

Edmonson Park – Town Centre North

Waste Management Strategy

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This report is based on information provided by Landcom coupled with Foresight Environmental's knowledge of waste generated within the mixed-use development sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of Landcom.

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Document Intent

This document has been prepared by Foresight Environmental to apply waste management best practice into the design of Edmondson Park. As such, Foresight Environmental will link the provisions and objective of relevant planning instruments identified in the SEARs as they pertain to waste management. This would include reference to the waste management components, where relevant, of the following documents:

- Environmental Planning and Assessment Act 1979
- State Environmental Planning Policy (State Significant Precincts) 2005
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy 55 Remediation of Land
- Greater Metropolitan Regional Environmental Plan 2 Georges River Catchment
- Liverpool Local Environmental Plan 2008
- A Plan for Growing Sydney
- Draft South West District Plan

This document addresses the waste management principles for the following types of development within the Edmonson Park :

- Residential
 - o Detached/Semi-detached
 - o Villa/Townhouses
 - o Low/Med Rise Apartments
 - o High Rise Apartments
- Schools (Primary/High)
- Mixed Use
- Public Place

The document is structured as follows:

- Section 1 Overview of the development project
- Section 2 Waste management practice requirements applicable to all developments
- Section 3 Specific waste management practices applicable to the **specific development** types
 - o 3.1 Detached/Semi-detatched
 - o 3.2 Villa/Townhouses
 - o 3.3 Low Rise Apartments
 - o 3.4 Mid-High Rise Apartments
 - o 3.5 Schools (Primary/High)
 - o 3.6 Mixed Use
- Section 4 Public Place

Provisions

The following provisions are the key focus for this waste management strategy.

A Plan for Growing Sydney

Direction 4.3: Manage the impacts of development on the environment

Western City District Plan

Direction: An Efficient City

Planning Priority W17 – Reducing carbon emissions and managing energy, water and waste efficiency

- new building standards and retrofits to design energy, water and waste systems to operate as efficiently as possible (for residential and non-residential buildings)
- waste diversion from landfill.
- Separating organics from other forms of waste, and valuing it as a resource which can be processed through a waste-to-energy facility to recover energy, will reduce waste being diverted to landfill.
- In higher-density neighbourhoods, innovative precinct-based waste collection, re-use and recycling would improve efficiency, reduce truck movements and boost the recycling economy. Where possible, additional land should be identified for waste management, reprocessing, re-use and recycling.

Actions	Responsibility
77. Support Initiatives that contribute to the aspirational objective of achieving net-zero emissions by 2050, especially through the establishment of low-carbon precincts in Priority Growth Areas, Priority Precincts, Collaboration Areas, State Significant Precincts and Urban Transformation projects.	Councils, other planning authorities, State agencies and State-owned corporations
 Support precinct-based initiatives to increase renewable energy, and energy and water efficiency, especially in Priority Growth Areas, Priority Precincts, Collaboration Areas, State Significant Precincts and Urban Transformation projects. 	Councils, other planning authorities, State agencies and State-owned corporations
79. Protect existing, and identify new, locations for waste recycling and management.	Councils, other planning authorities and State agencies
 Support Innovative solutions to reduce the volume of waste and reduce waste transport requirements. 	Councils, other planning authorities and State agencies
81. Encourage the preparation of low-carbon, high efficiency strategies to reduce emissions, optimise the use of water, reduce waste and optimise car parking provision where an increase in total floor area greater than 100,000 square metres is proposed in any contiguous area of 10 or more hectares.	Councils, other planning authorities, State agencies and State-owned corporations
82. Investigate potential regulatory mechanisms such as a Protection of the Environment Policy (PEP) that sets low-carbon, high efficiency targets to be met through increased energy efficiency,water recycling and waste avoidance, reduction or re-use. This could include a framework for the monitoring and vestification of rectification of the proteincer in Priority Council and Priority (Priority Council).	Environment Protection Authority

Collaboration Areas, urban renewal precincts and housing growth areas that are planned to have an increase in total floor area greater than IOO,000 square metres.

