A. INTRODUCTION

This chapter examines the Proposed Actions' potential for significant adverse impacts on solid waste and sanitation services. According to the ~~2020~~2021 *City Environment Quality Review (CEQR) Technical Manual*, a solid waste and sanitation services assessment is intended to determine whether a project has the potential to cause a substantial increase in solid waste production. Such an increase may overburden available waste management capacity or otherwise be inconsistent with New York City's Solid Waste Management Plan (SWMP) or with state policy related to the City's integrated solid waste management system.

As described in Chapter 1, "Project Description," the Applicant (a joint venture between Kaufman Astoria Studios, BedRock Real Estate Partners, and Silverstein Properties) is seeking a series of land use actions, including zoning map amendments, zoning text amendments, and special permits (the Proposed Actions), to facilitate the Applicant's intended development and programming. The area subject to the Proposed Actions is the five city blocks bounded by 35th Avenue to the north, 43rd Street/Northern Boulevard to the east, 36th Avenue to the south and 37th Street to the west (the "Project Area") in the Astoria neighborhood of Queens in Community District 1. The Project Area (Blocks 641, 668, 669, 670, and 671) contains 43 lots, of which 21 are controlled by the Applicant while the remaining lots are controlled by others. With the Proposed Actions, the Applicant-controlled lots would be controlled by a Large Scale General Development (LSGD) Special Permit and would contain the Proposed Development (referred to as the "Development Site"). The 22 lots outside of the Development Site that are not controlled by the Applicant would be rezoned with approval of the Proposed Actions (referred to as the "Additional Affected Area").

The Proposed Development (branded as the Innovation QNS project) would redevelop the Development Site with a series of mixed-use buildings and publicly accessible open spaces. Innovation QNS is intended to create a series of arts and cultural venues including a multi-purpose arts and culture center, a re-envisioned multiplex movie theater that would provide a state-of-the-art cinematic experience, galleries, artists' workshops and tech and general office space. In addition to art and cultural venues, the project would include eating and drinking establishments, a grocery store and world market and other local retail, service and community facility uses to support the new residential population, the existing business and residential community and provide a strong anchor for the Steinway Street and 35th Avenue commercial corridors.

In addition to the Proposed Development with approximately 2.9 million gsf of space, the Proposed Actions would facilitate the redevelopment of several projected development sites in the Additional Affected Area that are not controlled by the Applicant. These additional developments would include approximately 800,000 gsf of residential and commercial space, similar to the Proposed Development. Therefore, the Proposed Actions would facilitate the development of a total of approximately 3.7 million gsf in the Project Area.

To assess the potential effects of the Proposed Actions on solid waste and sanitation services, the detailed analysis in this chapter estimates the amount of existing solid waste generated on the Projected Development Sites identified in the Reasonable Worst Case Development Scenario (RWCDS) and provides a comparison of estimates under No Action and With Action conditions.

PRINCIPAL CONCLUSIONS

A preliminary analysis was conducted based on the methodology set forth in the *CEQR Technical Manual* and determined that the Proposed Actions would not result in a significant adverse impact on solid waste and sanitation services. The Proposed Actions would not directly affect a solid waste management facility. Development in the With Action condition would generate an increment above the No Action condition of approximately 82.8 tons per week of solid waste, of which 75.5 tons (91 percent), from residential and institutional uses, would be handled by the New York City Department of Sanitation (DSNY); 7.3 tons (9 percent), from commercial uses, would be handled by private carters. This incremental increase in solid waste correlates to the addition of approximately six additional truckloads per week of solid waste handled by DSNY and one truckload per week handled by private carters.

When compared with the solid waste generated by the No Action condition, the additional solid waste resulting from the With Action condition would constitute an increase that would not reach the level of impact significance, as it would be considered negligible relative to the approximately 12,260 tons of solid waste handled by the DSNY every day,[1] or the 13,000 tons handled by private carters. As such, the Proposed Actions would not result in an increase in solid waste that would overburden available waste management capacity. The Proposed Actions would also not conflict with, or require any amendment to, the City's solid waste management objectives as stated in the SWMP.

