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webinar

Waste Management Design Advice

Deliver functional, durable and visually coherent waste infrastructure from the outset

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Guest speakers Jose Sorribes and Nyomi Rowsell from **Buro Happold**

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Designing for efficient Waste Management

Key Design Considerations

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AGENDA

1. Presentations
2. What poor design looks like….
3. Prevention is better than cure
4. 5 Key design considerations for efficient waste management

PRESENTATIONS

Jose Sorribes, CRWM
Waste Management and Logistics Specialist
Associate Director at Buro Happold

- Passionate about solid waste management, operations, building design and process optimisation
- Over 11 years of experience in consultancy
- Areas of expertise include:
    - Development of operational waste strategies + design implementation
    - Complex buildings: Hospitals, Airports, Stadia

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PRESENTATIONS

Nyomi Rowsell, CRWM
Waste Management Specialist
Consultant at Buro Happold

- Driven by a deep commitment to sustainable solid waste and resource management, and the importance of behaviour change.
- Bringing nearly a decade of experience in designing, developing, and implementing waste management initiatives worldwide.
- Areas of expertise include:
- Minimising recycling contamination in multi-residential buildings.
- Enhancing food participation rates in flats and high-density housing.

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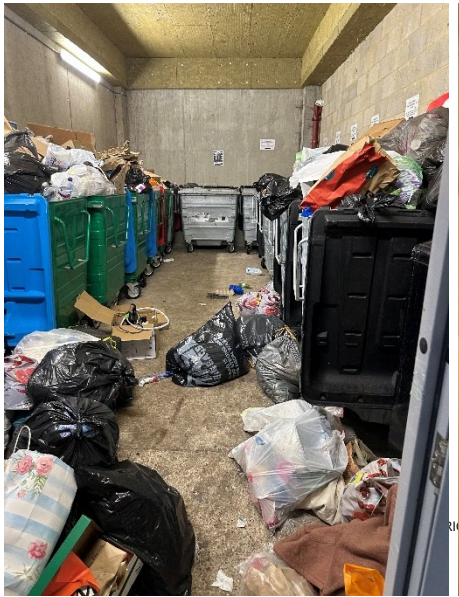
WHAT ‘POOR DESIGN’ LOOKS LIKE…

Source of images: Buro Happold



PREVENTION IS BETTER THAN CURE

PREVENTION IS BETTER THAN CURE

HOW DO LOCAL AUTHORITIES BENEFIT

Compliance with current waste collection services

Adaptable to future policies (e.g. simpler recycling)

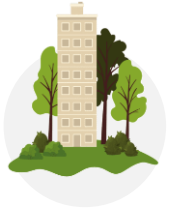
Higher capture rates → Better quality recyclables & organic material → Lower collection costs, Lower carbon emissions

More efficient collections

Safer, less straining operations

PREVENTION IS BETTER THAN CURE

HOW DO DEVELOPERS BENEFIT



Safer environment, less pollution, reduced visual impacts, enhanced aesthetics → Higher liveability → Attracts more residents

Less space needed for waste storage → More area for residential amenities or commercial spaces

Easier and faster planning processes

Lower service charges → More competitive rental prices

PREVENTION IS BETTER THAN CURE

HOW DO RESIDENTS BENEFIT

Safer environment, less pollution, reduced visual impacts, enhanced aesthetics → Higher liveability