Greater Sydney Region Plan

Objective 33: A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change; Objective 35: More waste is re-used and recycled to support the development of a circular economy and the corresponding strategies.

1. Overview of Development

1.1 Project Scope

This section outlines the proposed scope of planning and zoning in order to establish the context for future waste generation considerations from each distinct precinct within the masterplan.

Edmondson Park was rezoned for urban development in 2008 and was one of the first areas to be planned in the NSW Government's South West Sydney Priority Growth Area. It is located approximately 8km from the Liverpool City Centre and 40 km from the Sydney City Centre.

Edmondson Park is located in the both the Liverpool local government area. It is serviced by the Edmondson Park Railway Station which opened in February 2015, and is adjacent to the M5 and M7 Motorways. The Edmonson Park South Concept Plan was approved in 2011. The proposed modification will be Modification 5 (Mod 5) to the concept plan (MP10_0118M0D5)



Figure 1: Project Scope

The proposed Town Centre North site has been planned to allow for up to 3,286 dwellings that incorporate a range of lot sizes and dwelling choices, from detached cottage dwellings, terrace houses, studio dwellings and high-density apartments. It is anticipated that most lots will range between 125 – 250m².

The higher density areas are planned around proximity to services, public open space, retail areas and transport. High density development is encouraged in close proximity to the town centre and village centres, transitioning into lower density development comparable with surrounding low-density suburbs. This helps to create a liveable, walkable suburb with high amenity for all residents.

Edmondson Park is planned around a town centre, which will develop around Edmondson Park Railway Station. It is anticipated that the town centre will feature a town square, which will be able to host a number of community events. The approved Concept Plan allows for between 35,000-45,000m² of commercial, retail and business GFA in the town centre.

Figure 2: Masterplan Overview



1.2 Residential

The following housing typologies are planned for Edmondson Park. Foresight Environmental, for the purpose of the waste management strategy, has classified the housing typologies as follows:

- Detached/Semi-detached
- Studio dwellings
- Terraces
- Low Rise Apartments: 1-3 storeys
- Mid-High Rise Apartments: 4-15 storeys
- 1 x Landmark building: 20 storeys

Figure 3: Housing Typologies

Building Typologies



1.3 Primary/High School

The NSW State Budget 2018 confirmed funding for a new primary school and high school at Edmonson Park. Landcom are working with the Department of Education and Training who are considering land size requirements for a school site in the Town Centre North Site.

1.4 Mixed Use

The "Station Precinct" is zoned for mixed use development. Due to this, Foresight Environmental have included mixed use (residential/office/retail) design guidelines for waste management.

Figure 4: Zoning in Parkland, Maxwells Creek and Station precinct



2. All Developments

2.1 Waste and Recycling Storage & Collection Areas

Properties/designs must provide for the location of at least 3 areas to adequately service waste and recycling as follows:



2.1.1. Internal Storage Areas

Consideration needs to be given to providing sufficient space at the point of generation. Within most properties the highest point of generation is usually in the kitchen. It is required that each building or individual dwelling has adequate space for internal storage of at least two days' worth of general waste and recycling in their kitchen or other convenient location.

Depending on service availability additional recycling streams may need to be considered i.e. paper/cardboard, green waste, food organics. This should be referenced under the expected waste generation section for each specified development. The internal receptacles should always reflect the systems in place in the bin storage area.

Figure 5: Internal bin storage options



2.1.2. External Bin Storage Area

Bin storage areas should be located in positions that:

- Permit easy, direct and convenient access for the users of the dwelling.
- Permit easy transfer of bins to the collection point (if relocation of bins is required).
- Permit easy, direct and convenient access for collection service providers.
- Are secure and provide protection against the elements, vermin and potential vandalism.

Each storage area will have the following features:

- Ventilation: The bin storage room will be ventilated to external air or mechanically exhausted in accordance with AS 1668.2-2002
- Vermin Prevention:
 - The bin storage rooms will feature tightly fitted doors (if relevant)
 - Opening will be vermin proof
 - Bin lids are to remain closed when unattended
- Floor: Structural concrete slab finished to a smooth surface.
- Graded drains to approved sewer connections fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation.
- Walls: Brick work/concrete block or similar finished in a light coloured, washable paint
- Ceiling: bin area should be covered/sheltered
- Lighting: Base building lighting with switches inside and outside waste room (sensors may also be used) if waste storage is indoors.
- Water Supply: cold tap and hose connection

• Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see section on signage below)

Specific details on each typology storage arrangements are provided in section 3 below.

