FINAL REPORT



SOLID WASTE MANAGEMENT PLAN

2620 CHALKWELL CLOSE, MISSISSAUGA ONTARIO DUNPAR DEVELOPMENTS

RWDI #2401872 January 11, 2024

SUBMITTED TO

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January 11, 2024

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1 INTRODUCTION

RWDI AIR Inc. (RWDI), in collaboration with Walmsley Environmental (WE), was retained by Dunpar Developments (Dunpar) to prepare a Solid Waste Management (Plan) for a proposed condominium townhouse development located at 2620 Chalkwell Close in Mississauga, Ontario (Development). Dunpar intends to submit applications for Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) to the City of Mississauga (City) in support of the Development. Successful completion of the OPA/ZBA approval process requires the preparation of a Solid Waste Management Plan for submission to the Region of Peel (Region) and the City, that will provide a clear outline of how solid waste (including source separated organics (organics), blue box (BB) recyclables, and garbage) will be stored, transferred, and collected from the Development. The Plan, outlined herein, presents a plan for the storage and collection of the generated waste materials.

1.1 Summary Description of Proposed Development

The Development is to consist of a developable area of approximately 2 hectares bounded by Sandgate Park to the north, and residential land use to the east, south, and west. The Site was formerly occupied by Elmcrest Public School. The development proposal involves the repurposing of the Site for residential use. The Development is to include 180 back-to-back townhouse units within 12 blocks situated on condominium roads. Each townhouse block will have a common at-grade garage beneath each block.

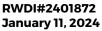
The identification and distribution of the residences to be developed is attached as **APPENDIX A** to this report. The balance of the lands will consist of amenity areas, walkways, buffers, internal roads, and visitor parking areas. Access and egress to the Development will be provided from Chalkwell Close, with condominium roadways providing access to the residential blocks.

1.2 Objectives of the Solid Waste Management Plan

The objectives of this Solid Waste Management Plan are as follows.

- To determine the appropriate method for the collection of BB recyclables, organics, and residual wastes (garbage).
- To outline storage and collection areas for solid waste generated within each townhouse unit.
- To develop an internal collection plan for the BB recyclables, organics, and garbage that provides for the efficient and effective collection and transport of these materials on each collection day.

This Plan was devised in regard to the document '*Waste Collection Design Standards Manual*', Region of Peel, 2020 (Standards), as well as the Region of Peel '*By-Law Number 35-2015, By-Law to Regulate the Collection of Waste In the Regional Municipality of Peel and to Repeal By-Law Number 47-2014*' as amended (Waste Collection By-law), where applicable.





Material generation and composition data for comparable multi-residential developments were obtained from the documents *Roadmap to a Circular Economy in the Region of Peel, Region of Peel Waste Management Division*, and *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 staging prior to collection. Collection methodologies were considered based on the design of the development, as well as industry best management practices.

Typically, developments like this would be considered similar to single family communities and as such, each residence would be issued a sufficient number of carts for their use. This would require, however, that each resident be responsible for placing their waste at the curb on collection day. The Development does not have sufficient curb space to give the collection vehicle the ability to access all the potential set out locations. The layout of the condominium roadways is such that accessible curb space is located only in certain portions of the Development. As a result, this Plan has been prepared as if it were a multi-residential development and that carts would be stored at specific locations within each block and transferred to the curb by property management staff.

2 MATERIAL QUANTITIES, COMPOSITION & VOLUME

As a first step in the design of the collection plans for the development, the amount of waste materials generated from the residences was calculated for each waste stream (BB recyclables, organics, and garbage). The data and volumetric calculations were used to determine the size and number of collection containers required to mostefficiently transport these materials from the Development and are outlined in the following sub-sections.

2.1 Material Quantities and Composition

The proposed development will create a medium-density residential community comprised of back-to-back townhome dwelling units. The quantity of total waste material generated by each household in a multi-residential community development was identified by the Region of Peel to be 661 kilograms (kg). per year¹. The Region also identified that households in single family, detached, residences generated about 1000 kg per year. Utilizing a conservative approach, a quantity of 800 kg per household was included in the calculations herein. The materials composition was determined based on the results of audits, undertaken in 2015, at multi-residential developments in the City of Toronto².

The determination of waste-generation volumes and composition was undertaken to determine the amount of waste that would need to be transferred and collected on each collection day. These data, in addition to the overall design of the proposed development, were used to consider which collection method would be appropriate for the Development.

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

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

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The breakdown of the composition of waste materials used is as follows.