Higher residents' participation and compliance → Higher sense of community

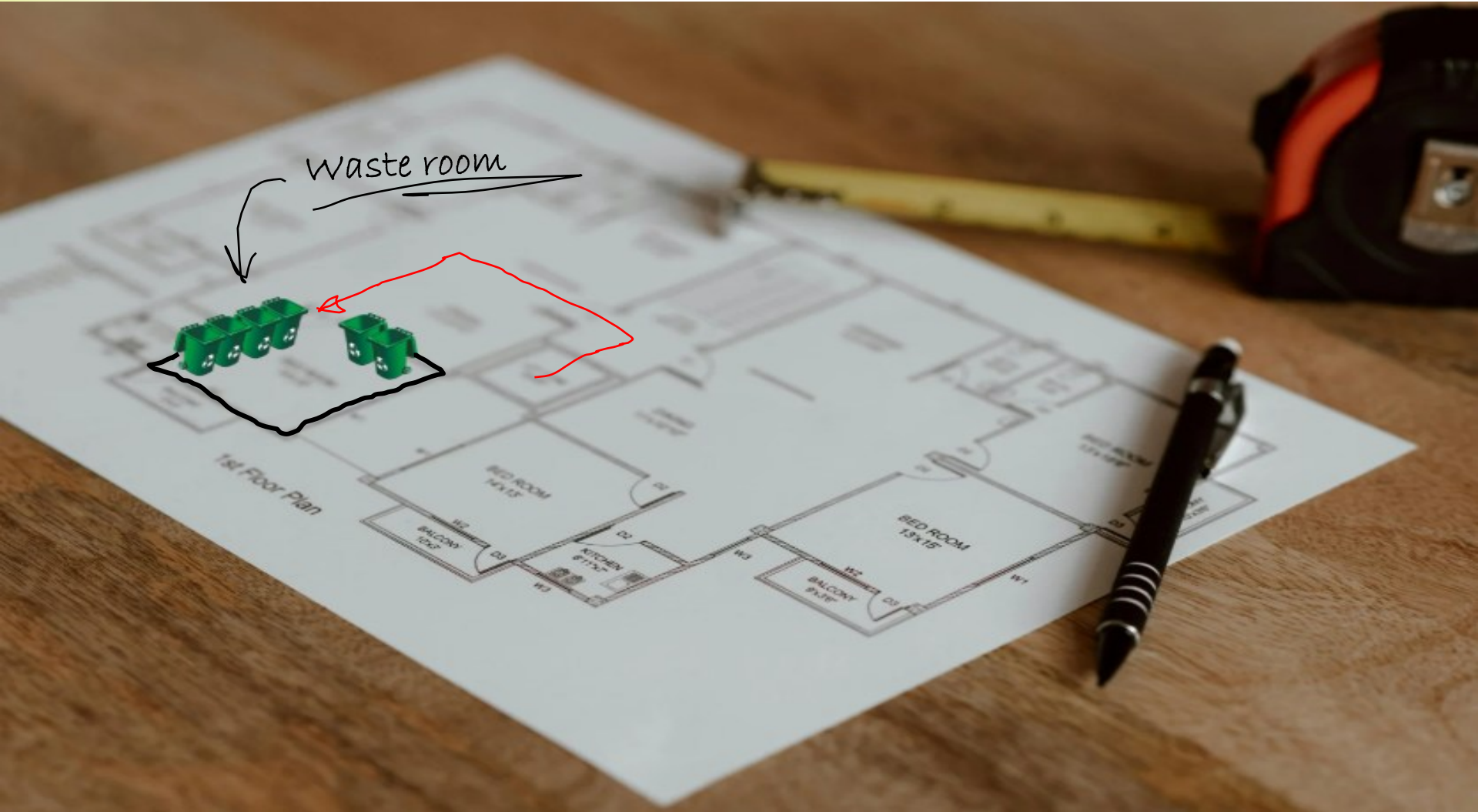
PREVENTION IS BETTER THAN CURE

HOW DO BUILDING MANAGERS BENEFIT

More efficient operations on-site → Higher service levels at more competitive costs