2.1.3. Collection Point

Consideration should be given to identifying a suitable waste collection point for all dwelling typologies.

General requirements

Collection points where possible should not be located:

- near intersections;
- near roundabouts or slow-points;
- along busy arterial roads;
- in narrow lanes;
- near possible obstructions, including trees, overhanging buildings, and overhead powerlines; or
- where they pose a traffic hazard.

The collection point(s) should enable collection operations to be carried out on a level surface away from gradients and vehicle ramps.

Where MGBs will be used and collected from the kerb, there should be sufficient space on the street for them to be lined up neatly in (preferably) a single row along the kerb. Remember cars parked along the street and bins placed two or more rows deep are an obstacle for safe and efficient kerbside collection, as they require collection operators to get out of the collection vehicle and manually move bins to an appropriate position for collection. They also create amenity issues for residents, can impede pedestrian access and can be a traffic hazard for motorists.

Identifying a suitable collection point is particularly important for servicing developments where there are a large number of bins to be collected; there is limited direct access to the development (for example battleaxe block developments); or where the development has specialised servicing requirements due to equipment used to provide the waste service. For example:

- The collection point for bulk bins or bins containing compacted waste should be located such that the bins can be accessed with minimal manual handling required.
- Underground systems require suitable access for the collection vehicle to enable safe lifting of the underground containers for servicing.
- Developers should consider what alternatives are available for locating collection points, particularly for developments built on small blocks with steep gradients, to enable safe presentation and uplift of bins.

Onsite collection

Liverpool Council waste services will not enter private property to make collections. Therefore, designated collection points (bin bays) should be established adjacent to a street frontage or if not possible, at a designated point adjacent to the common access driveway – the bin bay must be within 15m of where the collection vehicle will park on the kerbside. The path of transfer from the bin bay to the kerbside collection point should be flat or ramped with a maximum grade of 7% and be free of steps/gutters.

2.2 Signage

All waste and recycling streams should be differentiated with clear signage on all bins and on walls within the waste storage room. Below are examples of appropriate signage incorporating textual information, pictures and colour-coding to communicate the message.



2.3 Colour-coding

To further reinforce the differentiation between waste and recycling streams, it is highly recommended that the bin storage room be colour-coded to ensure bins are stored in the correct area and to enable easy identification of the streams provided. This can be done by painting borders on the floor indicating where bins should be stored. The colour of the paint should be consistent with the waste stream e.g. yellow paint for mixed recycling, red paint for general waste. The waste room walls can also be painted.

Photographs 1 & 2 – Examples of appropriate colour-coding

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3. Specific Dwelling Typologies

3.1 Detatched/Semi-detached

For this type of dwelling Liverpool Council provide the following bins:

- One 140L MGB for general waste (red lid) collected weekly
- One 240L MGB for recycling (yellow lid) collected fortnightly
- One 240L MGB for garden waste (green lid) collected fortnightly

The bins can be stored anywhere on the residents property but would generally be stored in the backyard/courtyard/carport/garage or specially designed enclosure.

It is the responsibility of the resident to bring the bins out to the kerb for collection.



[reference all source diagrams from Better Practice Guide for MUDS]

3.2 Villa/Townhouses

Liverpool Council provide the same bin configuration and collection frequency as detached dwellings. Villa's and Townhouse can use several options depending on the available storage space.

Typically, these are the options that would be most suitable:

- Option 1: Bins stored in the resident's own backyard/courtyard/carport/garage as appropriate,
- Option 2: Bins stored at a designated communal storage area residents access bins as required and bins are collected from this point by council waste services (provided the communal storage area is located in an area that complies with the collection point criteria as per section 2.1.3).



