

Project North Stand Manchester

Operational Waste Management Strategy

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Glossary

Term	Definition
AD	Anaerobic Digestion
CFA	City Football Academy
EV	Electric Vehicle
F&B	Food and Beverage
FM	Facilities Management
GA	General Admission
MCC	Manchester City Council
MCFC	Manchester City Football Club
NPPF	National Planning Policy Framework
OWMS	Operational Waste Management Strategy
WEEE	Waste Electrical and Electronic Equipment

1 Introduction

1.1 Preamble

This Operational Waste Management Strategy (OWMS) has been prepared by Buro Happold on behalf of Manchester City Football Club (MCFC) (the Applicant) and in support of the proposed North Stand Manchester development (the Proposed Development).

The Applicant intends to submit an application for full planning permission to the Local Planning Authority (Manchester City Council (MCC)), which will cover the following:

- Expansion of the North Stand of the Etihad Stadium;
- Workspace;
- A new and enhanced MCFC club shop and a new museum;
- A covered fan zone with the intention to offer a year-round amenity outside matches; and
- A hotel.

The formal description of the Proposed Development and further detail on the proposals can be found in the planning statement and planning application form, both of which accompany the planning application.

The Proposed Development is located within the Etihad Campus, an area which includes the Etihad Stadium, the City Football Academy (CFA) training facility and the Co-Op Live Arena.

The red line boundary for the site is shown in Figure 1.1.

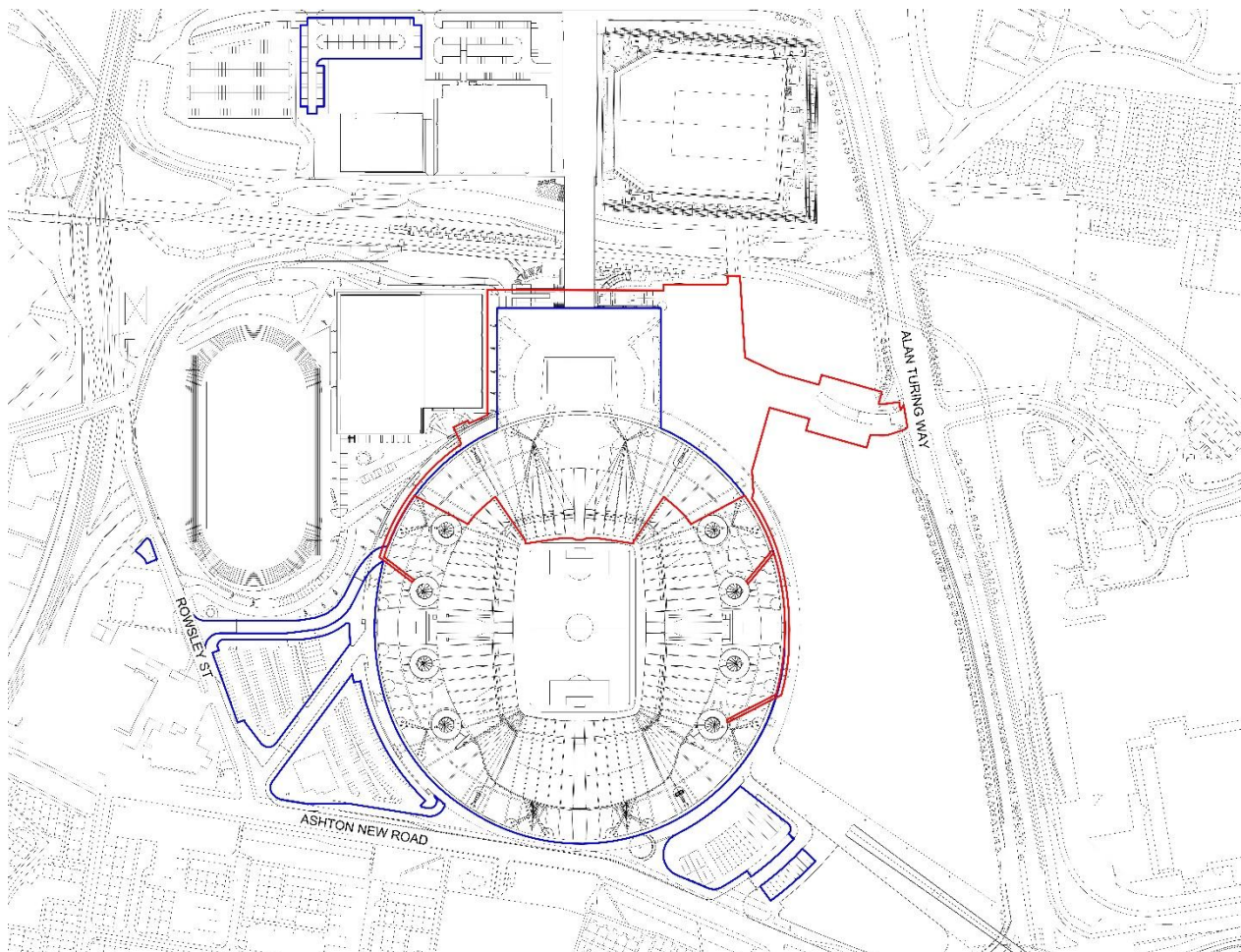


Figure 1.1 Site red line boundary

1.2 Purpose of Report

Both the Applicant and the design team acknowledge that waste management is an important element to consider when buildings are designed. Planning effectively for waste management will help the Proposed Development to operate efficiently, sustainably and safely, all while minimising adverse impacts on building performance, site users and the application site environment.

In line with this, the key objectives of this document are as follows:

- To provide a suite of measures for integrating the principles of the waste hierarchy and circular economy into the Proposed Development's design and operations;
- To provide an estimate of how much waste the Proposed Development will generate once operational;
- To help ensure that adequate spatial provision is made in the design for the clean and efficient storage and collection of waste;
- To allow waste and recycling to be easily collected, stored and managed by the Facilities Management (FM) team in a sustainable, efficient and discreet manner; and

- To ensure that national and local policies, as well as all of the Applicant's waste management aims and aspirations, are met. Relevant national, regional and local policies are detailed in full in Appendix A.

It should be emphasised that developing the waste strategy is an iterative process. In line with this, it is recommended that the OWMS is kept under review, ensuring that new waste management practices are considered and implemented once the Proposed Development becomes operational.

1.3 Report Structure

This report is broken down into the following sections:

- **The Waste Hierarchy and Circular Economy:** this section summarises the different initiatives the Applicant is already implementing to reduce waste generation and improve recycling rates. It also outlines some additional measures that the Applicant might consider implementing to complement these existing initiatives;
- **Relevant Waste Management Policy and Guidance:** this section provides a high-level summary of relevant waste management policies and guidance documents. A more detailed overview is included in Appendix A;
- **Waste Management Strategy:** this section outlines the proposed strategy for segregating, storing, moving, collecting and treating all operational wastes generated by the Proposed Development;
- **Waste Generation Estimates and Storage Requirements:** this section includes an estimate of the amount of waste generated by the Proposed Development. It also includes details of waste storage provision in the Proposed Development;
- **Conclusions:** this section summarises the proposed waste management strategy and highlights how it aligns with relevant policy requirements;
- **Appendix A – Waste Management Policy and Guidance:** this appendix includes a more detailed overview of relevant waste management policy requirements at the national, regional and local level; and
- **Appendix B – MCC Waste Management Strategy Proforma:** in line with MCC requirements, a waste management strategy proforma has been completed. This includes estimated waste volumes, details of internal and external waste stores, and details of waste transfer and collection operations.

2 The Waste Hierarchy and Circular Economy

2.1 Section Overview

The Applicant will promote the principles of the waste hierarchy (Figure 2.1) and a circular economy (Figure 2.2) across all aspects of its operations. The Proposed Development's waste management strategy will first look to prevent and reduce waste generation, before re-using, recycling or recovering value from discarded material. Only after these options have been deemed unfeasible should the safe treatment and final disposal of waste be considered.



Figure 2.1 The waste hierarchy

The Proposed Development's waste management strategy will facilitate staff, fans and guests in making sustainable choices and will look to move beyond the traditional linear approach of 'make, use, dispose'. Instead, a circular economy model will be promoted, with the aim of keeping resources in use for as long as possible, so that the maximum value possible can be extracted from them. In line with this ambition, attention will be paid to all stages of product packaging design and use, with the necessary provision made in the design and strategy to enable the effective segregation and recycling of materials.

The key principles of a circular economy model are shown in Figure 2.2.

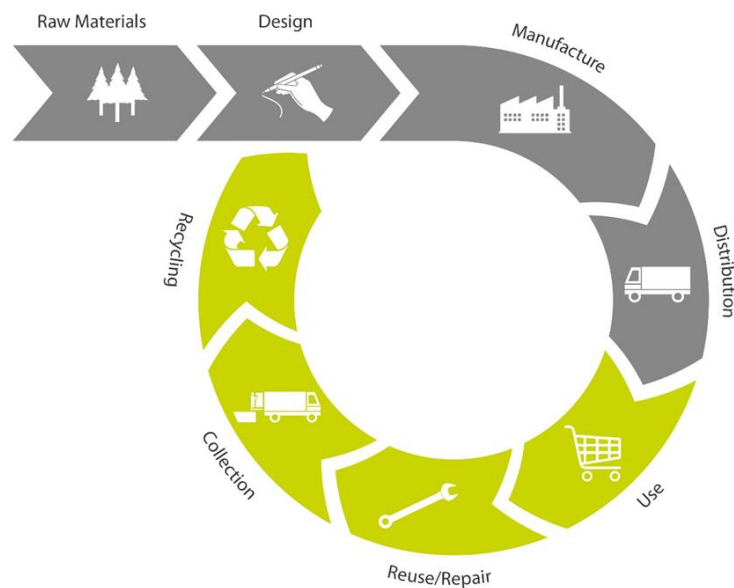


Figure 2.2 Principles of a circular economy

As detailed in the following sections, the Applicant is already implementing several initiatives to help reduce waste generation and improve recycling rates in its existing operations. These existing initiatives will be built upon in the Proposed Development.

2.2 Reduce

The Applicant has recently implemented a range of waste reduction initiatives, including eradicating single-use plastics from all match day and general operations. By the end of the 2022-23 season, all polyethylene terephthalate (PET) options will have also been eradicated. On top of this, the Applicant has moved towards using compostable packaging for some matchday products sold to fans, with edible tea and coffee cups trialled in recent years.

The Applicant will continue to explore waste reduction initiatives once the Proposed Development becomes operational. Initiatives could include educating staff, guests and fans on how they can reduce, reuse and recycle effectively, as well as tracking food sales/consumption to avoid over-ordering.