- Residential mixed waste (garbage) at 45% by weight.
- BB recyclables at 30% by weight.
- Organics at 25% by weight

The Region collects BB recyclables and garbage on an alternating bi-weekly basis. Organics are collected weekly. The amount of each material type that would be generated on a weekly basis from each residence was calculated by multiplying the annual total (in kg) by the projected % composition and dividing that by 52 weeks. The calculations are as follows.

- BB recyclables: (800 x 0.30/52) x 2 =
 - 10 kg/household (hh)/bi-weekly collection 4 kg/hh/weekly collection
- Organics: (800 *x* 0.25/52 =
- 14 kg/hh/bi-weekly collection

2.2 Material Volume Calculations

• Garbage: (800 x 0.45/52) x 2 =

The volume requirements for storage/collection containers for each material type were calculated by dividing the bi-weekly or weekly amounts for each material type by the applicable density factor (kg/m³) then multiplying by 1000 to generate a required volume quantity in litres (L). The calculations are as follows.

- BB recyclables: (10/70) x 1000 =
- 143 L/hh/bi-weekly collection
- Organics: (4/500) x 1000=
- Garbage: (14/130) x 1000=
- 8 L/hh/weekly collection 108 L/hh/bi-weekly collection

3 MATERIAL HANDLING – DESIGN CONSIDERATIONS

The material handling options for the Site 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 Standards. It was assumed that the Development would receive curbside, cart-based collection service provided by the Region.

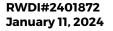
3.1 Applicable Waste Collection Standards

The Development should comply with the applicable Standards. The following requirements were incorporated into the Plan.

Section 2 of the Standards provides the general design standards to accommodate the set out and collection of waste materials. This Plan has been devised based on these requirements as follows.

- All internal roads are to have a minimum width of 6 metres and are to 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.
- The turning radius from the centre line is to be a minimum of 13 metres on all turns.







- Access routes for waste collection vehicles are to have a grade of no more than 8 percent.
- Waste collection vehicles will not be required to back-up onto a municipal road allowance.

3.2 Material Sources

Per the Site Plan (APPENDIX A), the development is to include 180 back-to-back townhouse units within 12 blocks (designated Blocks A through L).

The back-to-back townhouse blocks contain between 12 and 20 residential units. Access to each back-to-back townhouse block is to be via condominium roads. Each back-to-back townhouse block is to have a common atgrade garage. The townhouse blocks generally front on to condominium roadways, other residential blocks within the Site, amenity areas, or adjacent lands.

3.3 Cart Distribution

The distribution of carts for each residential block was based on the material volume calculations outlined in **SECTION 2.2.** The volumetric calculations assumed alternating bi-weekly (i.e., every two (2) weeks) collection of BB recyclables and garbage, as well as weekly collection of organics.

The back-to-back townhouse blocks are to be assigned enough carts for the number of units within each block, as summarized below.

| Cart Distribution per Back-to-back Townhouse Block | | | | | | |
|--|--------------------|--------------------|-------------------------|-------------------------------------|--------------------------------|--|
| Block | Number of Units | Material Type | Collection Frequency | Estimated Material Volume (L) | Proposed Cart Volume (L) | Number of Carts Required (per Block) |
| | 14 | BB Recyclables | Bi-weekly | 2,002 | 360 | 6 |
| A, C, D, F | | Organics | Weekly | 112 | 240 | 1 |
| | | Garbage | Bi-weekly | 1,512 | 360 | 5 |
| | | BB Recyclables | Bi-weekly | 1,716 | 360 | 5 |
| B, E, J | 12 | Organics | Weekly | 96 | 240 | 1 |
| | | Waste | Bi-weekly | 1,296 | 360 | 4 |
| | 18 | BB Recyclables | Bi-weekly | 2,574 | 360 | 8 |
| G, I | | Organics | Weekly | 144 | 240 | 1 |
| | | Garbage | Bi-weekly | 1,944 | 360 | 6 |
| | | BB Recyclables | Bi-weekly | 2,860 | 360 | 8 |
| н | 20 | 20 Organics Weekly | 160 | 240 | 1 | |
| | | Garbage | Bi-weekly | 2,160 | 360 | 6 |
| | 16 | BB Recyclables | Bi-weekly | 2,288 | 360 | 7 |
| K, L | | Organics | Weekly | 128 | 240 | 1 |
| | | Garbage | Bi-weekly | 1,728 | 360 | 5 |

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It is anticipated the carts specified above would be provided by the Region. It is noted the Region does not provide a 240 L volume cart for organics collection. These carts, therefore, would be sourced from a commercial manufacturer. The organics carts procured by the condominium corporation are to be American National Standards Institute (ANSI) compliant and designed to empty into waste collection vehicles with ANSI-approved lifters. The maximum load of a 240 L organics collection cart should not exceed 109 kg, they must be green in colour, and the Region will not be responsible for either the repair or replacement of damaged carts.