3.3 Low Rise Apartments (1-3 storeys)

For these dwellings Liverpool Council provide the following bins:

- One 240L MGB for general waste (red lid) shared between two units, collected weekly
- One 240L MGB for recycling (yellow lid) shared between two units, collected fortnightly
- Green bins for garden waste could be requested by strata/building management and would likely be managed by onsite maintenance staff for garden care (if relevant)

Bins would be located in a communal waste storage area which would ideally be located in an area that complies with the collection point criteria – as per section 2.1.3. If the communal storage area is located away from the collection point, then consideration must be given to strata/onsite management transferring the bins from the storage area to the collection point as required on collection days and then returning the empty bins after collection for contiuned resident use.

Bulky items storage

For apartment typologies of more than 25 dwellings, a designated storage area for the temporary storage of resident's bulky items (i.e. furniture, appliances etc) must be established. The minimum allocated space must have a floor area of 6m² with a height of 2m. The space should be signed as to its purpose. Refer to Council protocols regarding collection procedures/frequencies etc.



The following figures provide examples of communal bin storage areas for low-rise apartment typologies.

Figure 4-1 Example of Option 1: MGBs used for garbage and recycling

This example demonstrates locating a communal storage area at ground level, adjacent to resident parking. The storage area is easily accessible to residents using the main building entrance. In this example a caretaker may transfer bins to and from the kerbside for collection or an arrangement may be in place for onsite collection.





In the above example, multiple communal storage areas are used to service the overall development, with there being one communal storage area for each block of units. Dual street frontage enables bulk bins and MGBs to be used for collection, with bins spread between at least two collection points. It is possible to have on-site servicing of bins as the collection vehicle could enter and leave the development in a forward direction, using the dual access points.

3.4 Mid/High-Rise Apartments (4-15 storeys) + 20 Storey Landmark Building

The following provisions apply to the mid/high-rise apartment typologies including the 20 storey landmark building:

- For residents over the third floor, a chute system for the general waste stream can be implemented which would empty into bulk bins (1100L MGB) or bin carousel within the waste storage room (likely within basement). Liverpool Council does not allow the use of chutes for recyclables therefore, space must be provided on each level immediately adjacent to the chute access point for the storage of 2x240L recycling bins for resident use. Chute access and recycling bins should be located within a dedicated service room or compartment. Onsite strata management staff would then be responsible for transferring the recycling bins to the collection point as required on collection days, and then returning the empty bins to the floors after collections. Onsite strata management staff would also transfer general waste bins from basement storage room(s) to the collection point as required on collections.
- If chute systems are not implemented, waste and recycling can be managed by providing the appropriate number of bins for waste and recycling streams on each floor for resident use, i.e.
 - o One 240L MGB for general waste (red lid) shared between two units, collected weekly

• One 240L MGB for recycling (yellow lid) shared between two units, collected fortnightly Onsite strata management staff would then be responsible for transferring the recycling bins to the collection point as required on collection days, and then returning the empty bins to the floors after collections.

Bulky items storage

For apartment typologies of more than 25 dwellings, a designated storage area for the temporary storage of resident's bulky items (i.e. furniture, appliances etc) must be established. The minimum allocated space must have a floor area of 6m² with a height of 2m. The space should be signed as to its purpose. Refer to Council protocols regarding collection procedures/frequencies etc.



Figure 5-2 Example of Option 3: use chute for garbage and MGBs for recycling

This example demonstrates onsite collection of bulk garbage bins and MGB recycling bins from the basement of a 4-7-storey building. There is no access to the bulk bin storage area for residents, however, they can access the recycling and bulky waste storage areas.

Direct access is provided for the garbage collection vehicle to drive forward up to the bulk bin storage area and use an overhead lift and empty the garbage. The garbage collection vehicle would then proceed to drive through the car park and leave the basement, always moving in a forward direction.

The recycling collection vehicle would enter the basement and proceed to directly in front of the recycling storage area. Sufficient space has been provided to make the collection without obstructing traffic flow through the car park. This example assumes recycling bins are wheeled from the storage area to a rear-loading collection vehicle. The vehicle would then leave the basement car park in a forward direction. Similarly, bulky waste would be moved from the bulky waste storage area to the waiting bulky waste collection vehicle at the time of collection.