2.3 Reuse

Where preventing waste generation is not possible, efforts should be made to re-use items as many times as possible. In recent years, the Club has shifted from single-use cups to reusable cups. Cup return points are provided throughout the stadium's concourses to encourage fans to reuse these materials, rather than dispose of them.

The Club has also made significant strides in recent years with regards to organic waste. It recently completed a successful trial of an on-site processor that transforms organic waste into a compost-type material. This material was then used as a soil enhancer under shrubs and hedging areas around the City Football Academy.

2.4 Recycle/Upcycle

Where possible, materials that can no longer be re-used or that are no longer needed should be recycled/upcycled. The Applicant will focus efforts on improving the quality of recyclate, committing contractors to monitoring and inspecting the final destination of sorted material to ensure that it is recycled. It is recommended that the following measures are implemented to help improve the quality of recyclate:

- Ensuring that packaging materials are 'streamlined' to reduce the contamination of recycling streams. The Club is already doing a lot of good work in this space. In recent years, it has started to replace composite and plastic packaging that is sold to fans with fully compostable alternatives;
- Providing clear signage with recycling and disposal guidance;
- Training staff to ensure that those working at the stadium are fully aware of how the waste management and disposal system works; and
- Engaging and educating fans to encourage proper disposal of waste and to reduce the potential for contamination.

2.5 Duty of Care

In line with the Environmental Protection (Duty of Care) Regulations 1990, the Applicant has a duty of care to ensure that its waste is managed properly. All waste materials will therefore be stored safely and securely and, when collected, will be taken by a registered waste carrier to an appropriate permitted facility, with all relevant documentation completed.

3 Relevant Waste Management Policy and Guidance

3.1 Section Overview

The Proposed Development will be designed and operated in line with national, regional and local waste management policies. This section gives an overview of the most relevant policies and guidance documents. A more detailed overview is included in Appendix A.

3.2 National

- Environment Act 2021;
- Waste Management Plan for England (Department for Environment, Food and Rural Affairs, 2021);
- Waste Prevention Programme for England (Department for Environment, Food and Rural Affairs, 2021);
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021);
- National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014); and
- Our Waste, Our Resources: A Strategy for England (Department for Environment, Food and Rural Affairs, 2018).

3.3 Regional

- Greater Manchester Joint Waste Development Plan 2012.

3.4 Local

- Manchester's Local Development Framework Core Strategy Development Plan Document (MCC, 2012);
- Waste Storage and Collection Guidance for New Developments (MCC, 2017); and
- Manchester Climate Change Framework 2020-25 (Manchester Climate Change Agency, 2022).

3.5 Other Relevant Waste Guidance

- Building Regulations 2010 Part H6; and
- British Standards 5906:2005.

4 Waste Management Strategy

4.1 Section Overview

This section describes the proposed strategy to segregate, store, move and collect all waste generated within the Proposed Development.

4.2 Waste Definition

The Proposed Development is likely to generate a range of different types of waste, as summarised in Table 4.1.

Table 4.1 Main waste streams generated by the Proposed Development

Symbol	Waste material
	General waste: these are wastes which are not suitable for recycling
	Dry mixed recyclables: including metal cans, cardboard packaging, paper and some plastics
	Organic waste: mainly comprising organic wastes produced from food preparation and cooking activities
	Glass waste: mainly comprising glass bottles, generated in hospitality areas and the hotel
	Cooking oils
	Confidential wastes: wastes that contain sensitive information and require special management procedures
	Hazardous wastes: includes cleaning products and chemicals, batteries, soiled cleaning wipes, fluorescent tubes, paint solvents, pesticides and herbicides
	Waste electrical and electronic equipment (WEEE): includes IT equipment, small and large appliances
	Bulky wastes: includes furniture and large, unusable equipment
	Hygiene/sanitary wastes: items which are soiled with solid or liquid human wastes, and that are not known to be infectious

4.3 Waste Segregation

Waste will be segregated at source across the Proposed Development. This section outlines the main waste streams that will be segregated in each of the following areas:

- Stadium (general admission areas);
- Stadium (hospitality areas);
- Covered fan zone;
- Workspace;
- MCFC club shop and museum; and
- Hotel (and Food & Beverage (F&B) units).

In each of the areas above, it is anticipated that small quantities of specialist waste streams (e.g. bulky waste, hazardous wastes) will also be generated. These material streams will be managed separately from the main waste streams and will be collected as and when needed by specialist contractors.

Stadium (General Admission Areas)

General admission (GA) concourses give access to the stadium's seating bowl. They also provide facilities for fans, including toilets, food concessions, bars and merchandising outlets.

In the Etihad Stadium's existing GA areas, three main waste streams are currently segregated: general waste (which mainly includes biodegradable packaging and food waste); dry mixed recyclables; and reusable plastic cups. The North Stand expansion will plug into this existing segregation strategy.

Stadium (Hospitality Areas)

As in the existing Etihad Stadium, the North Stand's hospitality areas will segregate waste into four main streams: general waste; mixed recyclables; organic waste; and glass.

Covered Fan Zone

In the covered fan zone, three main waste streams will be segregated: general waste; dry mixed recyclables and organic waste.

Workspace

In the workspace, three main waste streams will be segregated: general waste; mixed recyclables; and organic waste.

MCFC Club Shop and Museum

In the club shop, two main waste streams will be segregated: general waste and mixed recyclables. If a food service area is incorporated in the museum, then organic waste will also be segregated. To future-proof the waste management strategy, the waste generation estimates and storage requirements in Section 5 assume that organic waste will be segregated in the museum.

Hotel (and F&B Units)

The hotel (and F&B units) will segregate four main waste streams: general waste; mixed recyclables; organic waste; and glass.

4.4 Waste Movement and Storage

The Proposed Development will plug into the Etihad Stadium's existing waste management strategy. Waste will initially be held locally in interim stores, before being transferred to one of the stadium's designated collection points by the sitewide FM team.

General waste and mixed recyclables will be transferred to the Etihad Campus' existing central waste compound. The location of the compound and the main waste movement route are shown in blue in Figure 4.1.

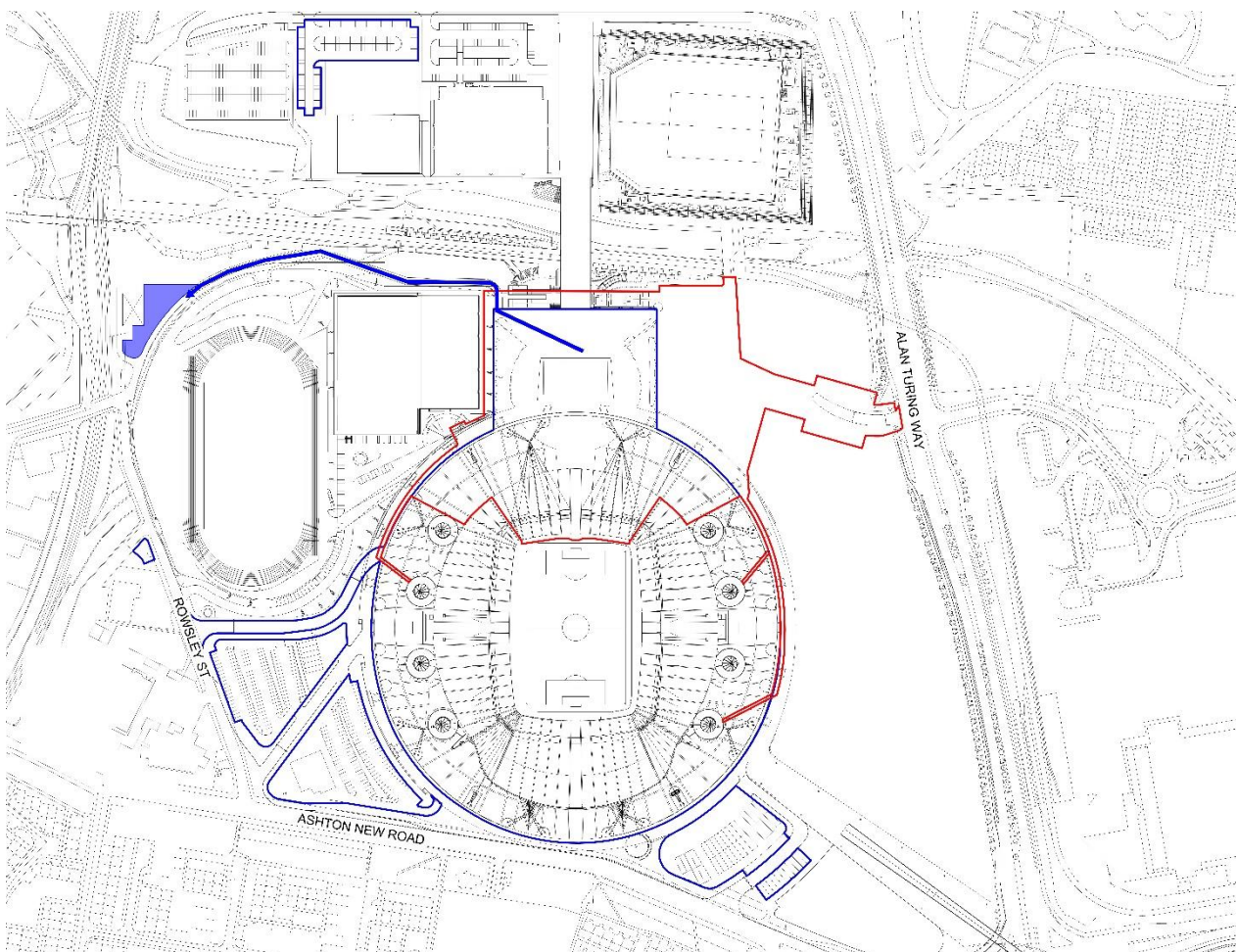


Figure 4.1 Location of Etihad Campus central waste compound and main waste movement route

The central waste compound currently includes the following:

- 1 x portable roll-on roll-off compactor (general waste);
- 1 x portable roll-on roll-off compactor (dry mixed recyclables);
- 1 x 35 cu yd roll-on roll-off skip (general waste);

- 1 x skip (wood);
- 1 x skip (cardboard); and
- Space for bins and other wastes.

This equipment provides sufficient storage capacity to hold waste generated by the existing stadium.

Figure 4.2 shows a satellite image of the existing compound. As shown, there is space for storing additional equipment, if needed. In addition to waste from the Proposed Development, the central compound will also hold general waste and mixed recyclables from the existing Etihad Stadium, as well as mixed recyclables from the Co-Op Live Arena.