B. METHODOLOGY

According to the *CEQR Technical Manual*, projects with a generation rate of less than 50 tons (100,000 pounds) of solid waste per week would not result in a significant adverse impact to the city's waste management capacity, and do not warrant detailed analysis. Because the Proposed Actions would result in a net increase of more than 50 tons of solid waste per week, an assessment of solid waste and sanitation services is warranted. In addition, as the Proposed Development would result in more than 500 new residential units and per the *CEQR Technical Manual*, a discussion of the anticipated waste and recycling plans for collection is provided.

An assessment of solid waste/sanitation services is a density-based technical analysis; as a result, only development on identified projected development sites forms the basis of the analysis. The analysis describes existing and future New York City solid waste disposal practices (including the collection system and disposal methods) and estimates the solid waste generated by activities on the Projected Development Sites under existing conditions and in the No Action condition for the 2032 Build Year. The chapter also forecasts solid waste generation based on rates for typical land uses and activities, as provided in the *CEQR Technical Manual*, and assesses the effects of the Proposed Actions' incremental solid waste generation on municipal and private sanitation services in the With Action condition.

[1] About DSNY: https://www1.nyc.gov/assets/dsny/site/about

C. EXISTING CONDITIONS

DESCRIPTION OF CURRENT SOLID WASTE SANITATION SERVICES

DSNY is the agency responsible for the collection and disposal of residential and institutional solid waste in the City, while private carters collect solid waste from commercial and manufacturing uses. In addition to collecting municipal solid waste, refuse, and designated recyclable materials generated by residential and institutional uses, including schools, some nonprofit institutions, and many city and state agencies, DSNY collects waste from city litter baskets, street-sweeping operations, and lot cleaning activities. The DSNY collection fleet is composed of over 2,100 waste collection trucks, with the typical collection truck for refuse carrying approximately 12.5 tons of waste material and the typical recycling truck carrying about 11.5 tons of paper, or approximately 10.0 tons of metal, glass, and plastic containers. In total, DSNY collects approximately 9,703 tons per day of residential and institutional refuse and approximately 2,072 tons per day of recyclables.[2]

Commercial establishments (e.g., restaurants, retail facilities, offices, and industries) in New York City contract with private carters for collection and processing and/or disposal of various kinds of solid waste, including municipal solid waste construction and demolition debris, non-hazardous industrial wastes, and recyclables. According to the *CEQR Technical Manual*, commercial carters typically carry between 12 and 15 tons of waste material per truck. The City's businesses, whose waste is collected by private carting companies, generate approximately 13,000 tons of refuse each day.

Under New York City's mandatory Recycling Law (Tile 16 of the NYC Administrative Code, Chapter 3), DSNY has established and enforces rules requiring that certain designated recyclable materials be separated from household waste for separate collection. New York City residents are required to separate aluminum foil, glass, plastic, and metal containers, and newspapers and other paper waste from household waste for separate collection. Commercial establishments are also subject to mandatory recycling requirements. Businesses must source-separate certain types of paper waste, cardboard, metal items, and construction wastes. Food and beverage establishments must recycle metal, glass, and plastic containers, and aluminum foil, in addition to meeting the commercial recycling requirements.

DSNY delivers most of the refuse it collects to certain public or private solid waste management facilities known as transfer stations in the City or in adjoining communities for processing and transporting to out-of-city disposal facilities. Solid wastes that are not recycled, reused, or converted to a useful product locally must be exported from the City for disposal because New York City does not have public or private local disposal facilities such as sanitary landfills, construction and demolition debris landfills, traditional incinerators, or waste-to-energy resources recovery facilities. Similarly, commercial refuse and other solid waste that is not carted directly to disposal facilities are delivered to transfer stations for transport to disposal facilities. Non-putrescible waste such as construction and demolition debris typically is sorted at transfer stations, which remove clean fill materials, metal, and wood for recycling, and send the residue to landfills for disposal. Designated recyclable materials are delivered to privately operated materials recovery facilities (MRFs) in the City and surrounding communities.