Note: In the above example, additional MGBs for garbage would be available in the recycling area that are accessible to residents so as to prevent contamination of recyclables.



Figure 5-3 Cross-section of Option 3: interim storage area and chute system

This example demonstrates the general principles and operation of a garbage chute system supported by recycling bins located within the interim storage area on each level. Additional recyclables storage and storage for bulky waste items are provided in the car park of the building. The chute discharges into an MGB carousel (or possibly bulk skips), which are located in a room normally locked and not accessible to residents.

Note: In the above example, additional MGBs for garbage would be available in the recycling area that are accessible to residents so as to prevent contamination of recyclables.



Figure 6-2 Example of Option 2: secure waste storage area for high-rise development

This example demonstrates a possible layout for a secure garbage area for a high-rise development. This type of arrangement may typically be located in a basement or underground car park.

In this example, access for residents to garbage and recycling facilities is limited to the interim storage area and chute inlet hopper on each floor. Access to rooms where the chute empties and extra bins are stored is restricted to the caretaker. This is for safety reasons and to discourage dumping.

Secure recycling bins are also included in the lockable garbage room in an effort to prevent vandalism. In this example the recycling bins are kept in a locked room or cage and access to the recycling bins for residents is by a slot in wall of the room or cage. This prevents theft and vandalism of the bins, and also prevents residents placing full bags of rubbish and other large items in the recycling bins (as they cannot fit through the slot).

Additional storage for bulky waste items and an area to wash down bins are incorporated in the facilities.

3.5 School (Primary and/or High)

The Edmonson Park precinct proposal includes the delivery of a new 2 hectare primary/high school site. Details regarding school size and design are yet to be finalized, however from a waste perspective, the proposed approach to waste management will share the same overarching principles regardless of the final size of the school.

Schools will typically establish a designated waste storage area for the storage of large bins within easy vehicular access within the school grounds i.e. within a loading area, or adjacent to maintenance shed etc.

As an approximate guide, the following bin types, numbers and collection frequency would be appropriate for a primary school of 1000 students and 100 staff:

Waste Stream	Bin Type	No. of Bins	Weekly Clearance Frequency
Paper/Cardboard Recycling	1100L MGB	3	1
	240L MGB	10*	1
Comingled Recycling	660L MGB	2	2
General Waste	1100L MGB	2	3

*Indicative number of paper bins that would be distributed throughout school learning areas/offices etc – these bins would be brought to the waste storage area when full for collection by waste contractor and then returned to the required area for continued use.

Typically, due to the amount of different rooms and areas within a contemporary school design it would be impractical and unnecessary to offer bins in every single room. Instead, it is recommended that bin hubs are established throughout the floors in hallways and common spaces to service the different areas. This encourages students/staff using the spaces to remove any waste they have and place it in the appropriate bin at the nearest hub – such a practice should promote recycling by giving users the choice of stream to dispose material into, and also reduce the time taken for cleaners to empty the bins. See photograph below for an example of a waste/recycling hub.

Signage will need to be displayed on all bins and ideally on walls above bins advising of acceptance criteria within each system.

Photograph 1 – Best practice bin hub



3.6 Outdoor Areas

Appropriate public place bin hubs should be implemented throughout high traffic outdoor areas i.e. sporting fields, break-out/lunch areas, walkways etc.

The following photographs provide examples of waste and recycling bin hubs. It is important to note that if recycling is implemented in these areas that both general waste and recycling bins must be located next to each other – when these streams are isolated from each other the likelihood of the recycling stream being contaminated by non-recyclables significantly increases.

For ease of use, bin hubs should be large enough to house a 240L MGB for each stream so that maintenance staff can simply remove the full bin and replace it with an empty bin. Full bins can then be transferred to the waste storage/collection area for collection by the waste contractor.