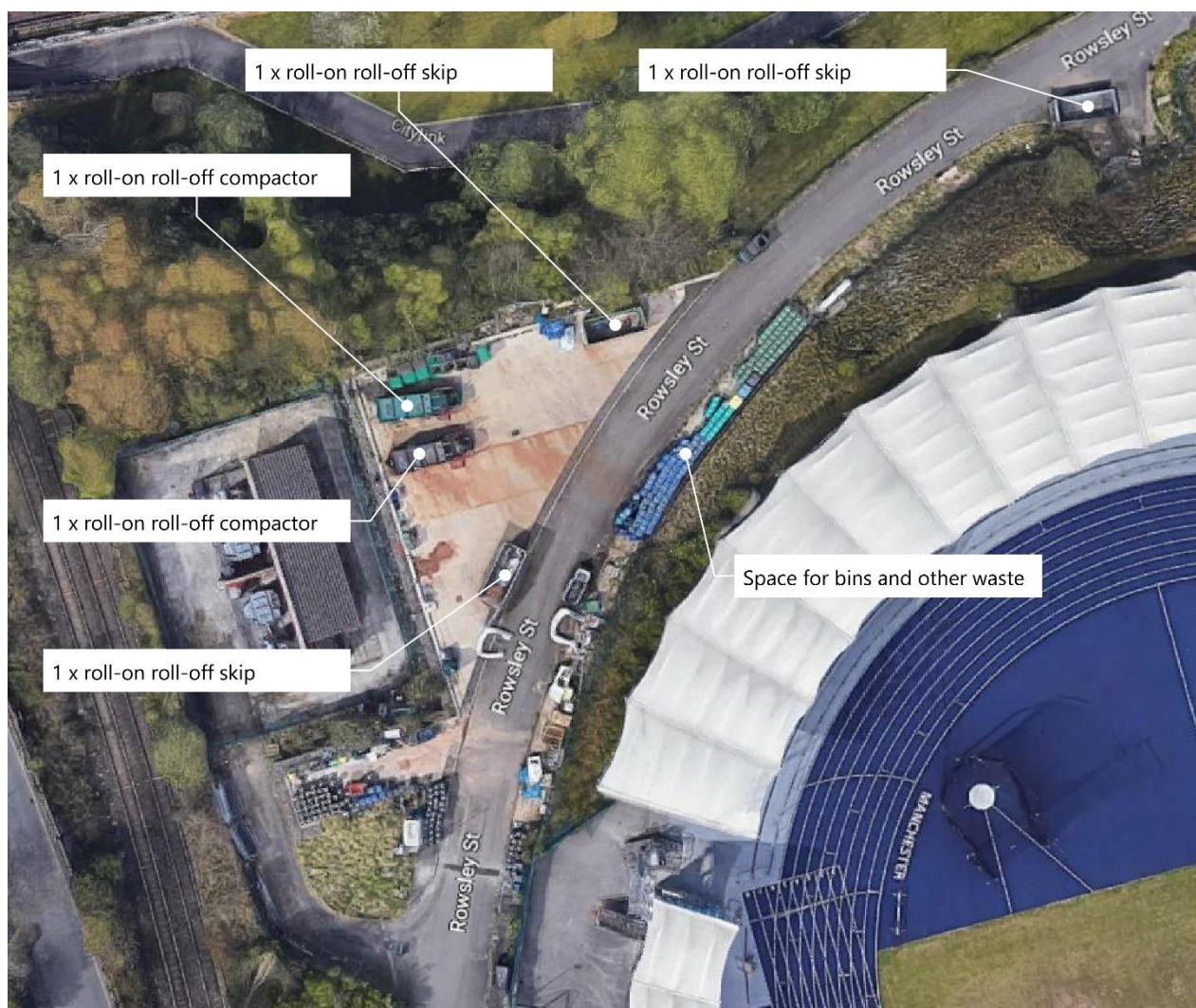


Figure 4.2 Satellite image of Etihad Campus central waste compound

While most waste streams will be transferred to the central campus waste compound for collection, there are two exceptions:

- In line with current operations, glass waste bins will be collected by the Club's catering contractor from the stadium's B gate. Glass waste bins will be held locally during the course of a match. The catering contractor will then swap full bins with empties on collection days; and
- Food waste bins will also be collected from the stadium's B gate, with food waste either taken to an anaerobic digestion (AD) plant in Widnes or to the City Football Academy's composting unit, where it will be treated on-site (see Section 4.6 for further details).

The indicative location of the stadium's B gate is shown in blue in Figure 4.3.

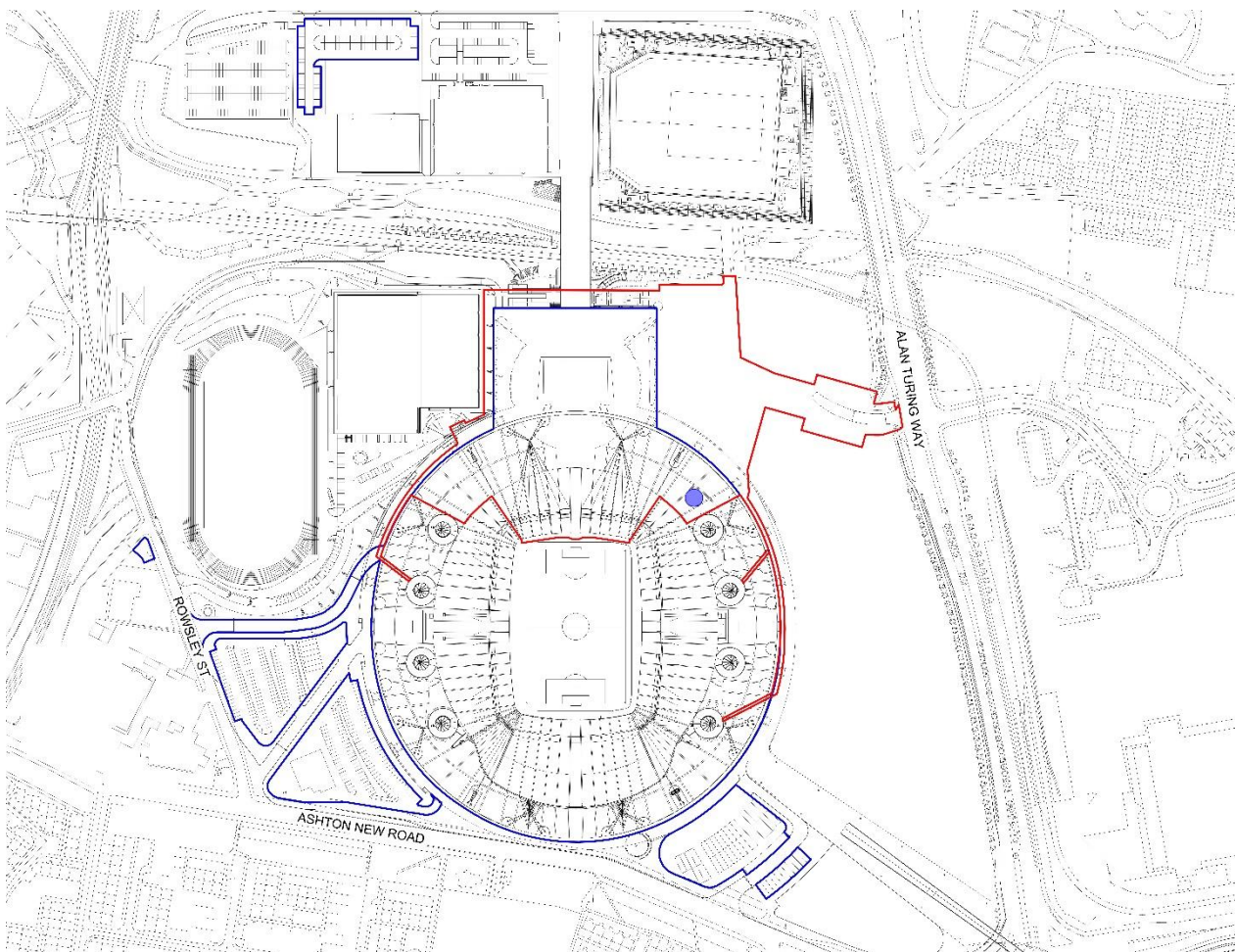


Figure 4.3 Indicative location of Etihad Stadium B gate

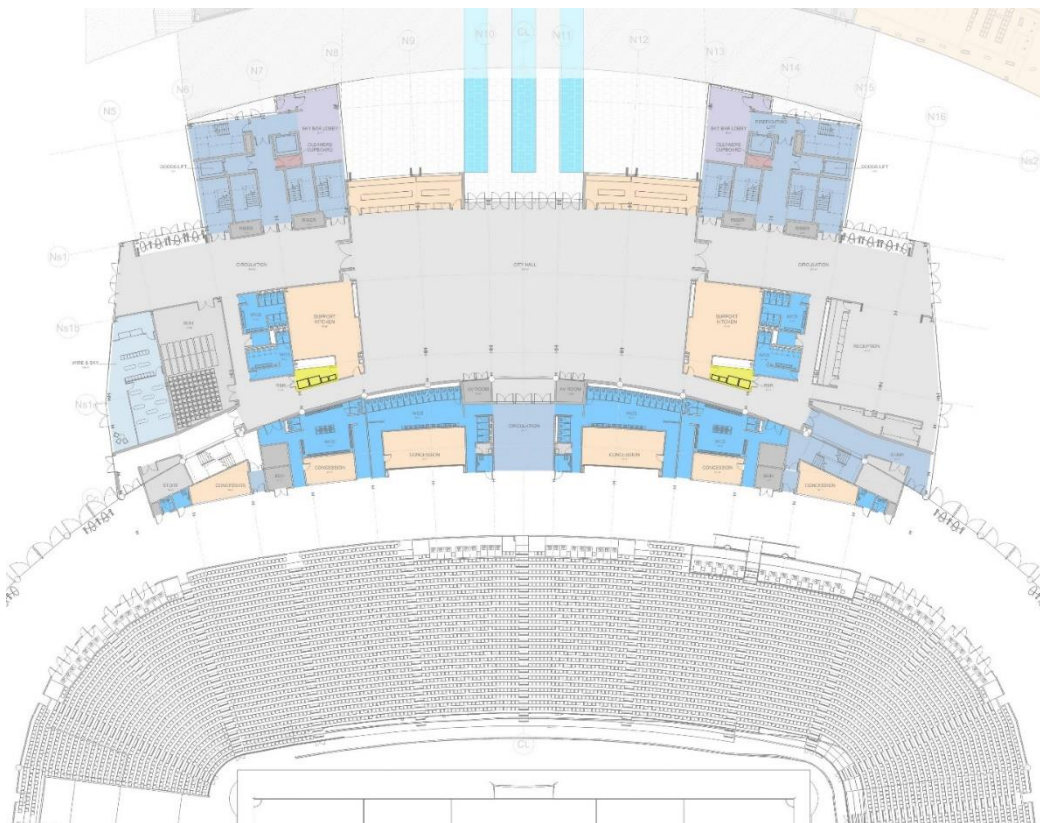
The sections that follow give a more detailed description of the waste movement, storage and collection strategy for each area of the Proposed Development.

