TECHNCIAL MEMORANDUM

ISSUED FOR USE

To:	Mark Palmieri De Zen Realty Company Limited .	**Date:**	April 17, 2024
c:		**Memo No.:**	02
From:	David Walmsley Walmsley Environmental	**File:**	WE2024-05
Subject:	**Solid Waste Management Plan for the Development at 98 Joymar Drive, City of Mississauga, Ontario**		

1.0 INTRODUCTION

Walmsley Environmental (WE) in association with RWDI Air Inc. (RWDI) was retained by De Zen Realty Company Limited (De Zen) to prepare a Waste Management Plan (WMP) to support the development at 98 Joymar Drive in the City of Mississauga ON.

Approval of the application will require that the Region's Waste Management staff sign off on a Waste Management Plan for the development which outlines how the system and infrastructure for the transfer, storage, staging and collection of Blue Box (BB) recyclables and mixed waste will be designed and operated in compliance with Peel's Waste Collection Design Standards Manual, 2020 (WCDSM). In accordance with the Standards Manual, the Region will provide front-end collection of recyclables and garbage subject, in part, to the following key conditions:

- Identified vehicle access and egress routes.
- Minimum turning radius of 13 metres (m) from the centre line of turns on the internal laneways.
- Minimum internal roadway width of 6 m.
- Minimum straight head-on approach to the collection point of 18 m.
- Minimum clear height of 7.5 m from the concrete pad comprising the floor of the collection point which must be clear of sprinkler systems and ducts and should be large enough to accommodate the set-out of the required number of bins without jockeying being required for collection.
- An area of 10 m^2 for both the storage and set out of bulky items.
- Enough space for the storage of both Blue Box (BB) recyclables and garbage bins.

The Plan, outlined herein, presents the calculated waste material quantity and characteristics that are anticipated to be generated from the development and presents a plan for the storage and collection of the generated waste materials in compliance with the Region's Waste Collection Design Standards.

1.1 Summary Description of Proposed Development

The development will consist of a multi - residential complex comprised of two towers with podiums and a third separated building. There is no commercial space identified. Development of the WMP at this stage of the land use approvals process is

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critical in ensuring that the preliminary design of the complex considers all the factors for the effective, safe development of infrastructure and transfer protocols for the management of residential solid waste which will be acceptable to the Region of Peel.

1.2 Objectives of the Waste Management Plan

The objectives of the Plan are as follows:

To present calculations for the volume of BB recyclables and garbage that will be collected from residences in the complex once developed.

To determine the number of bins required to provide for the storage and collection of waste from the building.

To develop a plan, with accompanying drawings in pdf and CAD format, for the receipt, transfer, set out and collection of waste that provides for the efficient and effective storage, transfer and transport of these materials on each collection day. The drawings will illustrate the waste receipt and storage room located in the development, and the transfer of full waste bins to the adjacent staging and collection facility. The drawing also depicts the access and egress of a collection vehicle to the collection point.

To identify the storage staging and collection of oversized (bulky) materials within a designated $10m^2$ area within both the storage room and the collection facility.

The quantity of waste material, in kg/hh/year, was obtained from the Region of Peel's Waste Management Department. Data on the composition of the waste generated from multi-residential households was obtained from the Continuous Improvement Fund (CIF) Project No.872: "Multi-Residential Audits & Superintendent Training, City of Toronto, 2016". This data was used to calculate anticipated volumetric requirements for the storage of generated materials, as well as for staging prior to collection.

2.0 MATERIAL QUANTITIES, COMPOSITION AND VOLUME

As a first step in the design of the Plan for the development, the quantity of waste materials generated from the residential suites was calculated for BB recyclables and mixed waste. The Region does not collect source-separated organics (SSO) from multi residential developments. Our volumetric calculations, therefore, have been completed for just the BB recyclables and mixed waste (garbage) streams. The garbage stream will be compacted for the subject development. This will significantly reduce the volume of these materials and, therefore, the number of bins needed for storage, staging, and collection.

Please be advised that a table is included in the Region's WCDSM, 2020, identifies the number of 3 yd and 4 yd waste bins needed to accommodate the materials from a specified number of residential units in a multi-residential development. We understand that the data used to establish this information is somewhat dated. The methodology described in the following sections was developed by our team three years ago based on Peel's monitoring data for the generation of Blue Box recyclables, organics, and mixed waste. The calculations undertaken are based on data and factors that are generally accepted in the solid waste sector. We have found that the results have provided an acceptable basis for the waste management planning exercise at this stage in the development-approval process.

