	4.0	143.2	0.0	0.0
FLR 2	1	2,324.0	15.7	58.1	203.9	3.4	1.0	35.8	0.0	0.0
FLR 1	1	2,325.0	15.7	58.1	240.0	3.4	1.0	23.7	13.1	155.3
TOTAL ABOVE	6	13,945.0	94.1	348.5	1,259.6	20.4	6.0	202.7	13.1	155.3
U/G GFA		7,010.0								

All areas are in square meters. Total GFA does not include U/G GFA.  
(2019-09-24)

**SUITE STATS**

(2019-09-24)

FLOORS	1B	1B+D	2B	2B+D	3B	TOTAL
1	10	5	7	2	2	26
2	12	5	7	3	2	29
3 TO 6	48	20	28	12	8	116
TOTAL	70	30	42	17	12	171
%	41%	18%	25%	10%	7%	100%

**AVERAGE UNIT AREAS**

STE TYPES	SQ. M.	SQ. FT.
1B	54.37	585
1B+D	62.81	676
2B	80.76	869
2B+D	94.76	1,020
3B	98	1,054

**NUMBER OF STOREYS** 6  
\*Areas are in square meters

**PARKING STATS**

**PARKING REQUIRED**

UNIT TYPE	RATE	# OF UNITS	PARKING REQUIRED
STUDIO	1	0	0
1B	1.25	100	125
2B	1.4	59	83
3B	1.75	12	21
RESIDENTS			229
VISITORS	0.2	171	35
TOTAL			264

PROVIDED	
AT GRADE	60
U/G	207
TOTAL	267

**PARKING SPACE TYPES**

- RESIDENT
- VISITOR
- ACCESSIBLE - TYPE A
- ACCESSIBLE - TYPE B

PROJECT ADDRESS & BRANDING  
SIGNAGE IN LANDSCAPED ISLAND

EXTENT OF PARKADE BELOW

3M MIN. SHORING SETBACK FROM  
PROPERTY LINE

FRONT PROPERTY LINE @ 9TH LINE

SURFACE  
PARKING

PARK  
(636.6SM)

FIRE ROUTE &  
DROP-OFF

SURFACE PARKING

60 SPACES  
TOTAL

RAMP  
DWN.

SURFACE  
PARKING

REAR PROPERTY LINE

VEST.

LOBBY

AMENITY

LOBBY

VEST.

BLDG  
ENTRY

MOV.