Photographs 2 & 3– Outdoor bin hubs





3.7 Mixed Use

Waste and recycling generated from a mixed-use development will generally depend of the tenant types. Should there be a residential component included within the property this waste should be separated from any commercial/retail waste generation to ensure the billing of commercial/retail waste is correctly attributed to the generators. The residential composition of the property should follow the waste management practices outlined in the previous sections. The retail/commercial components of a mixed-use development will typically be managed by a common facilities management operator who will be responsible for engaging and managing a commercial waste contractor to provide waste services specifically for the retail/commercial components of any mixed-use development.

Retail/commercial waste systems should be kept separate from residential waste systems, either by providing a dedicated storage area or by clearly partitioning and restricting access to a communal waste storage area which may also house the residential waste systems.

Retail/commercial operators will be responsible for managing and separating their waste and recycling streams within their tenancies and then will be required to transfer all materials to the waste storage room to be disposed into the appropriate bins provided (i.e. general waste, mixed recycling, paper/cardboard recycling, organics recycling etc).

Collection arrangements are typically more flexible with commercial waste contractors regarding frequency, location etc – if access to basement storage areas cannot be provided, consideration must be given to the transfer of bins from the internal storage areas to a designated collection point (in consultation with the waste contractor).



Figure 7-1 Example of Option 1 or Option 2

This example demonstrates separate waste storage areas for residential and commercial waste in a mixed use development. Resident access to the resident communal waste storage area is via a passageway adjacent to the residential lift well. Access to the waste room is limited to residents and caretakers only. Only commercial tenants and caretakers can use the commercial waste storage area, as access is via a service area at the rear of the commercial units.

Caretakers have additional access to each of the waste rooms direct from the parking area. This is normally kept locked and opened only as required, such as to allow regular cleaning and maintenance of the waste storage areas.

There is ground-level access from both the residential and commercial waste storage areas such that bins can be easily wheeled to and from the kerbside for collection. A caretaker would be required to do this.

14 A Waste Management Plan is generally required as part of the documentation supporting a development application. Requirements for Waste Management Plans may vary between Local Government Areas



Figure 7-2 Example of Option 3: chute system for residential garbage supported by recycling in MGBs

This example demonstrates the potential layout of a secure waste storage area for residents in the basement of a mixed use development. Access for residents to garbage and recycling facilities is limited to the interim storage area and chute inlet hopper on each residential floor. Access to rooms where the chute empties and extra bins are stored in the basement is restricted to the caretaker. This is for safety reasons and to discourage dumping.

Waste storage areas for commercial developments, located on the ground floor of the building, are provided either at ground level, or in a separate storage area in the building basement.

In the above example, additional MGBs for garbage would be available in the recycling area to prevent contamination of recyclables.

4. Public Place

While there are no strict guidelines on the number of bins required in public places, it is a rule of thumb to include public place bins in places of congregation or busy thoroughfares.

To reduce litter in the area these bins should be highly visible and easy to access. To improve recovery and reduce contamination, bins should be situated in hubs with a general waste and recycling bin provided next to each other. All bins should be clearly signed and colour coded to differentiate between recycling and waste.

The following images provide examples of appropriate bin housings and configurations.



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Identify disposal points

Bins should be placed where people dispose of materials, but not necessarily where they buy them. This may be identified through observation, survey and through monitoring litter.



Appendix 1 – Foresight Environmental

Company profile

Foresight Environmental is an industry leading waste management consultancy providing expert waste management advice to businesses, architects and developers. Specialising in the conception and delivery of national portfolio-wide waste programs, advanced analytics and reporting, and the development of waste management plans for development approval and Green Star submissions, Foresight Environmental brings extensive experience and practical solutions for real-world applications to every project.

We enjoy ongoing working relationships with some of the most prominent corporates, property groups, architects, developers and project managers in Australia. A selection of our clients includes:



Capacity and Relevant Experience

Foresight Environmental confirms their availability for immediate start and capacity to deliver the required services within project timelines. We have provided waste management advice, developed strategies and delivered waste management plans for DA submissions for some of the most high-profile developments currently underway or recently completed in Australia – a selection of our work is provided below. We pride ourselves on delivering high-quality, timely, market-leading consultancy to our clients. Through our wide network of contacts within the waste industry (waste contractors, equipment manufacturers, disposal facilities, industry bodies etc) we are able to deliver the most current, relevant and independent advice to our clients to ensure the success of each project – the long-standing relationships, repeat business and referrals from our clients is a testament to the quality of our work and services.