2.1 Material Quantities and Composition

The proposed development will create a multi - residential community comprised of condominium apartment residences with amenities and retail uses on the ground floor. The quantity of waste generated by each household in a multi-residential community has been identified by the Region in the most-recent year of its annual waste-generation monitoring program (2021) to be 681 kg/hh.

The Region's data has been broken down into total Blue Box (BB) recyclables (fibers, containers, etc.) organics and mixed waste (garbage). Over the 10-year period provided by the Region's data, the composition of the materials has been comprised of about 20% BB recyclables and 80% mixed waste including organics. For the purposes of this Plan, we have projected that the diversion of recyclables from the waste stream will increase to 30%. The quantity of BB recyclables, therefore, would equal 205 kg. per household/year and the quantity of mixed waste would equal 478 kg. per / household.

According to subsection 3.5 (c) of Peel's By-Law to regulate the collection of waste (By-Law 35-2015) the Region collects mixed waste twice per week from multi-residential complexes on the scheduled collection days and according to subsection 3.6 (a) BB recyclables are collected on a weekly basis. The amount of each material type that would be generated on a weekly basis from each apartment suite or household (hh) in the development was determined by multiplying the annual total (in kg.) by the projected % composition and dividing that by 52 weeks.

The calculations are as follows:

BB recyclables, (681 x 0.30/52) = 4 kg / hh/ weekly collection.

Mixed waste, (681 x 0.70/52) = 9.2 kg /hh/ week or about 5 kg / hh per twice-weekly collection.

The quantity of recyclables and mixed waste generated per collection day from the building is:

Phase 1, Tower A:

- BB recyclables: (4 kg/hh/week x 204 hh) = 816 kg/weekly collection.
- Mixed waste: (5 kg/hh/collection x 204 hh) = 1,020 kg/collection x 2 = 2,040 per week.

Phase 2A, N. Bldg. Podium:

- BB recyclables: (4 kg/hh/week x 173 hh) = 692 kg per weekly collection.
- Mixed waste: (5 kg/hh/collection x 273 hh) = 865 kg/ per bi-weekly collection

Phase 2B, N. Bldg. Podium:

- BB recyclables: (4 kg/hh/week x 180 hh) = 720 kg per week collection.
- Mixed waste: (5 kg/hh/collection x 180 hh) = 900 kg per bi-weekly collection

Phase 3, South Bldg.:

- BB recyclables: (4 kg/hh/week x 203 hh) = 812 kg per weekly collection.
- Mixed waste: (5 kg/hh/collection x 203 hh) = 1,015 kg per bi-weekly collection

Phase 4, Tower B:

- BB recyclables: (4 kg/hh/week x 261 hh) = 1,044 kg per weekly collection.
- Mixed waste: (5 kg/hh/collection x 261 hh) = 1,305 kg per bi-weekly collection.

These calculations have been used in the volumetric analyses provided in the following section of this Plan.

2.2 Material Volume Calculations

The volume requirements for storage/collection containers for BB recyclables and mixed waste were determined by dividing the weekly amount for recyclables by a density factor for these materials of 70 kg/m^3 and the twice-weekly amount for mixed waste by a compacted density factor of 500 kg/m^3 then multiplying by 1,000 / 765 to generate a required volume in cubic yards (yds).. The density factors are based on recently published data.

The calculations are as follows:

Phase 1, Tower A:

- BB recyclables: (816/70) x 1000/ 765 = 15 yds per week requiring four, 4 yd bins.
- Mixed waste: (1020/500) x 1000 / 765 = 3.yds per bi-weekly collection requiring one, 3 yd bin

Phase 2A, N. Bldg. Podium:

- BB recyclables: (692/70 x 1000 / 765) = 13 yds per week requiring five, 4 yd bin
- Mixed waste: (865/500 x 1000/765 = . 3 yds per bi-weekly collection requiring one, 3 yd bin

Phase 2B, N. Bldg. Podium:

- BB recyclables: (720/70 x 1000/765 = 13 yds per week requiring five, 4 yd bins
- Mixed waste: (900/500 x 1000/785 = 3 yds per bi-weekly collection requiring one, 3 yd bin