MAIL

FLUSH CURB AT DROP-OFF  
WITH BOLLARDS

BICYCLE PARKING  
AT MAIN ENTRANCE

SIDE PROPERTY LINE

SHORT TERM, HIGHLY VISIBLE BICYCLE PARKING AREA  
CONNECTED TO WALKWATS

WALKWAYS CONNECTED TO PUBLIC SIDEWALKS AND STREETS

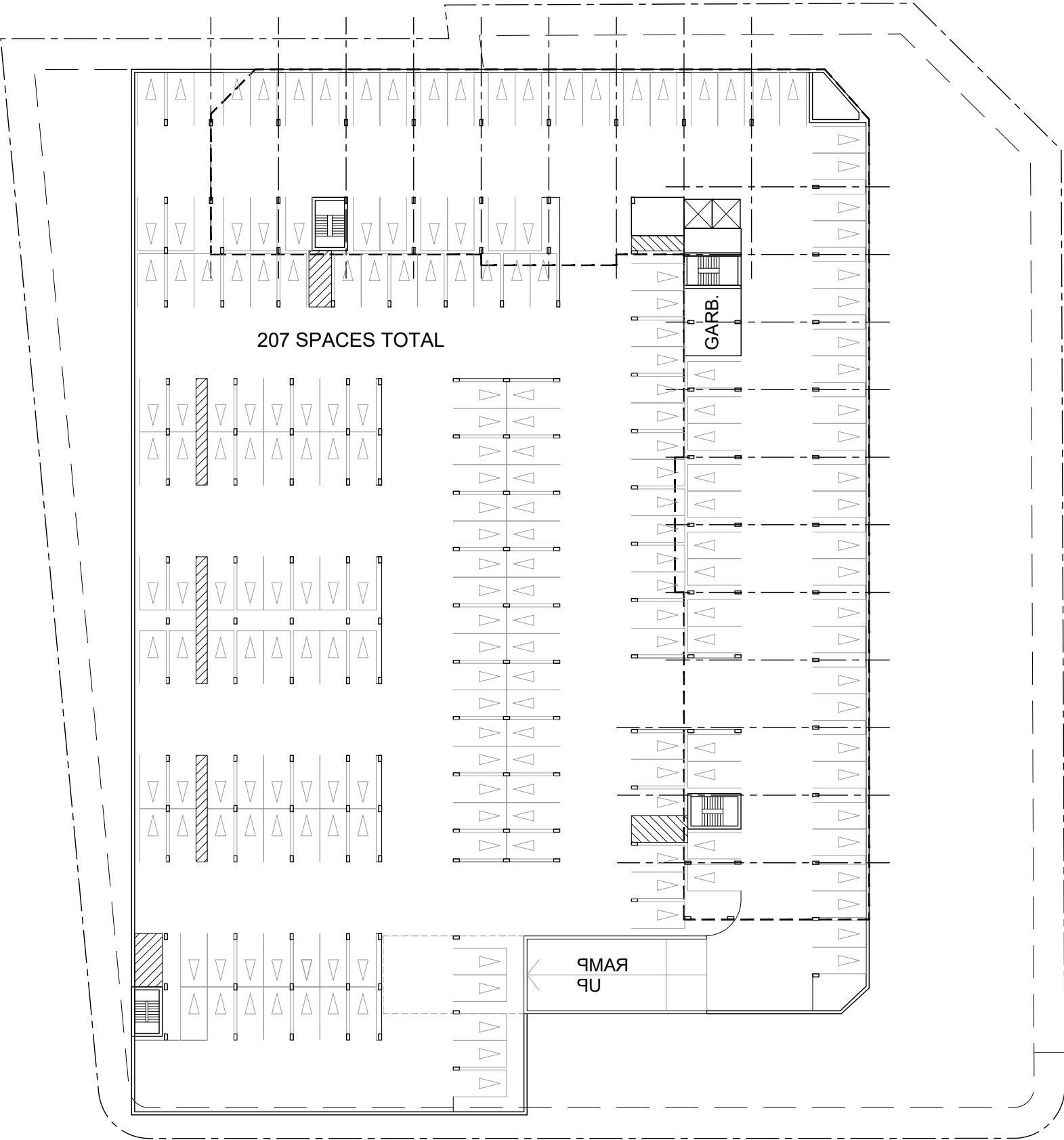
SITE AREA 10,697 SM



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**Mid-Rise Building Site "A" - Parkade Level**  
**9TH LINE YIELD STUDY**