Less strain on staff → Higher wellbeing and staff retention

5 KEY DESIGN CONSIDERATIONS



5 KEY DESIGN CONSIDERATIONS

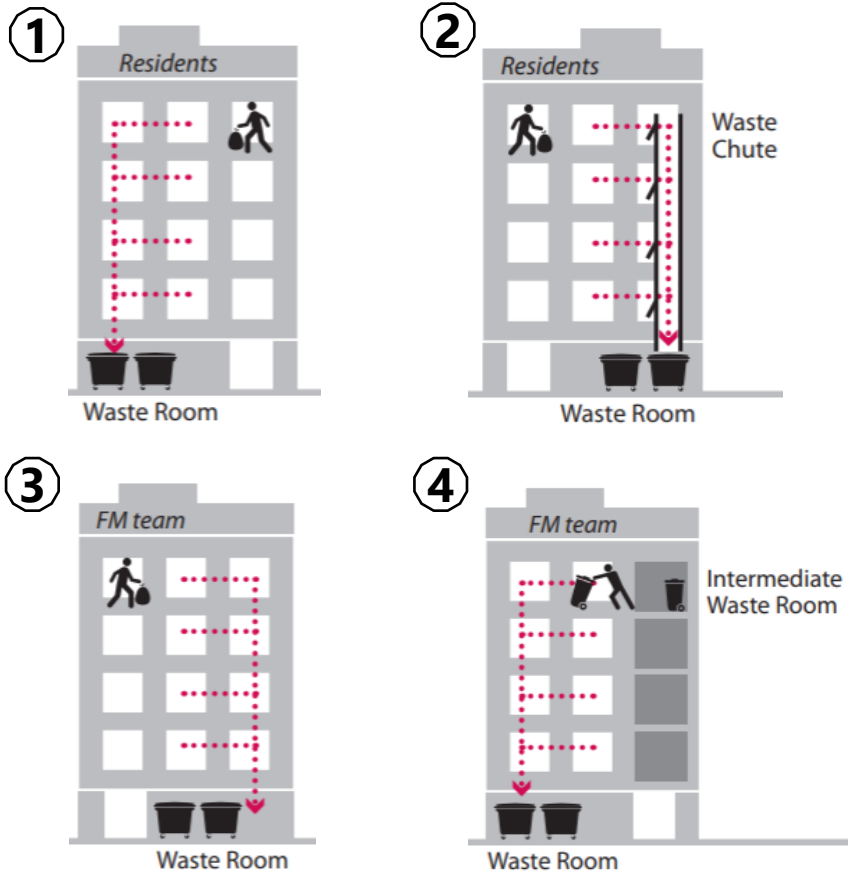
1. WASTE COMPOSITION, SEGREGATION AND FORECAST

- The building will generate waste. We need to accurately predict:
  - Types of waste materials that will be generated
  - Quantities of these materials
- When undertaking waste generation analysis/modelling:
  - Try to avoid relying on old waste generation metrics (*e.g. BS 5906:2005*)
  - Work with waste and environmental officers in Local Authorities to agree on realistic, up-to-date waste generation metrics
  - Consider future trends and fluctuations in generation
  - Important to future-proof the designs, → consider future segregation policies and practices (e.g. Simpler Recycling)