[2] "DSNY Annual Report; New York City Municipal Refuse and Recycling Statistics: Fiscal Year 2020," https://dsny.cityofnewyork.us/wp-content/uploads/2020/08/about_dsny-collections-annual-2020.pdf

As required by New York State Law, the City has adopted a comprehensive SWMP for the long-term management of solid waste generated within its borders. The current SWMP was adopted in 2006 and covers the period through 2025. It is anticipated that City will amend the current plan after 2025 to build on the ongoing programs to prevent, reuse, recycle, and compost waste, pursuant to the requirements of the New York State Solid Waste Management Act. The SWMP estimates public- and private-sector waste quantities that must be managed over the planning period and identifies processing, transfer, and disposal capacity that will be necessary for such waste. According to the SWMP, the City's commercial solid waste generation is projected to increase to approximately 74,000 tons per week by the year 2025.[3] The amount of DSNY-managed waste is projected to increase to approximately 115,830 tons per week.[4]

The SWMP takes into account the objectives of New York State's solid waste management policy with respect to the preferred hierarchy of waste management methods, in order of preference: waste reduction, recycling, composting, resource conservation and energy production, and landfill disposal. The SWMP includes initiatives and programs for waste minimization, reuse, recycling, composting, and siting a new waste conversion facility to derive energy from waste, waste transfer, transport, and out-of-city disposal at waste-to-energy facilities and landfills.

With respect to commercial waste, the SWMP provides the capacity for barge export of certain amounts of commercial refuse from four converted DSNY marine transfer stations (MTSs); provides for barge export of construction and demolition waste from the existing DSNY MTS at West 59th Street in Manhattan; and requires rail export of commercial refuse from the three private transfer stations that also contract to handle DSNY refuse. The SWMP also includes more stringent restrictions on the siting and operation of commercial solid waste transfer stations.

SOLID WASTE GENERATION ON PROJECTED DEVELOPMENT SITES

The Projected Development Sites are currently occupied with primarily commercial, manufacturing/auto-related, and parking uses with some residential uses. Based on Citywide average rates for solid waste generation used in the SWMP (and provided in Table 14-1 of the *CEQR Technical Manual*), the existing uses on the Projected Development Sites generate a total of approximately 22.9 tons of solid waste per week. As shown in **Table 11-1**, approximately 99 percent—22.7 tons (non-residential) per week—of the existing solid waste generated is handled by private carters, and approximately 1 percent—0.2 tons per week—is handled by DSNY.

[3] Comprehensive Solid Waste Management Plan, September 2006; Attachment IV, Table IV 2-2.

[4] Comprehensive Solid Waste Management Plan, September 2006; Attachment II, Table II 2-6.

Table 11-1
Existing Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)[1]	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	7,512	9 households	41 per household	369	0.2
Retail	104,761	315 employees	79 per employee	24,885	12.4
Cinema	98,810	80 employees	79 per employee	6,320	3.2
Manufacturing/Warehouse/ Auto-Related	196,859	197 employees	72.5 per employee[2]	14,283	7.1
Total Solid Waste Generation				***45,857***	***22.9***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***369***	***0.2***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***45,488***	***22.7***

Notes:
[1] Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, unless otherwise noted.
[2] Manufacturing/Warehouse/Auto-related use generation rate uses average of retail and wholesale rate—72.5 lbs per worker, from *Gowanus Neighborhood Rezoning and Related Actions EIS*
Estimates of workers by use, as follows:
General retail: assume 3 employees per 1,000 sf.
Manufacturing/Warehouse/Auto-related: assume 1 employee per 1,000 sf.
Cinema employees: provided by Applicant

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

As detailed in Chapter 1, "Project Description," in the Future without the Proposed Actions (the No Action condition), the Development Site and Additional Affected Area are assumed to either remain generally unchanged from existing conditions or be redeveloped with uses that are as-of-right under existing zoning. In particular, the Applicant would redevelop the underutilized parcels on Blocks C and D to the maximum extent feasible under the existing zoning. On Projected Development Site C (Block 669), the Applicant would develop a 1-story, approximately 30,000 gsf grocery store. On Projected Development Site D (Block D), the Applicant would develop local retail uses on the 35th Street frontage (approximately 20,000 gsf) with a 1-story, approximately 68,000 gsf warehouse on the remainder of the site. Overall, solid waste generated by the Projected Development Sites would increase under the No Action condition, as compared to the Existing condition.