Stadium (General Admission Areas)

The North Stand's GA areas will plug into the Club's existing waste management strategy. As a minimum, two-stream litter bins will be provided throughout the GA concourses. Cup holders/racks will also be provided for reusable cups.

At full time, the FM team will drive an electric vehicle (EV) through the GA concourses with a 1,100L bin in tow. The FM team will stop at each initial point of disposal and transfer bagged waste into the 1,100L bin. Once the bin is full, they will then transfer it to one of the stadium's interim waste rooms, located around the perimeter of the GA concourses.

The North Stand's interim waste storage provision has been based on existing stadium operations (see Section 5 for further details). Six interim waste stores have been provided in the North Stand's GA areas: two at L00; two at L01; and two at L02. The locations of these interim waste stores are shown in yellow in the figures that follow.



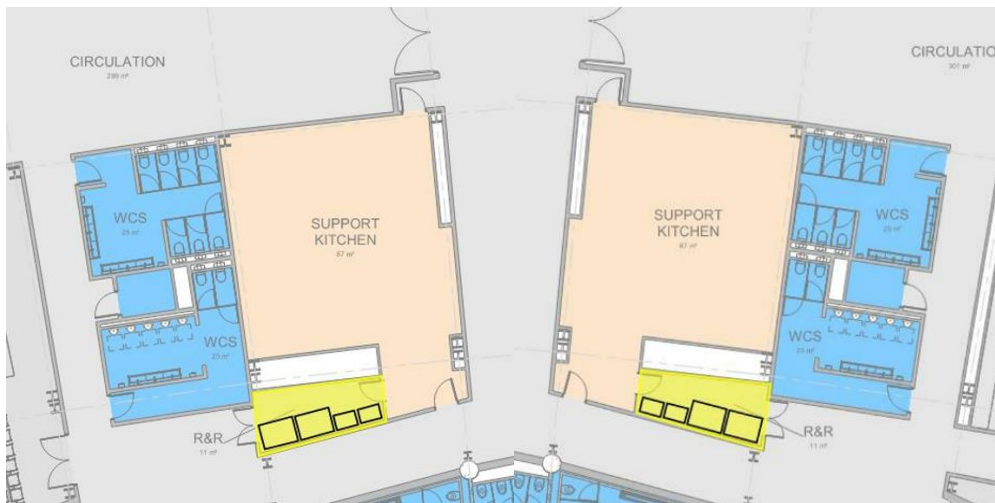


Figure 4.4 Indicative location of North Stand interim waste stores (L00)

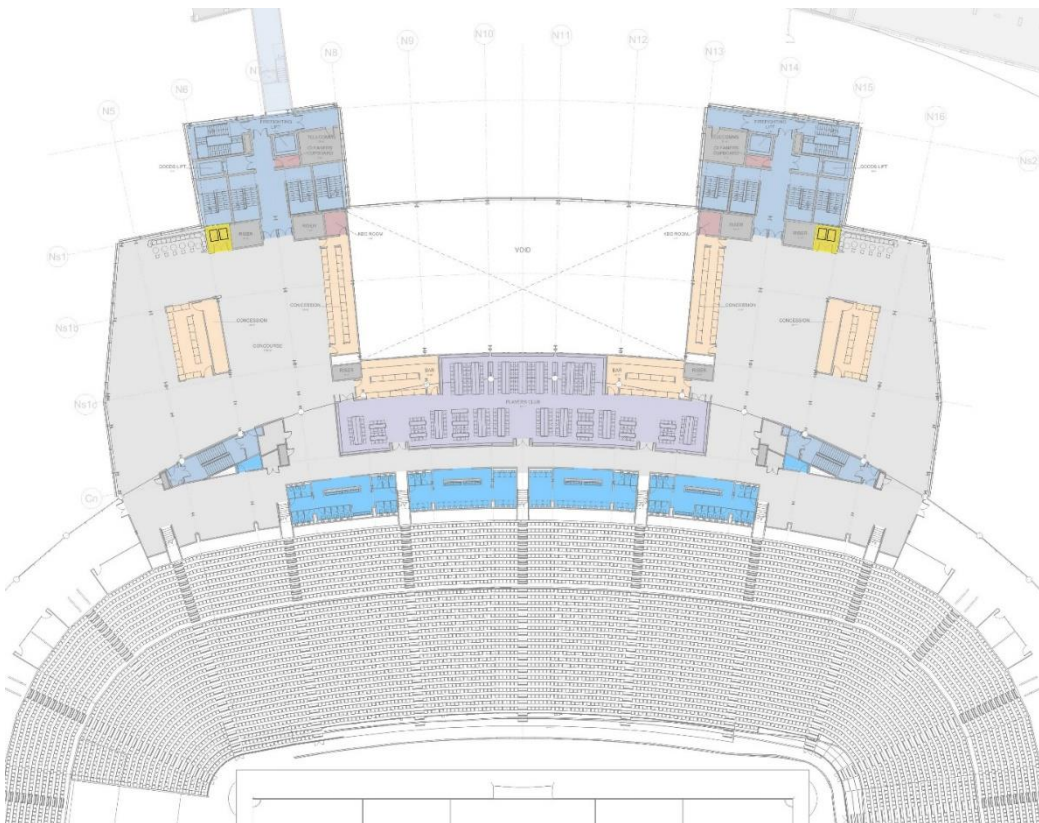
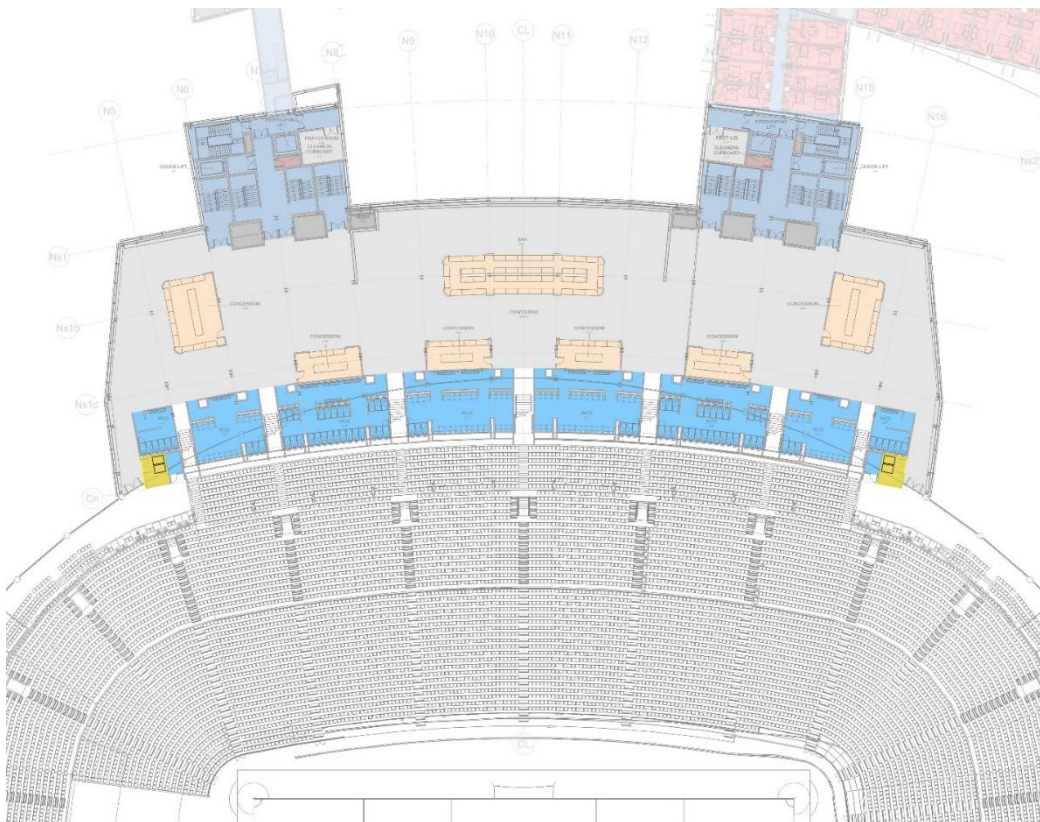




Figure 4.5 Indicative location of North Stand interim waste rooms (L01)



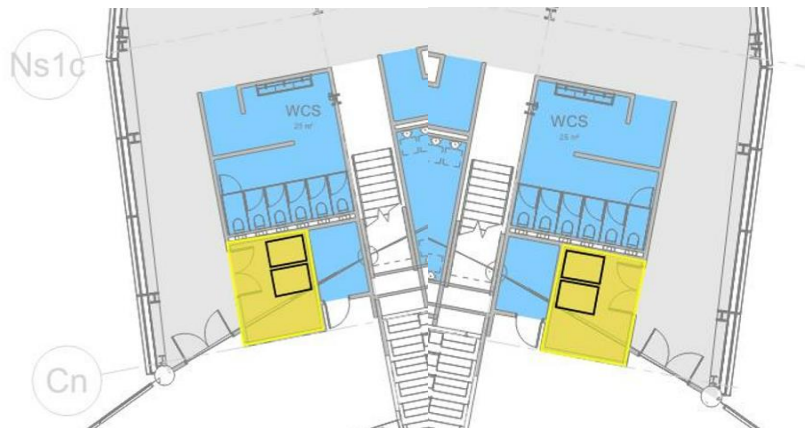


Figure 4.6 Indicative location of North Stand interim waste rooms (L02)

Once the 1,100L bins in each interim waste store are full, the next phase of waste transfer will occur. The FM team will transfer 1,100L bins from the interim waste stores to the Etihad Campus' central waste compound using EVs with bins in tow. If at ground floor, the FM team will take bins directly outside. If on the upper levels, the FM team will transfer bins to ground level via one of the stadium's spiral ramps.

Stadium (Hospitality Areas)

Waste from the Players Club (L02), VIP suites (L04) and Sky Bar (L05) will initially be held in bins within the kitchens and bars on these levels. Hospitality staff will be provided with adequate training to ensure that they are aware of the correct procedure for separating waste streams.