3.4 Material Transfer & Collection

Each back-to-back townhouse block is to receive enough carts for each material stream as outlined in SECTION 3.3. Cart sizing for all back-to-back townhouse blocks is to be as follows; BB recyclables – 360 L, organics – 240 L, and garbage – 360 L. The carts are to be stored in dedicated material storage areas located within each common atgrade garage. Residents are to access the material storage areas for transfer of materials from each residence to the dedicated carts.

3.4.1 Material Storage Areas

Dedicated material storage areas are to be established within the common at-grade garages of each back-to-back townhouse block. A schematic of waste storage areas within a typical back-to-back block common basement is presented as **FIGURE 1**. Images of a typical material storage area are included in **APPENDIX B**, for reference. The material storage areas are to consist of dedicated, fully enclosed rooms accessible to all residents of each back-to-back to-back townhouse block. Carts are to be contained completely within the material storage areas. Each area would be separated from the garage area via doors. The material storage areas could be labeled on the exterior of each door to indicate the type of material to be stored in each room.

3.4.2 Material Transfer Methodology

Residents of the back-to-back townhouses are to transfer the materials generated from each unit to the carts located in the designated material storage areas. Property management is to transfer the carts from the material storage areas to the designated areas along condominium roadways no earlier than 7:00 p.m. on the evening prior to collection day, and no later than 7:00 a.m. on the morning of collection day. Following collection, property management is to return each cart to the designated material storage area within the at-grade garage of each back-to-back townhouse block.

3.4.2.1 Bulky Items

Residents of the back-to-back townhouses can transport bulky items to the designated collection area on the designated collection day. Alternatively, residents can contact property management to arrange transport of bulky items by property management to the designated collection point on the designated collection day.

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3.4.2.2 Restrictions to Visitor Parking

The placement of carts along condominium roadways will not require either restrictions to identified visitor parking spots or the closure of these parking spots on waste collection days.

3.4.3 Material Collection

A schematic for the collection of BB recyclables, garbage, and organics for each residential block is presented in the Recyclables and Organics Collection Plan and the Waste and Organics Collection Plan (Figures 2 and 3, respectively). It was assumed collection of materials is to be provided by the Region, using an automated side loading vehicle(s).

Per APPENDIX A, the orientation of the condominium roadways within the Development is not conducive to continuous forward motion of the collection vehicle due to turning radii and spatial limitations. Therefore, the collection vehicle is to enter the Development collecting materials in the vicinity of Block I. The collection vehicle is then to reverse into the driveway between Blocks C and D and subsequently collect materials in the vicinity of Block C. The collection vehicle is then to reverse again into the driveway between Blocks C and D and proceed to towards the exit of the Development, while collecting materials in the vicinity of Blocks K and L. It is noted the driveway between Blocks C and D is not a through road and therefore traffic is expected to be limited. As an added safety precaution, property management staff are to be available for spotting the collection vehicle during reverse movements.

Bulky items are to be collected, as required, on days scheduled for garbage and organics collection, such that sufficient area (10 square metres) is available for staging/collection of these items.

4 STANDARDS UPDATE

The Region is currently proposing to update the Standards such that the design requirements address the Provincial Growth Plan, which includes intensification, compact urban form, and redevelopment, as well as to promote safe and efficient collection service and increasing waste diversion through the Region's Roadmap to a Circular Economy long-term plan.

Implementing concepts such as intensification and compact build form present challenges to satisfying the current waste storage/staging area requirements, as well as collection vehicle size/access requirements. Updates to the Standards are to include considerations for smaller collection vehicles, as well as revised turning movements, route requirements, etc.

The Development, as currently proposed, supports the concepts of intensification, compact urban form, and redevelopment. The Plan, as outlined herein, endeavors to satisfy the current Standards to the extent practical. However, the proposed updates to the Standards (smaller collection vehicles and associated turning radii) would incorporate further efficiency with respect to waste collection within the proposed design of the Development. It is anticipated the Plan could be amended based on the results of the Standards updates, when implemented.

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5 STATEMENT OF QUALIFICATIONS AND LIMITATIONS

This Report has been prepared for a specific purpose and use, as outlined within the Report. The scope of the undertaking was initially provided in a proposal submitted by RWDI AIR Inc. (RWDI) to Dunpar Developments (Dunpar). The proposal (subject to any documented scope changes requested by Dunpar) constitutes an agreement between RWDI and Dunpar.