3M SHORING SETBACK FROM PROPERTY LINE  
APPROXIMATE AREA: 7,000sm

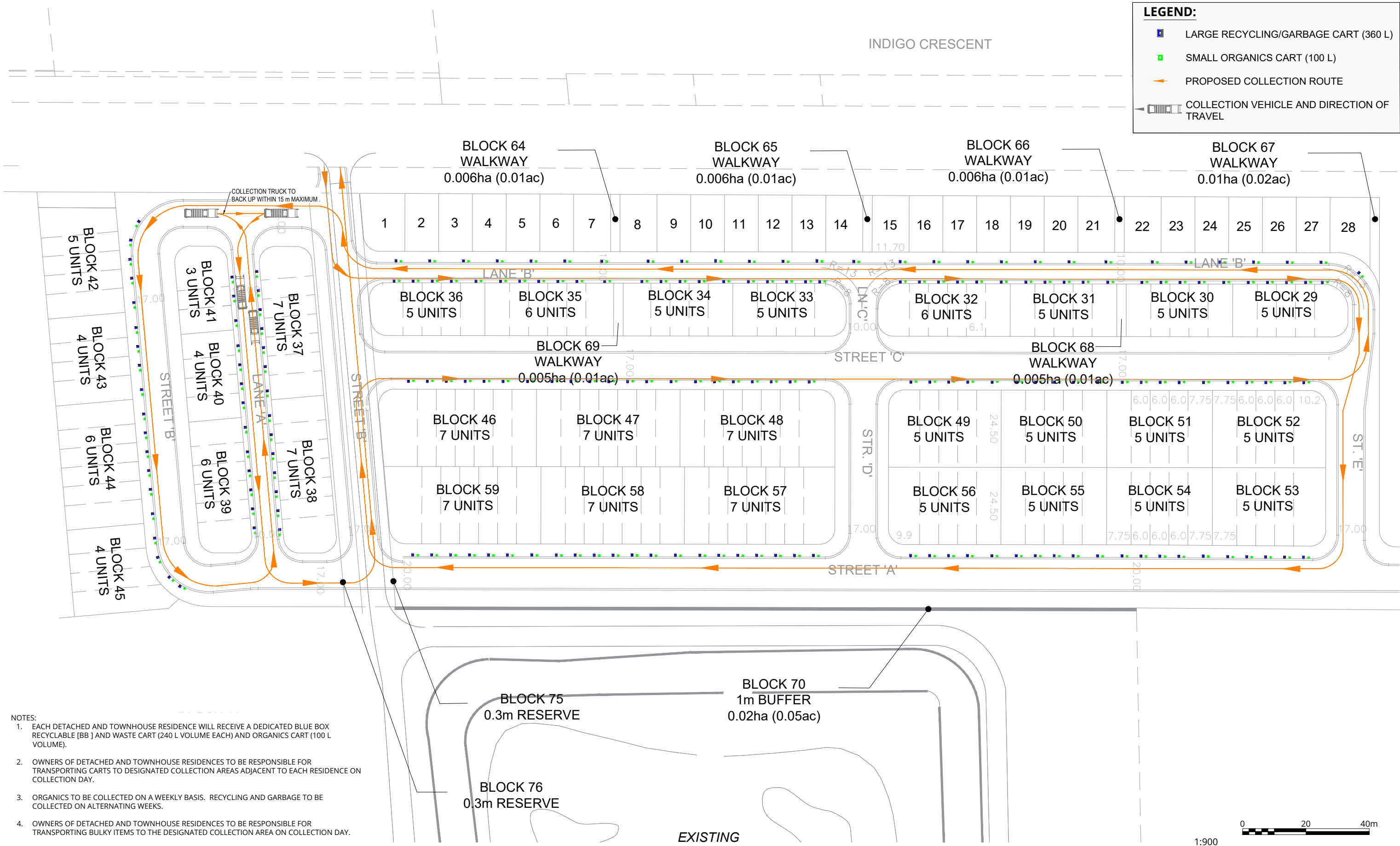
Proj. No. 16050  
Scale 1:500

Date 2019.09.24  
Client Mattamy

**SK-05B**

## APPENDIX B





**Recyclables/Garbage and Organics Collection Plan**  
Solid Waste Strategy, Ninth Line Development, Mississauga, Ontario

Derry Britannia Developments Inc.

**NOTES:**  
1. Base map provided by Derry Britannia Developments Inc. (2020).

Project #2001574



Drawn by: TFB	Figure: 1
Approx. Scale:	1:900
Date Revised:	Apr. 14 2020





## APPENDIX C



## CARTS USED FOR CURBSIDE WASTE COLLETCION



### Notes:

1. Cart images and dimensions from Waste Collection Design Standards Manual, Region of Peel Public Works Department, Waste Management Division.

### WASTE/RECYCLING CART IMAGES & DIMENSIONS

Solid Waste Strategy  
Ninth Line Development, Mississauga, Ontario  
*Derry Britannia Developments Inc.*

FIGURE NUMBER

**C-1**

PROJECT NUMBER

**2001574**

APPROX. SCALE

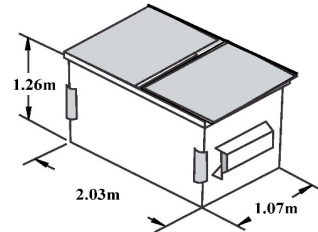
**NTS**

DATE REVISED

**01/10/2020**

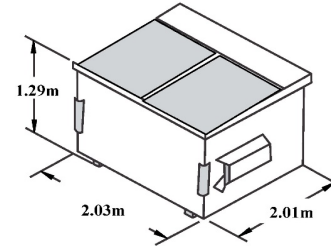


**3-Cubic Yard**



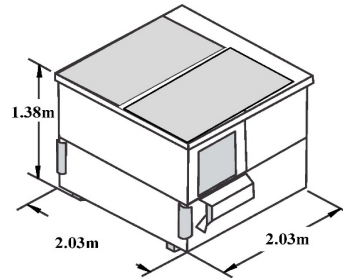
3-yard inside storage area bin  
1.26 m high, 2.03 m wide, 1.07 m deep

**4-Cubic Yard**



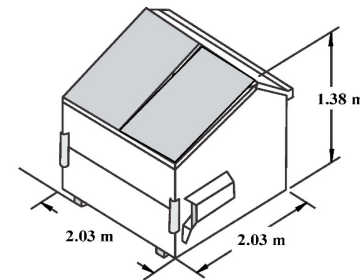
4-yard inside storage area bin  
1.29 m high, 2.03 m wide, 2.01 m deep

**6-Cubic Yard**



6-yard inside storage area bin  
1.38 m high, 2.03 m wide, 2.03 m deep

**6-Cubic Yard Slant**



Due to their size, 6-cubic yard Front-End Bins are only to be used for Multi-Residential Developments where Waste is to be stored externally in a Concealed Collection Point.

**Note:**  
\*3- & 4-cubic yard bins include casters.  
\*\*Garbage receptacle model and dimensions may vary depending on model and manufacturer.  
\*\*\*Drawing is not to scale

Notes:  
1. Bin images and dimensions from Waste Collection Design Standards Manual, Region of Peel Public Works Department, Waste Management Division.

## WASTE/RECYCLING BINS IMAGES & DIMENSIONS

Solid Waste Strategy  
Ninth Line Development, Mississauga, Ontario  
*Derry Britannia Developments Inc.*

FIGURE NUMBER

**C-2**

PROJECT NUMBER

**2001574**

APPROX. SCALE

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**01/10/2020**