At the end of service, the FM team will transfer waste from the hospitality areas to L00 via one of the stadium's goods lifts (outlined in red in Figure 4.7). Waste will be moved using 240L bins or 360L bins. General waste and mixed recyclables bins will be transferred to the Etihad Campus' central waste compound using EVs, while food waste and glass bins will be transferred to the stadium's B gate for collection.

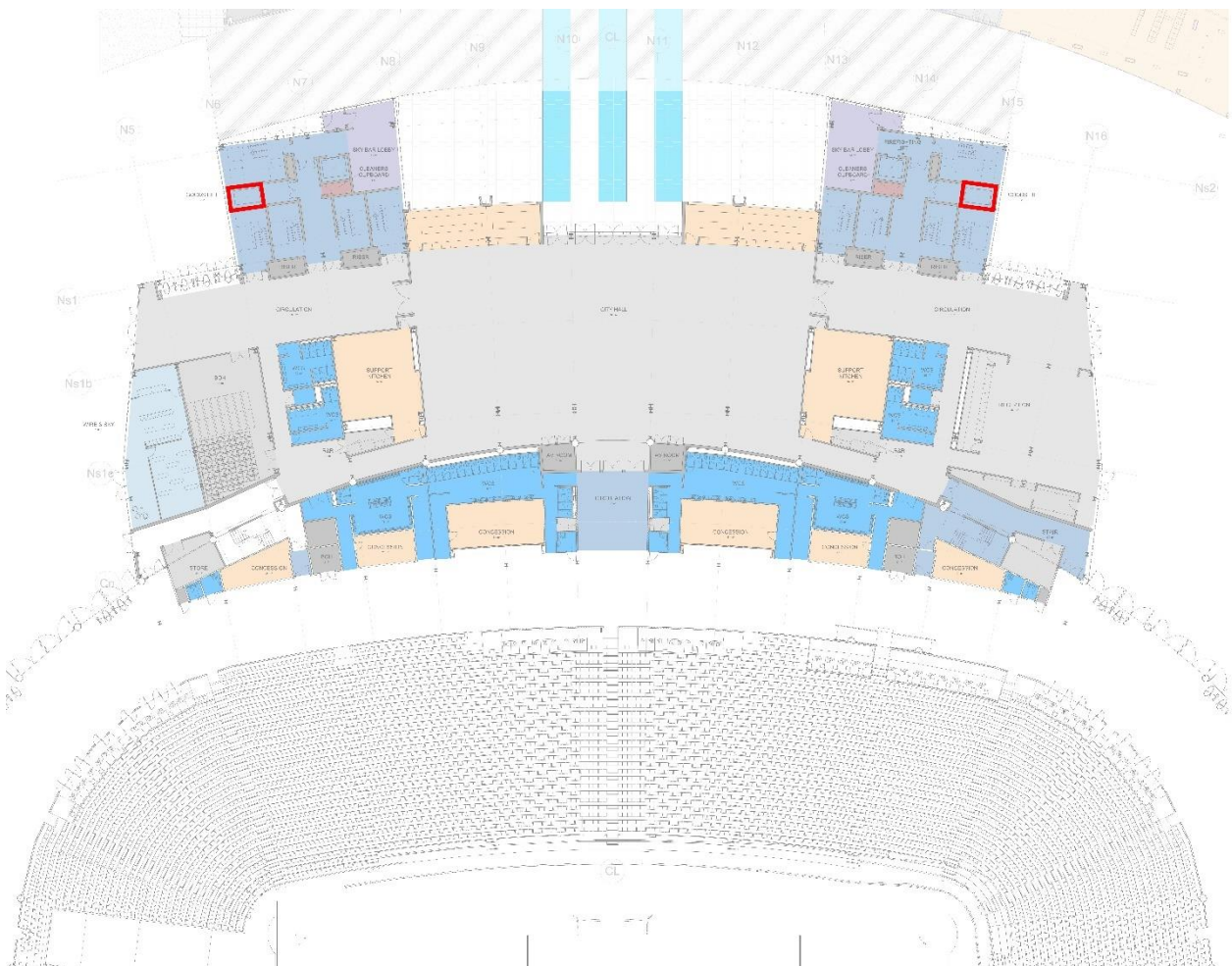


Figure 4.7 Indicative location of lifts used for moving waste (North Stand)

Covered Fan Zone

The site's FM team will regularly service litter bins in the covered fan zone and will undertake litter picks to ensure that waste does not become an environmental or visual nuisance. When litter bins are nearly full, the FM team will transfer waste to the Etihad Campus' central waste compound using EVs.

Workspace

Waste from the workspace will be temporarily held in litter bins distributed across the upper floors. The FM team will transfer bagged waste from these litter bins to L00 using a mobile waste container. The lifts used for waste movement are outlined in red in Figure 4.8. At L00, the FM team will transfer the bagged waste into a larger 1,100L or 240L container taken from the campus' central waste compound. The FM team will transfer the waste to the Etihad Campus' central waste compound (general waste and mixed recyclables) or to the stadium's B gate (organic waste) for collection.

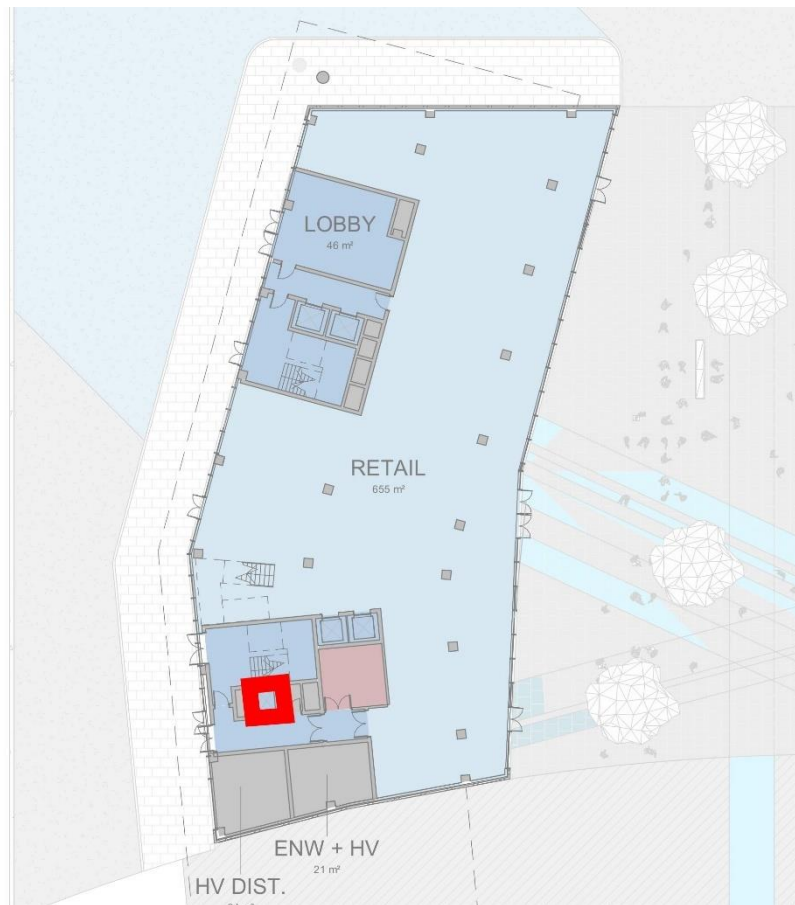


Figure 4.8 Indicative location of lift used for moving waste (commercial building)

MCFC Club Shop and Museum

Waste from the club shop and museum will be temporarily held in litter bins. The FM team will transfer bagged waste from these litter bins to L00 using a mobile waste container. The lifts used for waste movement are outlined in red in Figure 4.8. At L00, the FM team will transfer the bagged waste into a larger 1,100L or 240L container taken from the campus' central waste compound. The FM team will transfer the waste to the Etihad Campus' central waste compound (general waste and mixed recyclables) or to the stadium's B gate (organic waste) for collection.

Hotel

Cleaners will collect waste from the hotel rooms and transfer it to the hotel waste store adjacent to the loading dock. Figure 4.9 shows the location of the waste store (highlighted in yellow), the lifts that will be used for waste movement (outlined in red), as well as the main routes used for moving waste to the interim waste store (shown in blue).

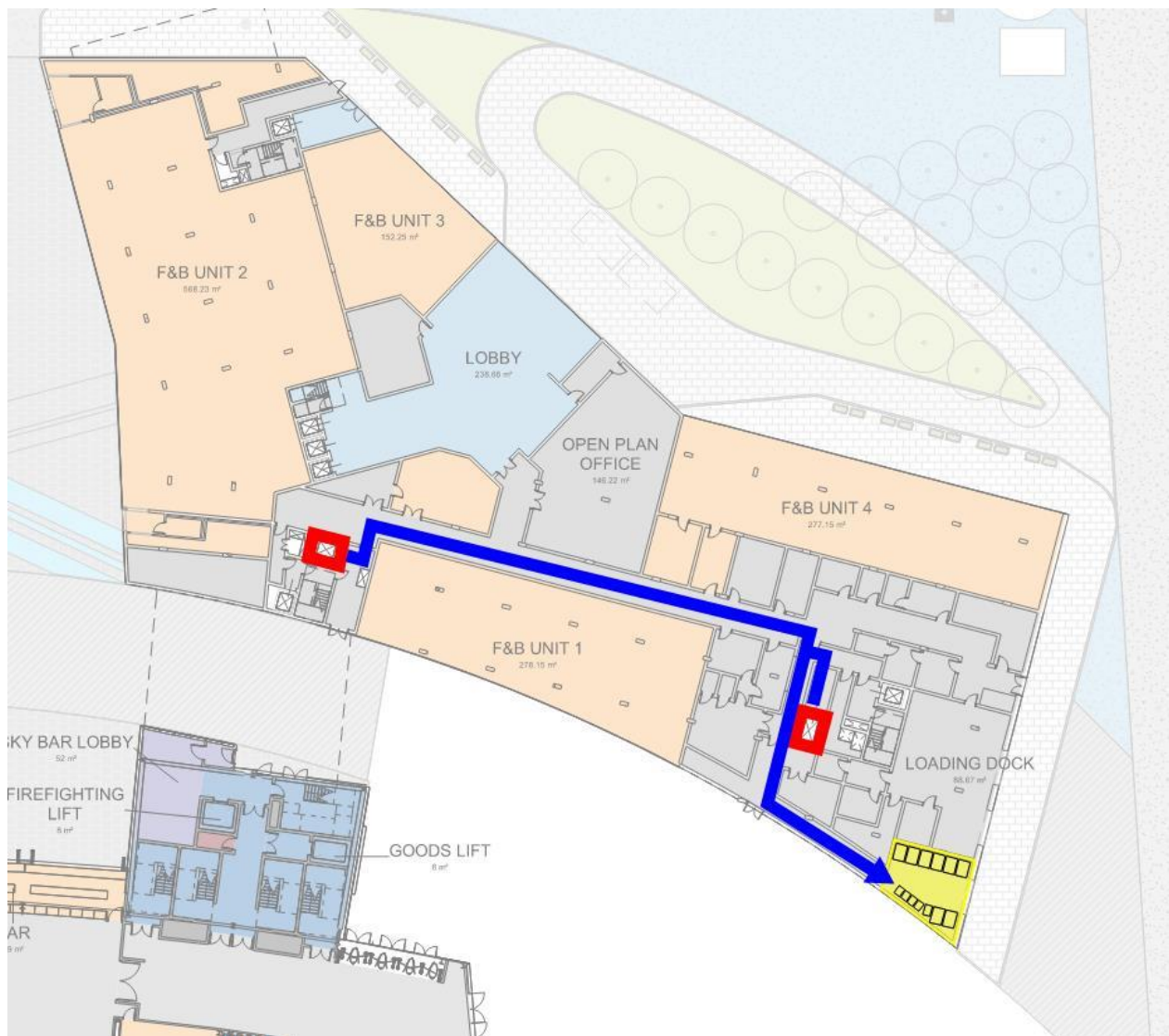


Figure 4.9 Indicative location of hotel building interim waste store, lifts used for moving waste and main internal waste route