Phase 3, South Bldg.:

- BB recyclables: (812/70 x 1000/765 = 15 yds per week requiring four, 4 yd bins
- Mixed waste: (1015/500) x 1000/765 = 3 yds per bi-weekly collection requiring on, 1 yd bin

Phase 4, Tower B:

- BB recyclables: (1044/70) x 1000/765 = 20 yds per week requiring five, 4 yd bins
- Mixed waste: (1305/500) x 1999/765 = 3 yds per bi-weekly collection requiring one, 3 yd bin

Since recyclables and garbage collection will be provided by way of front-end loaders, bins are the container of choice for the development. The size of front-end loaded containers is typically expressed as “cubic yards” or “yd”. The storage capacity required to accommodate the BB recyclables and mixed waste generated from the suites in the building has been calculated by dividing the volume in L by 765 to convert the value to cubic yards (yd).

An additional recyclables and uncompacted mixed waste bin have been included in the counts to provide for the continued transfer of the material during each collection day.

3.0 MATERIAL HANDLING-DESIGN CONSIDERATIONS

The waste material handling for the proposed development was 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.

3.1 Applicable Waste Collection Standards

The design standards applicable to the subject development are summarized in section 1 of this report. In addition, **Section 4** of the WCDSM, which applies to multi-residential complexes, states that:

- Solid waste from the apartments will be collected in a dedicated room, then transferred to the designated garbage staging and collection facility.
- BB recyclables stream cannot be compacted after having been received via the materials chutes.
- Separate chutes will be provided for BB recyclables and garbage unless a single chute can be equipped with an automated mechanical separation system to direct materials into respective front-end bins. These materials will be received in front-end bins in the dedicated "garbage" room on the ground floor of the development.
- Collection areas will be provided on the development property which will be designed and constructed in compliance with the following requirements:

    - A minimum width and depth of 3 m is required for each front-end bin.
    - A minimum of 10 m^2 is required for the storage of bulky items.
    - A conditional vertical distance at the collection point of about 7.5 m to accommodate the fully extended forks of the collection vehicle during loading of the waste materials.
    - A minimum straight-line distance of 18 m to the collection point.
    - A turning radius of 13 m to access and egress the collection point.
    - Internal roadways will be constructed of a hard surface material and designed to support a minimum of about 35 tonnes or the weight of the fully loaded waste collection vehicle to be used.
    - A maximum grade along the waste collection vehicle access route of 8 percent.
    - If the waste collection vehicle is required to drive onto or over a supported structure (such as an air grate, transformer cover, or underground parking garage) the Region will be provided with a letter from a professional engineer (licensed by Professional Engineers Ontario) certifying that the structure can safely support a fully loaded Waste Collection Vehicle weighing about 35 tonnes.
    - Outside the collection point, a clear height of 4.4 metres from the top of the access road, along the waste collection vehicle access and egress route will be provided.

3.2 Material Staging and Collection

3.2.1 Staging

Residents in each of the apartment suites will dispose of their BB recyclables and garbage via a chute-based system. As the materials are received in the garbage room, located on ground floor, they will be directed to either the recycling or mixed waste front-end bins. There is sufficient space provided for the storage of recyclables and uncompacted mixed waste between collections. On each collection day, the bins will be transported, by building management staff, from the storage rooms to the adjacent staging/collection facility.

The waste materials from the residences will be placed at the designated waste staging pad before 7:30 a.m. on the scheduled waste collection day. Waste materials will be set out in the staging area where the bins will have to be jockeyed for collection. The staging area identified on the drawing provides enough space for the bins as well as room for jockeying the bins into position for collection. There is also enough space to accommodate the 10 m^2 area needed to set out bulky items as required by the Region for collection on a Thursday as required.

3.2.2 Collection

The routing of the collection vehicle has been illustrated in Figures 2 & 3 that accompany this WMP report.

4.0 CONCLUSIONS

The subject Waste Management Plan supports the conclusion that the development at 98 Joymar Drive, as proposed, will provide enough space for the storage, staging and collection of BB recyclables and uncompacted mixed waste from the residential suites.

In Closing

We trust this report meets your present requirements.

Respectfully submitted,
Walmsley Environmental

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