RWDI relied in part, upon the data, information, specifications and documentation (Data) provided by Dunpar as well as third parties. It is assumed by RWDI that the Data provided are complete and accurate. RWDI was not retained to, nor has it conducted any independent verification of the accuracy, completeness or suitability of the Data. As such, RWDI assumes no liability for losses, damages, or claims of any nature arising from inaccurate, incomplete or unsuitable Data provided on this project. Dunpar by receipt of this Report agrees to indemnify and hold harmless RWDI with respect thereto.

It is important that the reader of this Report, recognize that subsurface, environmental and/or geotechnical conditions may vary geographically and temporally. This is a natural phenomenon, which is not fully accommodated in the limited testing conducted by RWDI. In addition, the analysis of the collected data, by necessity, incorporates simplifying assumptions of site conditions and analytical solutions that assume uniformity in site conditions. The opinions, conclusions, and recommendations contained within the Report therefore represent RWDI's professional judgment in-light of these limitations.

This Report is to be considered confidential and is for the sole use of Dunpar. As such, the Report shall not be relied upon by third parties, except where agreed in writing between RWDI and Dunpar; where required by law; or where used for governmental review. RWDI accepts no responsibility, and denies any liability whatsoever, to parties other than Dunpar who may obtain access to the Report, for any injury, loss, or damage suffered by such parties arising from their use of, reliance upon, decisions or actions based on the Report or any of its contents, except to the extent where those parties have obtained prior written consent of RWDI to use and rely upon the Report and its contents. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report are subject to the terms thereof.

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6 CLOSURE

We trust that this Solid Waste Management Plan for the 2620 Chalkwell Close development in Mississauga, Ontario for Dunpar Developments is satisfactory. Please do not hesitate to contact us with any questions you may have.

Yours very truly,

RWDI AIR Inc.

Timothy Boc, B.E.S. Senior Scientist | Technical Team Leader | Associate

Peter-James Mauro, P. Eng., QP _{ESA} Senior Technical Director | Practice Area Leader – Geosciences, S2S & GHG |Associate

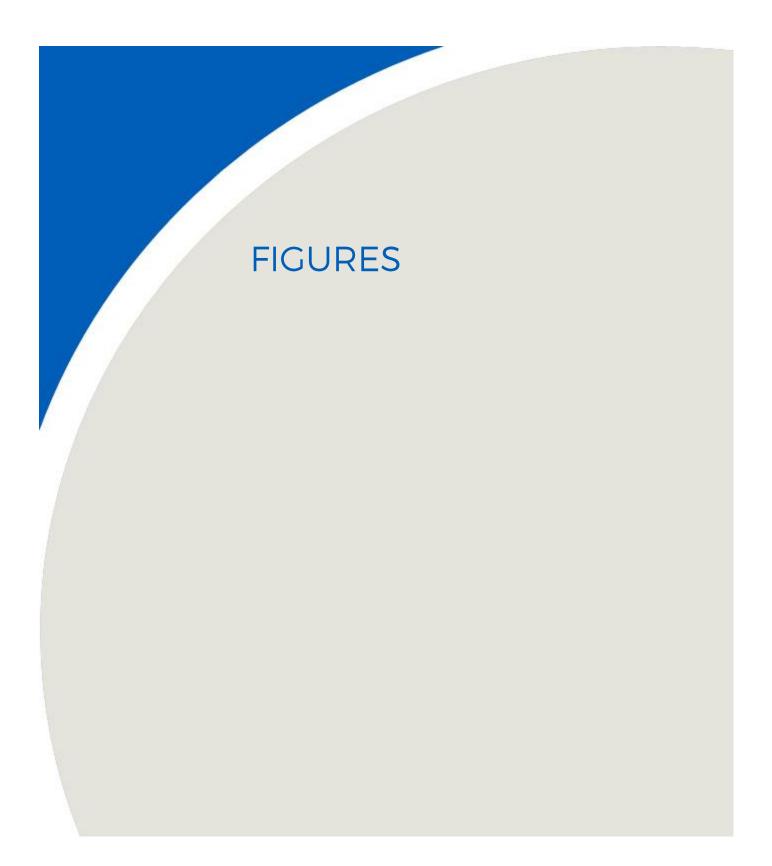
Attach.

Walmsley Environmental

MSUblushy.