The bins in this waste store will also be used to hold waste generated in the hotel restaurant and the food and beverage (F&B) units in the hotel building. At the end of each day, the sitewide FM team will transfer the bins from the hotel waste store to the central campus compound (general waste and mixed recyclables) or to the stadium's B gate (organic waste and glass) (see Figure 4.1 for main waste movement routes).

4.5 Waste Collection

Most waste from the Proposed Development will be transferred to the Etihad Campus' central waste compound for collection. General waste and mixed recyclables will be compacted. Specialist waste streams will be stored in other receptacles. As a minimum, the compactors will be collected before each match.

Glass waste will be collected by the catering contractor from Gate B. The catering contractor will swap full bins with empty bins on collection days.

Food waste bins will also be collected from the stadium's B gate, with food waste either taken to an anaerobic AD plant in Widnes for treatment or to the City Football Academy's composting unit, where it can be treated on-site.

Waste Collection Vehicles

The following table summarises the main types of vehicles that will be used to collect each waste stream.

Table 4.2 Indicative waste collection vehicles

Symbol	Waste material	Waste storage system	Indicative waste collection vehicle
	General waste	30 cu yd (22.9m ³ litres) roll-on roll-off compactor 10.7m ³ skip compactor	
	Dry mixed recyclables		
	Organic waste	240 litre wheeled bins	 Box van with tail lift (if treated at CFA)  Rear-loader waste vehicle (if treated at Widnes AD plant)

Symbol	Waste material	Waste storage system	Indicative waste collection vehicle
	Glass waste	360 litre wheeled bins	 Box van with tail lift (c. 8m long)
	Cooking oils	Oil drums or specialist 120 litre oil bins	 Box van with tail lift (c. 8m long max.)
	Confidential wastes	Specialist confidential waste bins	 Box van with tail lift (c. 8m long max.)
	Hazardous wastes	Hazardous waste crates, cabinets and chests	 Box van with tail lift (c. 8m long max.)
	Waste electrical and electronic equipment (WEEE)	Stillage cages or similar	
	Bulky wastes	35 cubic yard roll-on roll-off skip	 Hook-lift truck
	Hygiene / sanitary wastes	Specialised sanitary waste bins (pedal-operated and enclosed)	 Small Box van (c. 8m long max.)

Vehicle Access and Circulation

The main access to the campus' central waste compound will be via Gate 15 on Rowsley Street, as per the existing arrangements. Vehicles collecting waste from Gate B will access the site via Gate 3, 7 or 11, before circulating the stadium via the road that runs around its perimeter. Figure 4.10 shows the location of these gates.

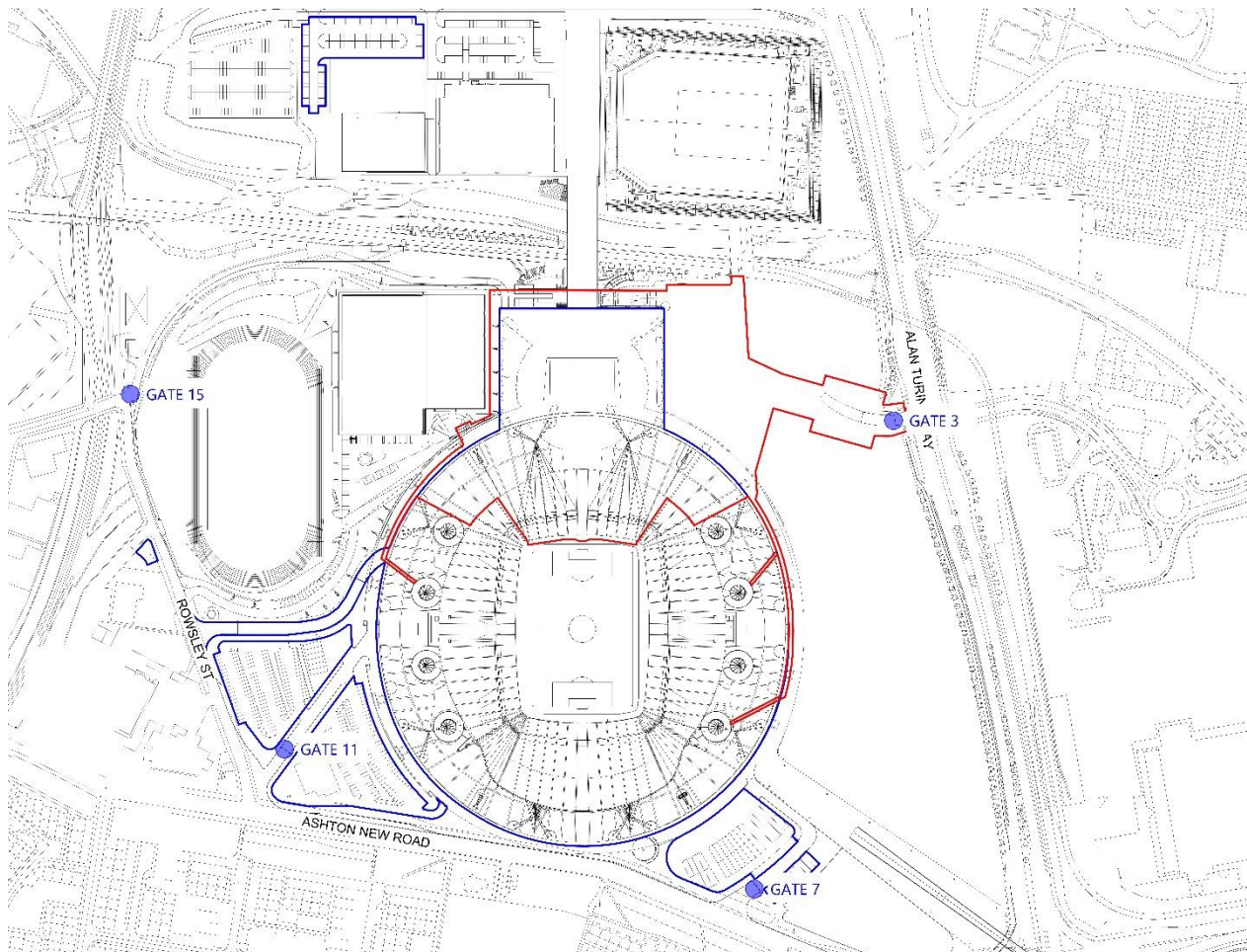


Figure 4.10 Indicative location of Gates 3, 7, 11 and 15

Both the central waste compound and Gate B are currently used for waste collections. The road layout has been designed to accommodate the different types of vehicles that require access. It is anticipated that the same types of waste collection vehicle will be used once the Proposed Development is operational, and so the existing access arrangements will remain adequate.

4.6 Waste Treatment/Disposal

As discussed in Section 2, the Applicant will look to apply the principles of the waste hierarchy to all aspects of its operations, prioritising waste prevention, reduction, re-use, recycling and energy recovery over landfill disposal.

The Proposed Development will plug into the Club's existing operations. General waste is currently collected by Veolia, before being directed to the Ferrybridge Multifuel Facility – a waste-to-energy plant located in West Yorkshire. Mixed recyclables are currently treated at Biffa's Irlam Materials Resource Centre in Manchester, while glass waste is currently

recycled into beer bottles at the Recresco plant in Ellesmere Port. Historically, organic waste has been collected by ReFood and taken to an AD plant in Widnes for treatment. However, the Club are currently conducting a trial, which involves transferring the stadium's food waste to the City Football Academy composting unit, where it can then be treated on-site. The initial results of the trial have been encouraging and it is anticipated that a larger composting unit will be provided on the campus in future.

5 Waste Generation Estimates and Storage Requirements

5.1 Section Overview

Waste generation estimates have been made to help determine the spatial requirements for waste storage. The key working assumptions are outlined in Section 5.2.

5.2 Key Working Assumptions

For the purposes of conservative assessment, waste arisings have been estimated for an assumed peak waste generation scenario (i.e. a football match where the North Stand is at maximum capacity).

For the stadium, a waste generation rate of 0.38 kg/fan/game has been assumed. This generation rate has been extrapolated from 2022 data for the existing Etihad Stadium.

Generation rates for the workspace, F&B and retail uses have been taken from MCC's (2017) *Waste Storage and Collection Guidance for New Developments*. Generation rates for the hotel and museum uses have been based on benchmarking work undertaken by Buro Happold on similar developments.

The assumed generation rates are summarised in Table 5.1. In some cases, the waste generation rates have been standardised from litres into kilograms. The following densities have been assumed when doing so:

- Residual: 85 kg/m³;
- Mixed recyclables: 62 kg/m³;
- Organics: 290 kg/m³; and
- Glass: 456 kg/m³.

Table 5.1 also includes the assumed compositional breakdown for each land use (i.e. the percentage split between different waste streams). These compositional splits have been informed by benchmarking work done on similar developments, as well as published guidance and industry experience.