5 KEY DESIGN CONSIDERATIONS

2. WASTE FLOW

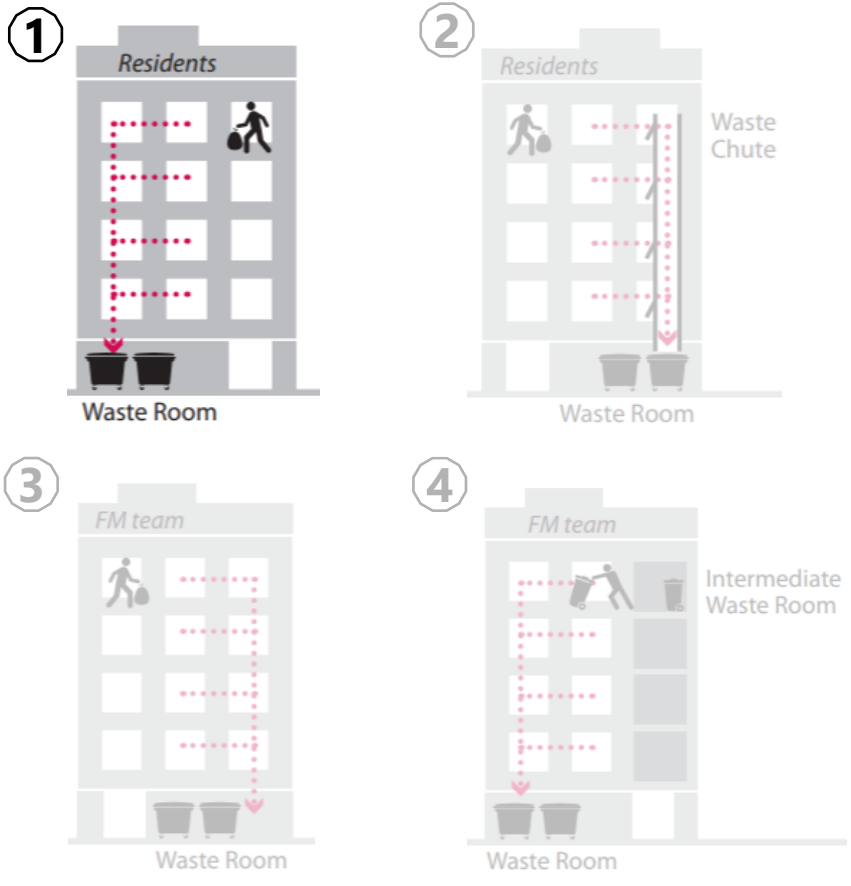
- Consider how waste will be moved through the building. Main systems are:
  - **(1)** Carried by residents
  - **(2)** Waste Chutes
  - **(3) (4)** Valet service



5 KEY DESIGN CONSIDERATIONS

2. WASTE FLOW

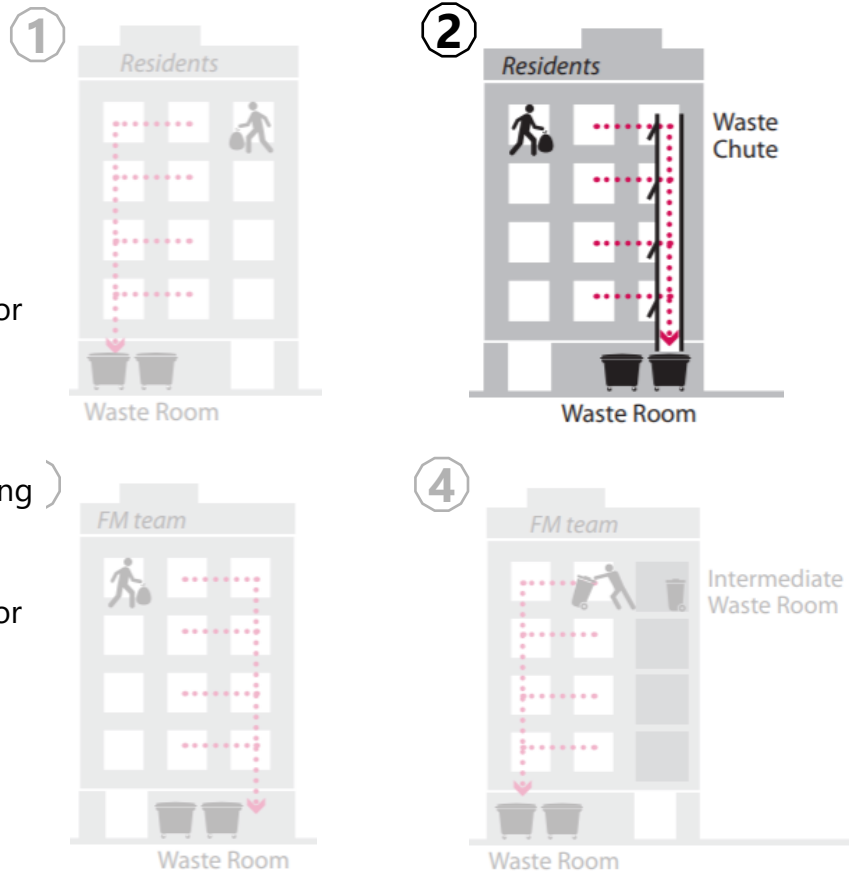
- Design considerations:
- **(1) Carried by residents**
  - Horizontal carrying distances from apartments to waste storage room(s) < 30 m
  - Avoid creating a 'path of less resistance' for some waste streams
  - Ensure routes to waste storage areas are part of the natural routes that residents will take daily e.g. to car park or bike store
  - Free of stairs, steep ramps