Under the No Action condition, approximately 37.7 tons of solid waste per week would be generated, compared with 22.9 tons per week under existing conditions. As shown in **Table 11-2**, the amount of solid waste handled by DSNY weekly would remain at 0.2 tons, and the amount of solid waste handled by private carters per week is expected to increase to 37.7 tons from the 22.7 tons generated under existing conditions.

Table 11-2
No Action Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)[1]	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	7,512	9 households	41 per household	369	0.2
Retail	136,042	409 employees	79 per employee	32,311	16.2
Cinema	98,810	80 employees	79 per employee	6,320	3.2
Supermarket	30,000	90 employees	284 per employee	25,560	12.8
Manufacturing/Warehouse/ Auto-Related	150,715	151 employees	72.5 per employee[2]	10,948	5.5
Total Solid Waste Generation				***75,508***	***37.9***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***369***	***0.2***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***75,139***	***37.7***

Notes:
[1] Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, unless otherwise noted.
[2] Manufacturing/Warehouse/Auto-related use generation rate uses average of retail and wholesale rate—72.5 lbs per worker, from *Gowanus Neighborhood Rezoning and Related Actions EIS*
Estimates of workers by use, as follows:
General retail/Supermarket: assume 3 employees per 1,000 sf.
Manufacturing/Warehouse/Auto-related: assume 1 employee per 1,000 sf.
Cinema employees: provided by Applicant

E. THE FUTURE WITH THE PROPOSED ACTIONS

In total, in the With Action condition, the Projected Development Sites (inclusive of the Proposed Development in the Development Site and the sites in the Additional Affected Area) would contain approximately 3.7 million gsf of space, an increase of approximately 3.3 million gsf above the No Action scenario. The With Action condition would include a total of approximately 3.1 million gsf of residential space (3,652 DUs, of which 914 would be permanently affordable pursuant to MIH), approximately 540,000 gsf of commercial space (retail, eating and drinking establishments, grocery store, PCEs, and the relocated cinema and potential automobile showroom), approximately 108,000 gsf of community facility space (e.g., day care, community center, and performing arts center), and approximately 1,633 parking spaces. The With Action condition would also include the 2.17 acres of publicly accessible open space to be constructed in the Development Site.

As shown in **Table 11-3**, the total solid waste generation under the Proposed Actions would be approximately 120.7 tons per week, which represents an additional 82.8 tons in weekly solid waste generation as compared with the No Action condition.

Table 11-3
With Action Solid Waste Generation on Projected Development Sites

Use	Floor Area (sf)	Population	Solid Waste Generation Rate (lbs/wk)[1]	Solid Waste Generation (lbs/wk)	Solid Waste Generation (tons/wk)
Residential	3,104,308	3,652 households	41 per household	149,732	74.9
Retail[2]	189,915	570 employees	79 per employee	45,030	22.5
Cinema	73,000	80 employees	79 per employee	6,320	3.2
Supermarket	30,000	90 employees	284 per employee	25,560	12.8
Office	250,070	1,000 employees	13 per employee	13,000	6.5
Community Facility[3]	107,720	123 employees	13 per employee	1,599	0.8
Total Solid Waste Generation				***241,241***	***120.7***
Solid Waste Handled by DSNY (includes residential and all CF uses)				***151,331***	***75.7***
Solid Waste Handled by Private Carters (all includes commercial and industrial uses)				***89,910***	***45.0***