A selection of our previous waste management experience includes:

- Barangaroo (Lend Lease) development of common basement waste strategy and overarching waste management plan detailing recommended equipment recommendations and design input to ensure adequacy of basement area for future staged development of towers.
- Barangaroo (Lend Lease) preparation of waste management plan for residential components and basement infrastructure for DA and Green Star rating (Liverpool and GBCA)
- Sydney International Convention, Exhibition and Entertainment Precinct (Lend Lease) preparation of waste management strategy and plans for DA encompassing all functions and components within the precinct including exhibition space, convention centre, entertainment centre, hotel, residential, commercial, retail and public domain (Liverpool and iNSW)
- Barangaroo (Lend Lease) Public Space waste management strategy (Liverpool).
- Redlands School (Sandrick Projects) 20 year masterplan redevelopment waste strategy and waste management plan documentation for DA (North Sydney Council)
- Stella Maris College (Sandrick Projects) major redevelopment waste strategy and waste management plan documentation for DA (Manly Council)
- O'Connell Street podium retail and basement redevelopment preparation of C&D and ongoing operation waste management plans for DA and Greenstar (Liverpool and GBCA)
- Green Square Community Facilities redevelopment of South Sydney Hospital Site, Zetland preparation of waste strategy and design input, preparation of waste management plan for DA (Liverpool)
- Parramatta Square (multiple stakeholders) development of precinct wide-wide waste strategy including proposal for submerged centralized waste facilities. Preparation of waste management plans for individual plot developments for DA (PCC).
- Ashmore Estate (GH Properties) development of residential precinct-wide waste strategy including submerged centralized waste facilities. Preparation of waste management plan for DA (Liverpool).
- Sussex Street Hotel development preparation of waste strategy and design input, preparation of waste management plan for DA (Liverpool)
- Holiday Inn Byfield Rd Hotel development preparation of waste management plan for DA (CoR)
- Holiday Inn Wharf St Hotel development preparation of waste management plan for DA (BCC)
- Harbord Diggers mixed use redevelopment preparation of waste management plan for DA (WC) encompassing design of common basement waste facilities
- Defense Housing Australia Shout Ridge Residential Development, Lindfield development of waste management plan for DA and Green Star rating (KMC and GBCA)
- Westfield Sydney preparation of waste management plan for DA and ongoing operational strategy/support (Liverpool)
- West Keira, Wollongong mixed use development (GPT) preparation of waste management plan for DA and Green Star rating (Wollongong City Council and GBCA)
- Wet n Wild water park development (Buchan Group) preparation of waste management plan for DA
- Craigieburn Town Centre retail development (Lend Lease) preparation of waste management plan for DA and Green Star rating (Hume City and GBCA)

- Lilypad Early Learning Childcare Centre, Top Ryde City preparation of waste management plan DA
- Top Ryde City preparation of waste management plan for retail centre
- 810 Elizabeth Street, Waterloo residential development (MPRDG) preparation of waste management plan for DA (Liverpool)
- 517-527 Elizabeth Street, Surry Hills residential development (Brenchley Architects) preparation of waste management plan for DA (Liverpool)
- 48-50 Martin Place commercial bank redevelopment (Macquarie Bank) preparation of waste management plan for DA and Green Star rating (Liverpool and GBCA)
- Panorama Apartments, Crows Nest residential development preparation of waste management plan for DA (North Sydney Council)
- 169 Macquarie Street, Parramatta commercial development (Architectus) preparation of waste management plan for DA and Green Star rating (Parramatta City Council and GBCA)
- 120 Terry Street, Rozelle residential development (Anka Property/Turner + Associates Architects) preparation of waste management plan for DA and Green Star rating (Leichhardt Council and GBCA)
- Casuarina Square retail development (GPT) preparation of waste management strategy and plan for DA and Green Star rating (Darwin City Council)
- 4 National Circuit, Canberra mixed use development (Lend Lease) preparation of waste management plan for DA and Green Star rating (GBCA)