Table 5.1 Assumed waste generation rates and composition splits

Land Use	Waste Generation Rate	Units	Waste Composition (%)			
			Residual	Mixed Recyclables	Organics	Glass
Stadium*	0.38	kg/fan/game	49%	25%	11%	15%
Workspace	0.03	kg/m ² /day	32%	50%	18%	0%
F&B	0.18	kg/m ² /day	21%	25%	35%	19%
Other Retail	0.05	kg/m ² /day	58%	42%	0%	0%
Hotel	1.48	kg/key/day	30%	40%	25%	5%
Museum	0.02	kg/m ² /day	35%	55%	10%	0%

*includes GA areas, hospitality areas and seating bowl

5.3 Waste Generation Estimates

The benchmarks in Table 5.1 have been applied to a unit of floor area (e.g. m²) or unit of occupancy (e.g. number of fans, number of keys) to yield a total waste generation value for each land use (see Table 5.2). In total, it is estimated that the Proposed Development could generate up to 4,056kg of waste on a match day: 3,000kg from the stadium; 1,056kg from the other uses.

Table 5.2 Estimated waste generation (kg per day)

Land Use	Estimated waste generation (kg per day)				
	Residual	Recycling	Organics	Glass	Total
Stadium	1,456	755	344	445	3,000
Workspace	47	74	27	0	148
F&B	48	58	81	43	230
Retail	40	29	0	0	70
Hotel	178	237	148	30	593
Museum	5	8	1	0	15
Total	1,774	1,162	602	517	4,056

5.4 Waste Storage Requirements

The waste generation estimates have been used to inform the spatial requirements for waste storage. As outlined in previous sections, waste will initially be held locally before being transferred to one of the stadium's designated collection points.

Interim waste stores have currently been incorporated in those areas where most waste is likely to be generated (i.e. the stadium and the hotel building). It is anticipated that the other land uses (i.e. workspace, retail and museum) will generate smaller quantities of waste, which can initially be held in litter bins, without the need to provide dedicated interim stores.

Stadium Interim Waste Storage

The Proposed Development will increase the capacity of the existing stadium, with 7,910 seats added to the North Stand. This uplift in capacity will generate additional waste and will require additional interim waste storage space.

The Club has reported that its existing interim waste storage provision is sufficient to meet current levels of demand. Currently, the stores provide space for 41 x 1,100L Eurobins. These stores serve an existing stadium capacity of 54,048 seats.

Based on this current level of provision, it is estimated that at least seven additional 1,110L Eurobins would be needed to meet the uplift in waste generation brought about by the Proposed Development. As shown in Section 4, space has currently been provided for an additional 12 x 1,100L Eurobins, with dedicated interim waste stores incorporated at L00, L01 and L02 of the new North Stand.

Hotel Building Interim Waste Storage

A dedicated interim waste store has also been incorporated in the hotel building. This store will hold waste from both the hotel and F&B units.

As shown in Table 5.2, it is estimated that the hotel and F&B units will generate a total of 226kg of general waste, 295kg of mixed recyclables, 230kg of organics and 72kg of glass waste each day. Using the assumed densities outlined in Section 5.2, this equates to 2,656 litres of general waste, 4,765 litres of mixed recyclables, 793 litres of organics and 159 litres of glass waste.

It is assumed that the hotel interim waste store will need to provide enough capacity for a day's worth of waste, with general waste and recyclables stored in 1,100L bins, organics stored in 240L bins, and glass in 360 litre bins. Based on these assumptions, it is estimated that the hotel interim waste store will need to provide enough space for the following:

- 3 x 1,100L bins for general waste;
- 5 x 1,100L bins for mixed recyclables;
- 4 x 240L bins for organics; and
- 1 x 360L bin for glass.

As shown in Figure 4.9, the hotel interim waste store currently provides sufficient space to hold the number of containers outlined above.

Central Campus Waste Compound

As discussed in previous sections, waste will be transferred from the temporary stores to one of the Etihad Campus' dedicated collection points. Residual waste and mixed recyclables will be transferred to the Etihad Campus' central waste compound, where they will be stored in portable compactors. Meanwhile, organic waste will be collected from the stadium's B gate and either sent to the City Football Academy or to an off-site AD plant for treatment. Glass waste will also be collected from the B gate.

In addition to waste from the existing stadium, the central compound will also hold general waste and mixed recyclables from the Proposed Development, as well as mixed recyclables from the Co-Op Live Arena. The total volumes of general waste and mixed recyclables that will need storing in the central campus compound are shown in Table 5.3. The volumes for the existing stadium have been derived from 2022 waste data provided by the Club, while the volume of dry mixed recyclables for the Co-Op Live Arena has been sourced from the OWMS report submitted with that development's full planning application. As detailed in that report, general waste from the arena will be compacted locally and collected from a service yard provided within the arena's demise.

Table 5.3 Estimated compactor requirements (existing stadium, North Stand expansion and Co-Op Live Arena)

Land Use	Waste Generation and Composition			
	Waste Generation (kg per day)		Waste Generation (litres per day)	
	Residual	Mixed Recyclables	Residual	Mixed Recyclables
North Stand Expansion	1,774	1,162	20,874	18,748
Existing Stadium	9,697	5,028	114,078	81,102
Co-Op Live Arena	N/A	1,306	N/A	21,065
Total	11,471	7,497	134,953	120,915

The two roll-on roll-off compactors and other containers in the central campus compound provide sufficient waste storage capacity for the existing stadium. However, additional storage equipment (e.g. additional compactors) is likely to be required to hold waste generated by the North Stand expansion and the Co-Op Live Arena.

To estimate the number of additional compactors required, the following assumptions have been made:

- Compactor type: the two portable roll-on roll-off compactors for the existing stadium will be retained. Waste from the North Stand expansion and Co-Op Live Arena can be stored in smaller portable compactors, which would be collected by a skip truck;
- Compactor capacity: 10,700 litres;
- Compaction ratio (general waste): 1:4;
- Compaction ratio (mixed recyclables): 1:2; and
- It is assumed that the Co-Op Live Arena will have its own compactor to simplify waste charging between campus stakeholders.

Based on the assumptions above and the waste generation values in Table 5.3, it is estimated that the following additional equipment will be required for general waste and mixed recyclables in the central campus waste compound:

- 1 x portable skip compactor (residual) for the North Stand expansion;
- 1 x portable skip compactor (recycling) for the North Stand expansion; and
- 1 x portable skip compactor (recycling) for the Co-Op Live Arena.

This estimate represents an absolute worst case. It assumes that a maximum capacity event at the Co-Op Live Arena could happen on the same day as a maximum capacity football match at the Etihad Stadium. In reality, this scenario is unlikely to occur on a frequent basis, and so the campus could be adequately serviced by the two existing roll-on roll-off compactors on most days.

As mentioned in Section 4.4, the central waste compound already incorporates one roll-on roll-off compactor for general waste and one roll-on roll-off compactor for recyclables. If needed, the additional portable skip compactors can be incorporated adjacent to the existing compactors, as is illustrated schematically in Figure 4.11. Alternatively, the Applicant could explore increasing its current collection frequency, rather than procuring additional compactors.

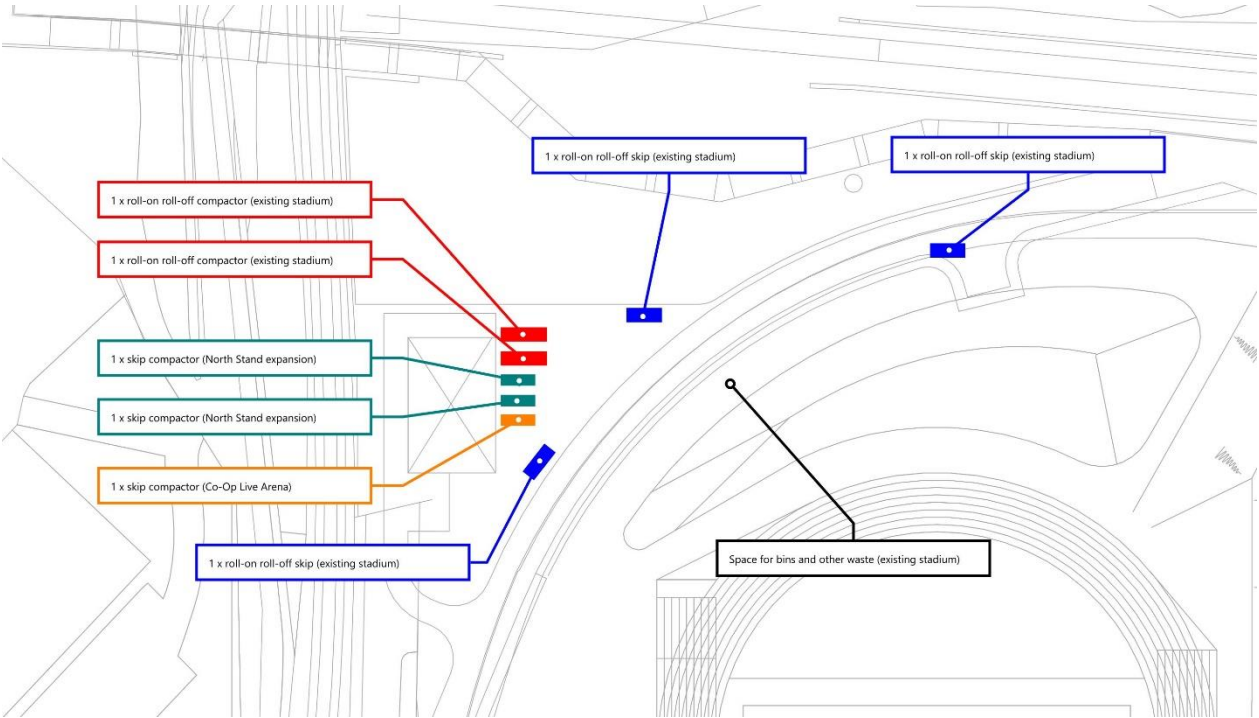


Figure 5.1 Indicative layout of central waste compound

6 Conclusions

This OWMS has described how operational waste generated from the proposed North Stand Manchester development will be managed in compliance with relevant national, regional and local waste management policy requirements (see Appendix A).

The waste management strategy has been formulated with the guiding vision of helping the Proposed Development to operate efficiently, sustainably and safely, all while minimising impacts on building performance, the users of the site, and the application site environment. In line with Manchester's Local Development Framework Core Strategy Development Plan Document (MCC, 2012), the strategy will promote the principles of the waste hierarchy and a circular economy. The emphasis will first and foremost be on minimising the amount of waste that is generated. Product procurement will play a key role in achieving this, with particular consideration given to how goods are packaged (e.g. using no packaging, edible materials, less packaging or packaging that is made up of a proportion of recycled materials).

In line with the requirements set out in the National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014), the waste management strategy will then look to maximise recycling and re-use, with waste segregated at source into a number of streams. As a minimum, residual waste and mixed recyclables will be separated, although some areas will also segregate glass and organic waste.