Notes:
[1] Solid waste generation is based on Citywide average waste generation rates presented in Table 14-1 of the *CEQR Technical Manual*, unless otherwise noted.
[2] Includes retail and Physical Culture Establishment (PCE) space.
[3] Community Facility space includes medical office, performing arts center, daycare, and community center space, which are assumed to generate solid waste at the rate of commercial office space.
Estimates of workers by use, as follows:
General retail/Supermarket/PCE: assume 3 employees per 1,000 sf
Office/Medical Office: assume 4 employees per 1,000 sf
Cinema employees: provided by Applicant
Community Facility (performing arts, community center, daycare): assume 1 worker per 1,000 sf

As shown in **Table 11-3**, commercial uses under the Proposed Actions would generate approximately 45 tons of solid waste per week. Solid waste generated by commercial uses would be collected by private commercial carters, and commercial buildings developed under the Proposed Actions would be subject to mandatory recycling requirements for paper, metals, construction waste, aluminum foil, as well as metal, glass and plastic containers. Residential and community facility uses would generate approximately 75.7 tons of solid waste per week under the With Action condition (see **Table 11-4**). Solid waste generated by residential and community facility uses would be collected by DSNY trucks and would be served by existing DSNY collection routes. As a general practice, DSNY adjusts its operations to service the community. Residents will be required to participate in the City's recycling program for paper, metals, and certain types of plastics and glass.

Table 11-4
Comparison of Weekly Solid Waste Generation on Projected Development Sites (Existing, No Action, With Action Conditions)

	Existing Condition	No Action Condition	With Action Condition	Increment (No Action to With Action)
Total Solid Waste Generation (tons/wk)	22.9	37.9	120.7	82.8
Solid Waste Handled by DSNY (tons/wk)	0.2	0.2	75.7	75.5
Solid Waste Handled by Private Carters (tons/wk)	22.7	37.7	45.0	7.3

As shown in **Table 11-4**, compared with the No Action condition, the Proposed Actions would result in an approximately 75.5 ton increase in weekly solid waste handled by DSNY. This would represent approximately 0.07 percent of the City's anticipated future waste generation handled by DSNY (it is estimated that DSNY will manage 115,830 tons of solid waste for export, recycling

compost, and refuse per week by 2025), as projected in the 2006 SWMP. [5] Based on the typical DSNY collection truck capacity of approximately 12.5 tons, the new residential and community facility uses introduced by the Proposed Actions would be expected to generate solid waste equivalent to approximately six truckloads per week. This increase is not expected to overburden the DSNY's solid waste handling services.

Compared with the No Action condition, conditions with the Proposed Actions would result in an approximately 7.3 ton increase in weekly solid waste handled by private carters. This would represent approximately 0.01 percent of the City's anticipated future commercial waste generation, as it is estimated that private carters will carry 74,000 tons of solid waste per week by 2025, as projected in the SWMP. Based on the typical commercial carter capacity of between 12 and 15 tons of waste material per truck, the Proposed Actions would require roughly one additional collection truck per week compared with the No Action condition. There are more than 2,000 private carting businesses authorized to serve New York City, and it is expected that their collection fleets would be sufficiently flexible to accommodate this increased demand for solid waste collection. Therefore, the net increment in commercial solid waste handled by private carters would not overburden the City's waste management system.

Overall, the Proposed Actions would not conflict with the SWMP, or have a direct effect on a solid waste management facility. The Proposed Actions would generate a net increase of approximately six DSNY truckloads and one commercial carter truckload of refuse per week. At this time, the proposed location and method of storage of refuse and recyclables for the Proposed Development prior to collection has not been finalized; however, the applicant is evaluating a number of options and will work with DSNY to identify an appropriate waste management plan for the Proposed Development. The use of compactor containers and/or dumpsters is being considered to minimize or avoid bag placement at the sidewalks prior to curb-side pick-up collection, and balers are being considered in light of growing box deliveries. In addition, it is possible that some or all of the proposed buildings may participate in DSNY's voluntary organic waste collection program. The incremental solid waste generated by the Proposed Actions would not overburden the City's solid waste handling systems, and therefore the Proposed Actions would not have a significant adverse impact on the City's solid waste and sanitation services. ✷

[5] Comprehensive Solid Waste Management Plan, September 2006; Attachment II, Table IV 2-2, p. 4. Accessed August 8, 2016.