David A S Walmsley, RPP, MCIP, EP Principal





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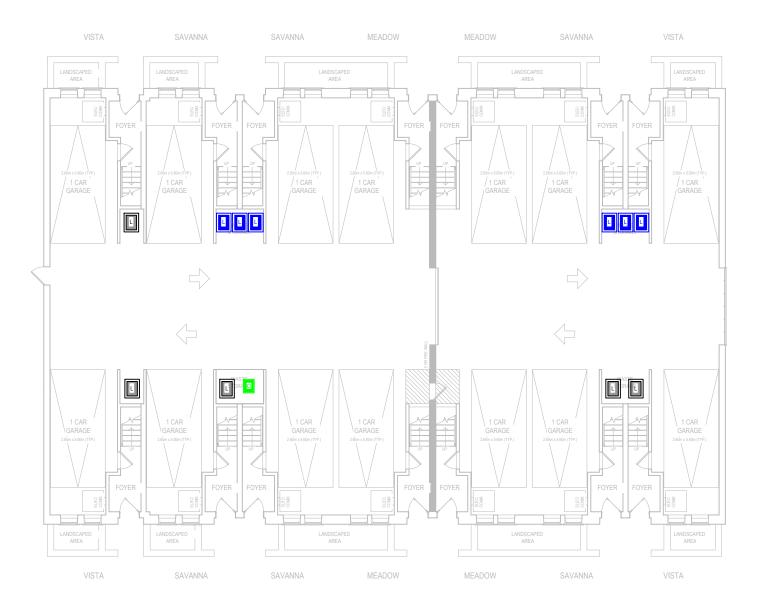
- 360 L CART RECYCLABLES

PROPOSED COLLECTION ROUTE

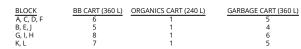
- 240 L CART ORGANICS
- 360 L CART GARBAGE

COLLECTION VEHICLE

NOTES:



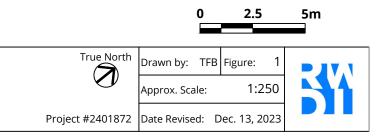
1. NUMBER OF CARTS FOR EACH BACK-TO-BACK TOWNHOUSE BLOCK IS AS FOLLOWS.



- 2. OWNERS OF BACK-TO-BACK TOWNHOUSES TO BE RESPONSIBLE FOR TRANSFERRING MATERIAL TO THE DESIGNATED MATERIAL STORAGE ROOMS.
- 3. PROPERTY MANAGEMENT TO BE RESPONSIBLE FOR TRANSPORTING CARTS FROM THE MATERIAL STORAGE ROOMS WITHIN THE BACK-TO-BACK TOWNHOUSE BLOCKS TO THE DESIGNATED COLLECTION AREAS ALONG CONDOMINIUM ROADWAYS ON THE EVENING BEFORE COLLECTION DAY. UPON COLLECTION, PROPERTY MANAGEMENT TO BE RESPONSIBLE FOR RETURNING CARTS TO THE ORIGINAL LOCATION.
- 4. OWNERS OF BACK-TO-BACK TOWNHOUSES TO BE RESPONSIBLE FOR TRANSFERRING BULKY ITEMS TO THE DESIGNATED STORAGE AREAS.
- 5. PROPERTY MANAGEMENT TO BE RESPONSIBLE FOR TRANSPORTING BULKY ITEMS TO THE DESIGNATED BULKY ITEM COLLECTION AREA ON COLLECTION DAY.
- 6. SITE PLAN PROVIDED BY DUNPAR DEVELOPMENTS (2023).

Typical Staging Plan

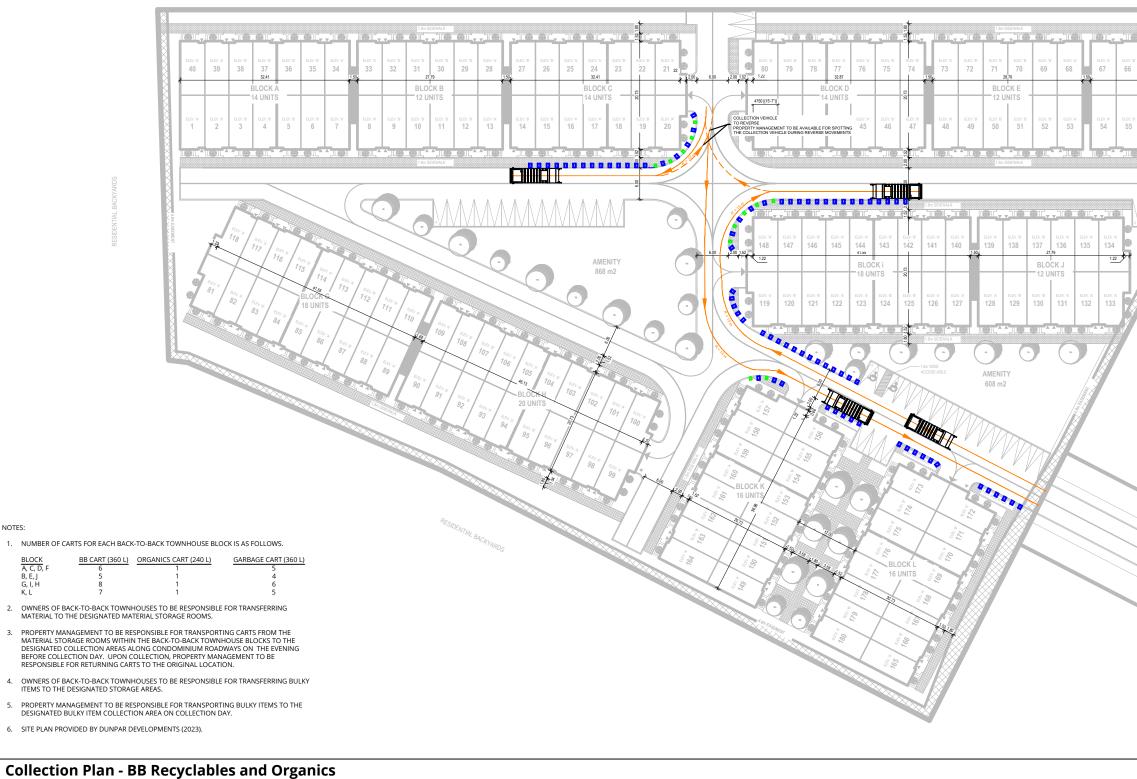
Solid Waste Strategy, 2620 Chalkwell Close, Mississuaga, ON