The Proposed Development will be at its busiest on a match day and it is at this type of event that most waste will be generated. In total, it is estimated that the Proposed Development will produce approximately 4,056kg of waste when the North Stand reaches maximum capacity.

Adequate provision has been made in the stadium and hotel building's interim waste stores for temporarily holding waste generated on match days. In the commercial building, where smaller quantities of waste will be generated, waste will temporarily be stored in litter bins distributed across each floor.

The provision of intermediate waste storage rooms in various locations across the Proposed Development will provide resilience and also improve the efficiency of waste management operations. These rooms have been located in close proximity to those areas that generate the most significant quantities of waste (i.e. the GA concourses), and will enable waste to be held locally until the fan circulation area are less congested. Once fans have exited the stadium, bins will be transferred from the interim waste stores to one of the stadium's existing designated collection points. General waste and recycling will be moved to the compactors in the Etihad Campus' central waste compound, while organics and glass waste will be collected from the stadium's B gate, as per existing operations.

Appendix A Waste Management Policy and Guidance

A.1 Overview

This appendix provides an overview of the most relevant national, regional and local waste management policies and guidance.

A.2 Relevant National Policy and Guidance

Environment Act 2021

The Environment Act forms part of a new legal framework for environmental protection in the United Kingdom. It aims to improve air and water quality, protect wildlife, increase recycling and reduce plastic waste.

Regarding waste and resource efficiency, the Environment Act covers the four areas listed below:

- Producer responsibility – the Act confers power on national authorities to make regulations about producer responsibility obligations and disposal costs;
- Resource efficiency – the Act includes requirements regarding resource efficiency and relevant information on deposit return schemes and the associated charges assigned to single use items and carrier bags;
- Managing waste – the Act explains the protocol for appropriately separating waste, for waste electrical and electronic equipment (WEEE) tracking, and for the regulation of hazardous waste in the United Kingdom; and
- Waste enforcement and regulation – the Act describes the enforcement powers and how waste is charged in the United Kingdom, as well as additional information on waste regulation.

Waste Management Plan for England (Department for Environment, Food and Rural Affairs, 2021)

At its core, the plan describes how the government intends to work towards a more efficient and sustainable approach to waste and resource use/management. The plan feeds off other policy documents, including the 25 Year Environmental Plan (2018), the Resources and Waste Strategy (2018) and the Waste Prevention Programme for England.

Waste Prevention Programme for England (Department for Environment, Food and Rural Affairs, 2021)

The Waste Prevention Programme for England articulates actions for government and for others which will result in reduced waste arisings and increased resource efficiency. The aim of the Programme is to improve the environment and protect human health by supporting a resource efficient economy, reducing the quantity and impact of waste produced, whilst promoting sustainable economic growth.

National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021)

The National Planning Policy Framework (NPPF) notes that the purpose of the planning system is to contribute to the achievement of sustainable development. The document identifies three dimensions to sustainable development: economic, social and environmental. As part of its environmental role, the planning system should help to use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy. The NPPF was revised on 20 July 2021, in response to the government's Building Better, Building

Beautiful Commission findings. The revised NPPF puts greater emphasis on place-making, sustainable development and the need to reflect local design policies and government guidance on developments.

The NPPF should be read in conjunction with the National Planning Policy for Waste and the National Waste Management Plan for England.

National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014)

The National Planning Policy for Waste document states that non-waste planning applications should consider the impact on existing and planned waste infrastructure and that suitable provision should be made for managing waste within new developments.

Our Waste, Our Resources: A Strategy for England (Department for Environment, Food and Rural Affairs, 2018).

This document was published in the wake of the Government's 25 Year Environment Plan (Defra, 2018). The strategy sets out plans to double resource productivity and eliminate avoidable wastes of all kinds by 2050. It includes details of how waste will be minimised and managed to reduce damage to the environment. The strategy gives a policy direction in line with the 25 Year Environment Plan, with a particular focus on moving away from a traditional linear economic model towards a more sustainable and efficient circular model.

A.3 Relevant Regional Policy and Guidance

Greater Manchester Joint Waste Development Plan 2012

This Plan outlines the waste planning strategy for the ten Greater Manchester local authorities. The document aims to ensure the adequate provision of waste management facilities in appropriate locations for municipal, commercial and industrial, construction and demolition and hazardous wastes. It provides a spatial planning framework to deliver sustainable waste management in Greater Manchester.

The Plan not only looks to ensure that sufficient capacity is provided for waste management in the region; it also aims to promote the movement of waste up the waste hierarchy. In line with this, developments' waste management strategies should first look to minimise waste at source, before targeting reuse, recycling, recovery and, as a last resort, safe disposal.

A.4 Relevant Local Policy and Guidance

Manchester's Local Development Framework Core Strategy Development Plan Document (MCC, 2012)

This document outlines MCC's development vision for Manchester up to 2027 and sets out the planning policies which will help deliver on that vision.

The following policies are of most relevance to operational waste management:

- Policy EN17 Water Quality – this policy stipulates that any development close to a watercourse should ensure that waste or litter cannot enter the watercourse from the site; and
- Policy EN19 Waste – this policy states that all developers will be required to demonstrate to the council how their proposals will promote the principles of the waste hierarchy and help achieve a closed-loop waste management system.

Waste Storage and Collection Guidance for New Developments (MCC, 2017)

This guidance sets out minimum standards for planners, architects, developers and property managers to assist in planning and designing systems for the storage and collection of refuse, and for recycling facilities in domestic and commercial properties.

Planning applications for all new developments should include a waste management strategy which includes the following:

- Estimated volumes and types of waste produced by the development;
- Details of internal and external stores for waste and recycling;
- Location of the proposed collection point and details of the route the collection vehicle will take;
- Details of how waste will be transferred between stores and to the collection location; and
- Details on the number and capacity of bins proposed and the collection frequency.

These details should also be provided in a waste Proforma, submitted to MCC. This has been provided in Appendix B.

Manchester Climate Change Framework 2020-25 (Manchester Climate Change Agency, 2022)

This document is the city's high-level strategy for tackling climate change. It sets out how Manchester will 'play its full part in limiting the impacts of climate change'. The document highlights the need to reduce waste and manage unavoidable waste as sustainably as possible.

A.5 Other Relevant Guidance

Building Regulations Approved Document H6 Drainage and Waste Disposal and British Standards 5906:2005

These documents set out a number of requirements and guidelines for solid waste storage within buildings. The following requirements and guidelines are most relevant to the Proposed Development:

- Adequate provision shall be made for the storage of solid waste;
- Adequate means of access shall be provided for people in the building to the place of storage and from the place of storage to a collection point;
- A minimum clear space of 150mm should be provided between and around all bins in waste storage rooms;
- Adequate space must be provided for the easy and efficient movement of bins over smooth, continuous surfaces;
- Waste storage areas should be secure to prevent access by vermin unless the waste is to be stored in secure containers with close fitting lids; and
- Adequate lighting, drainage and ventilation should be provided in these areas.

Appendix B MCC Waste Management Strategy Proforma

Appendix E Proforma for Planning Applications



**MANCHESTER
CITY COUNCIL**

Planning Application – Waste Management Strategy

Planning Application Number:

Date Submitted:

Estimated volumes/ m² required by the development

Low Rise Domestic

Waste Types	Capacity Required (litres)	Number of bins required per household	Confirm what is to be provided
General refuse	140 / 240	1 x wheeled bin	N/A
Pulpable Recycling	140 / 240	1 x wheeled bin	N/A
Mixed Recycling	140 / 240	1 x wheeled bin	N/A
Garden Waste	140 / 240	1 x wheeled bin	N/A
Food Waste	23	1 x 23 litre caddy	N/A

High Rise Apartment Developments

	Yes/No - how much space has been provided?
0.43m ² has been provided per apartment for the container space. Space to manoeuvre and access containers individually has also been provided so that each container can be accessed and removed for collection individually.	N/A

Commercial Developments

Please state number of bins you propose, showing calculations where appropriate.

General Waste - 1 x 10.7m³ compactor (+ 1,100L bins in interim waste stores)
Pulpable Recycling - N/A
Mixed Recycling - 2 x 10.7m³ compactors (+ 1,100L bins in interim waste stores)
Food Waste - max. 5 x 240L Eurobins (for North Stand) + 4 x 240L Eurobins (for
Industrial Waste - hotel building) + 1 x 240L Eurobin (for commercial building)

Details on calculations and assumptions are contained in the OWMS report.

Has / will a contract be obtained with a licenced waste carrier?	☒
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Mixed Use Developments

Are the stores for residential and commercial separate from each other?	☐	N/A
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Internal Stores (Residential and Commercial)

Please provide details of internal stores / segregation of waste and recycling.

Waste will be segregated at source into a number of streams. As a minimum, each area will segregate residual waste and dry mixed recyclables (DMR). Waste from the general admission (GA) concourses will initially be moved to intermediate waste stores to help reduce the risk of concourse litter bins overflowing. Waste generated within the GA bars and concession units themselves will be stored within these units for the duration of a match. Waste from the hospitality areas will be held in the kitchens/bars on each level, where residual waste, DMR, organics and glass will be segregated. In the hotel building, waste will be temporarily held in an interim waste store at ground level, where residual waste, DMR, organics and glass will be segregated. In the commercial building, waste will be temporarily held in litter bins distributed across the floors.

Storage Areas for Waste Containers (Residential and Commercial)

Please provide details of container stores, attaching plans if appropriate.

The Proposed Development will plug into the Etihad Stadium's existing waste management strategy. Residual waste and DMR will be transferred to the Etihad Campus waste compound for consolidation and collection post-match. A satellite image of this area is included in the OWMS report.

In line with current operations, organics and glass bins will be stored internally, before being taken to the stadium's B gate for collection.

Ensure all bins in the store are accessible	☒
Ensure recycling facilities are as easy to access as general refuse	☒

Please confirm details of waste store ventilation and hygiene / cleaning proposals

Ventilation -	internal waste rooms will be mechanically ventilated. External waste stores are outside, and so will be naturally ventilated.
Hygiene -	intermediate waste rooms will be fitted out to be easily cleaned and maintained. Bin wash down facilities are already provided in the existing Etihad Campus waste compound. Drainage is already provided by means of a trapped gully connected to the foul sewer.

Please provide details of who will be responsible for placing the bins at the collection point and returning them to the store / property promptly e.g. resident / management company

The site's facilities management (FM)/cleaning team will be responsible for moving waste from the point where it is generated to the point where it is collected.

Please ensure that you have attached:

Detailed plans of waste stores	☒
Location plans showing stores	☒
Location plans showing the proposed collection point and the route the collection vehicle will take	☒

Please ensure that you have completed this form in accordance with our GD04 Waste Storage and Collection Guidance for New Developments

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