LEGEND:

- 360 L CART RECYCLABLES
- 240 L CART ORGANICS
- PROPOSED COLLECTION ROUTE _

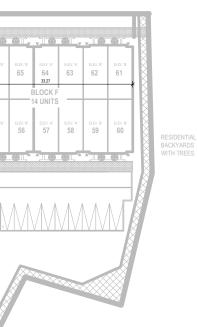
COLLECTION VEHICLE



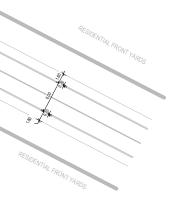
Solid Waste Strategy, 2620 Chalkwell Close, Mississuaga, ON

NOTES:

BLOCK A, C, D, F B, E, J G, I, H K, L



RESIDENTIAL BACKYARDS

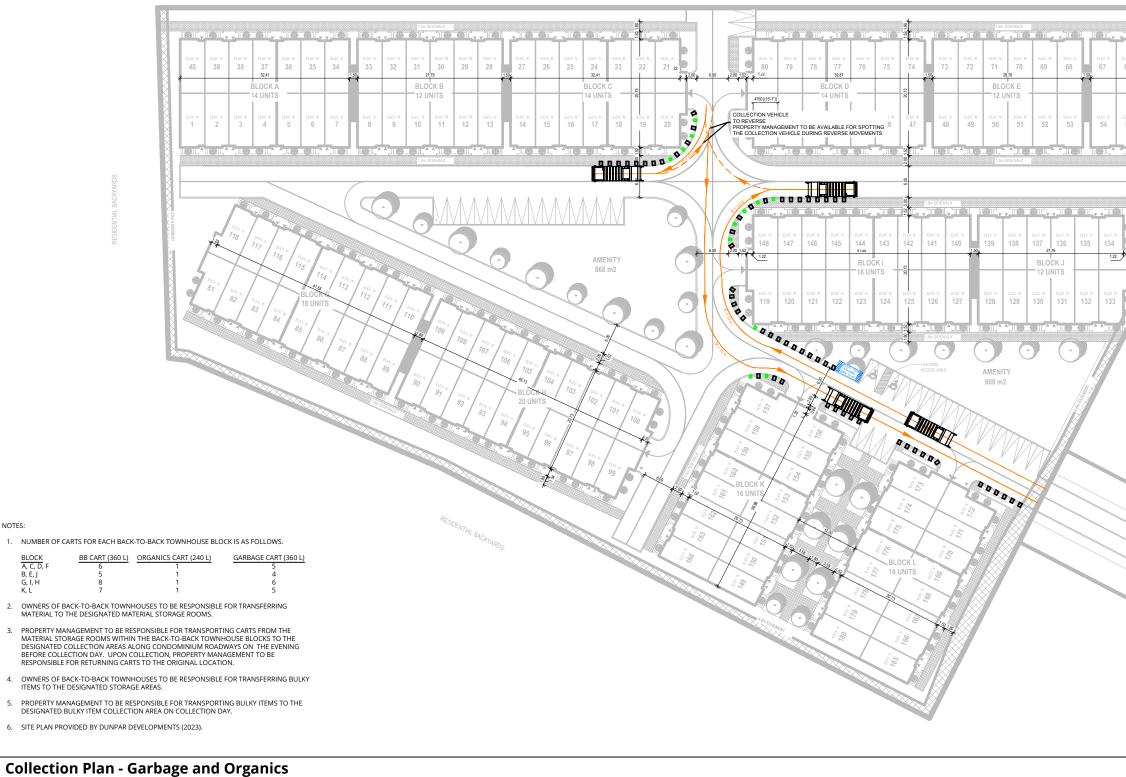


| | 0 | 15 | 30m |
|------------------|-----------------|--------------|-----|
| True North | Drawn by: TFB | Figure: 2 | |
| | Approx. Scale: | 1:250 | |
| Project #2401872 | Date Revised: D | ec. 14, 2023 | |

LEGEND:

- 360 L CART GARBAGE
- 240 L CART ORGANICS
- PROPOSED COLLECTION ROUTE _

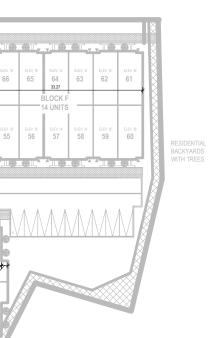
COLLECTION VEHICLE



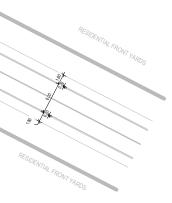
Solid Waste Strategy, 2620 Chalkwell Close, Mississuaga, ON

NOTES:

BLOCK A, C, D, F B, E, J G, I, H K, L



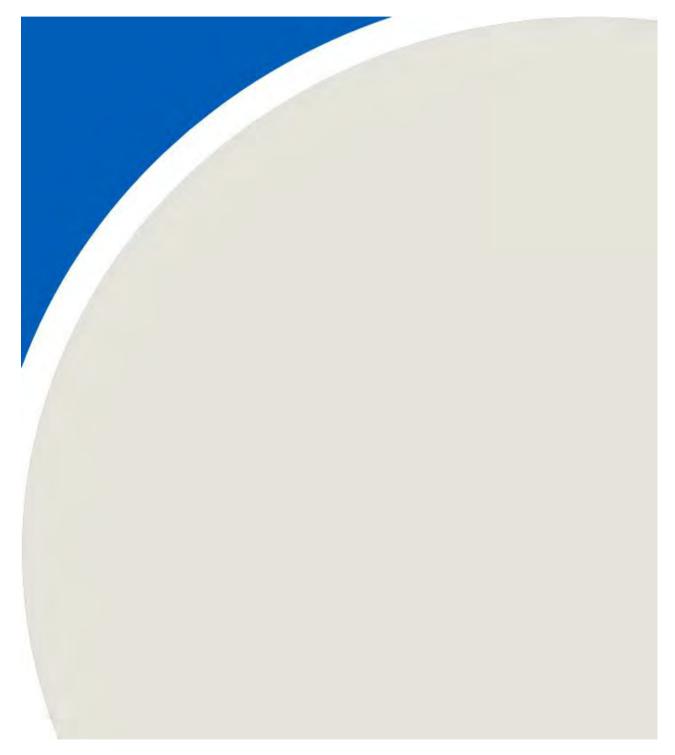
RESIDENTIAL BACKYARDS

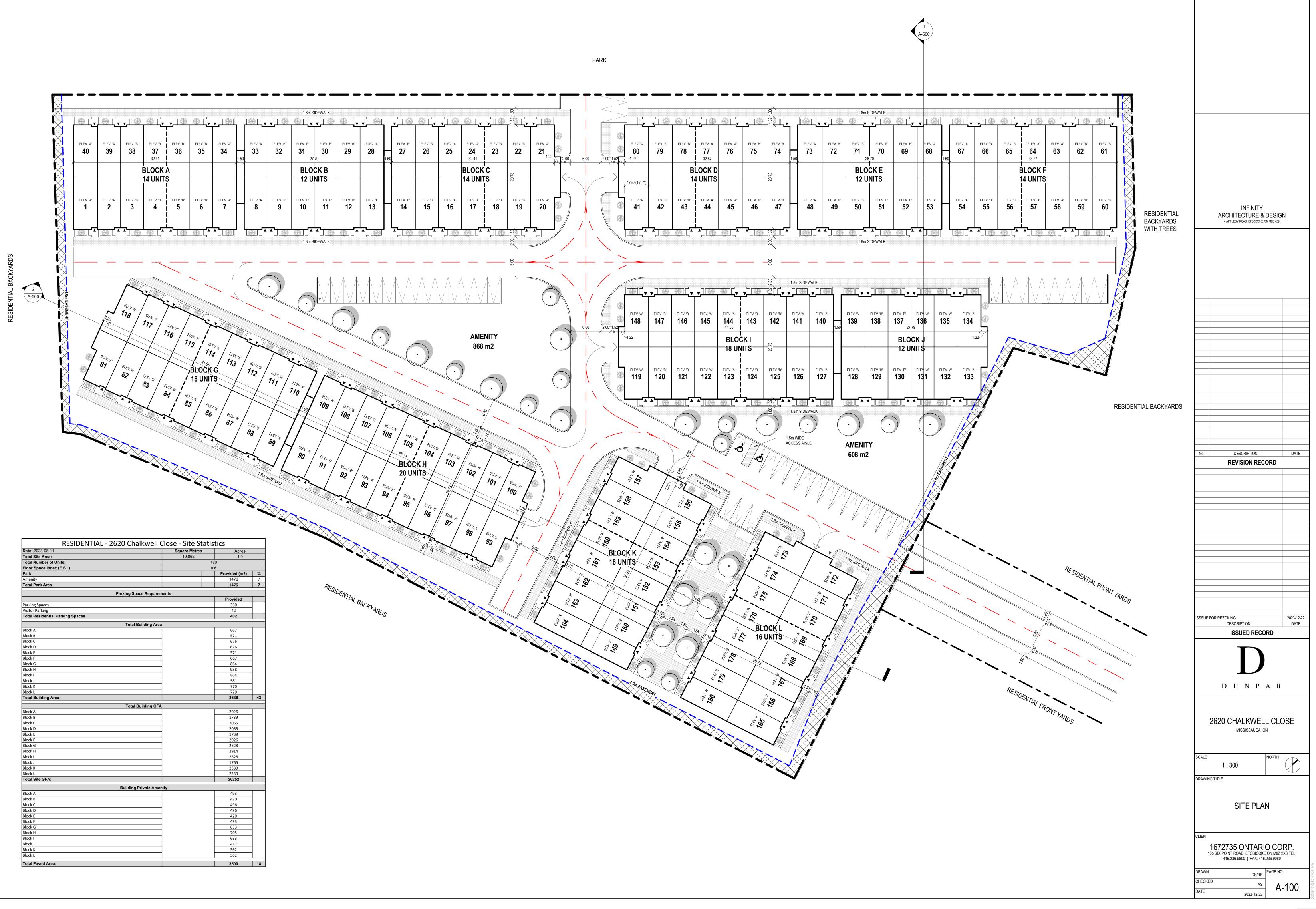


| | 0 | 15 | 30m |
|------------------|---------------------------------|-----------|-----|
| True North | Drawn by: TFB Approx. Scale: | Figure: 3 | KW |
| Project #2401872 | | | |



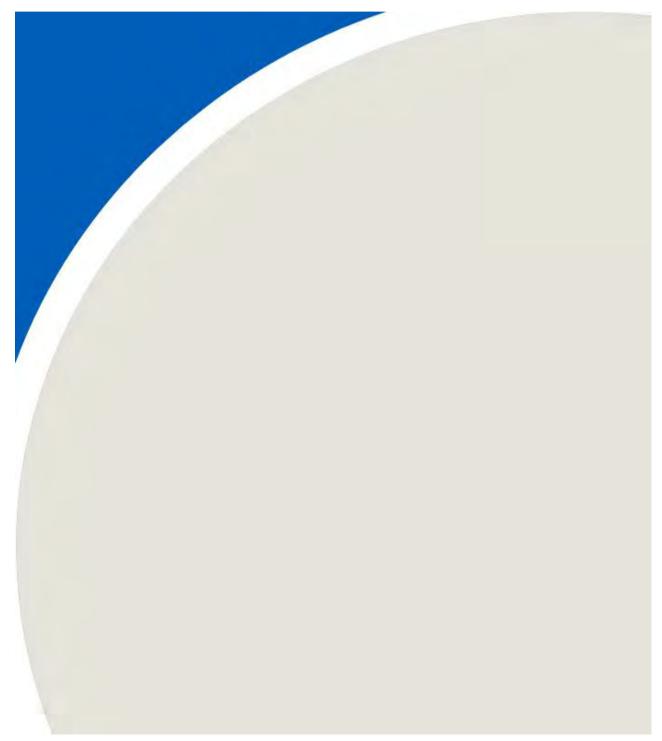
APPENDIX A







APPENDIX B





| EXAMPLE MATERIAL STORAGE ROOM IMAGES | FIGURE NUMBER B-1 | PROJECT NUMBER 2401872 | |
|--------------------------------------|-----------------------------|---------------------------|--|
| 2620 Chalkwell Close | APPROX. SCALE | DATE REVISED | |
| Dunpar Developments | NTS | 13/12/2023 | |
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DATE PLOTTED: December 13, 2023