5 KEY DESIGN CONSIDERATIONS

2. WASTE FLOW

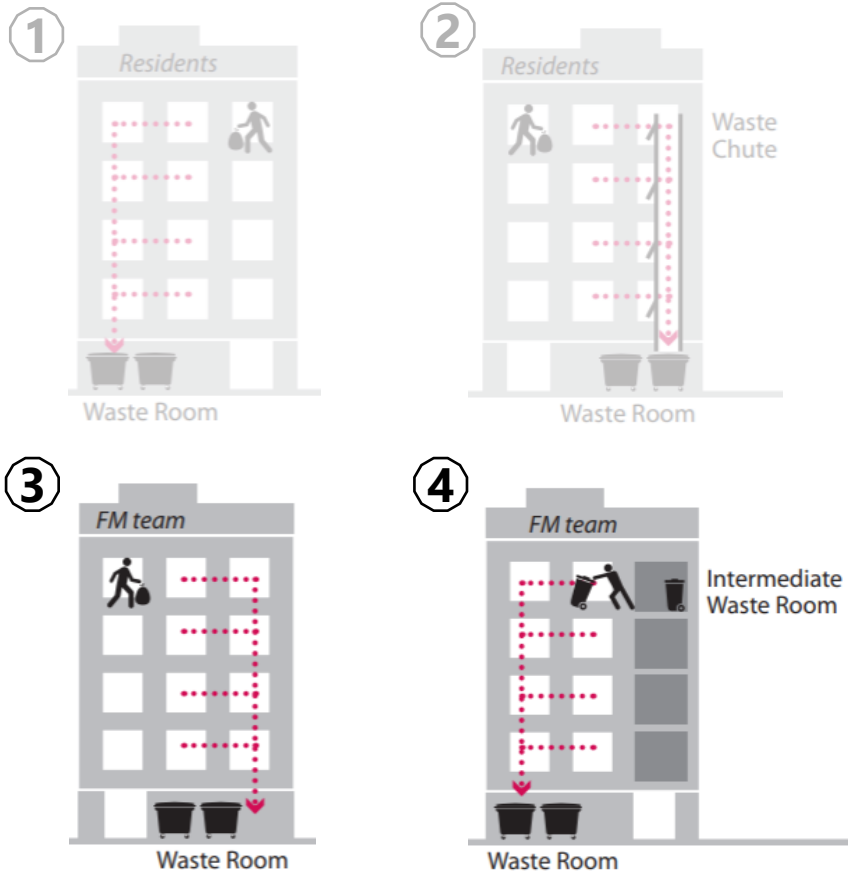
- Design considerations:
- **(2) Waste Chutes**
  - Incorporate inlet rooms on every floor → space for 2 or 3 inlets+chutes (minimum)
  - Incorporate discharge rooms at ground floor or basement level → provide adequate space for swapping containers
  - Provide alternative disposal and movement systems for materials not tolerated by the chute (e.g. cardboard)



5 KEY DESIGN CONSIDERATIONS

2. WASTE FLOW

- Design considerations:
- **(3) (4) Valet Service**
  - Incorporate service lifts where possible to minimise impacts to residents
  - Consider how the handover of waste is done → for instance, design in intermediate waste stores on every floor
  - Where possible, provide Back of House routes for the movement of waste



5 KEY DESIGN CONSIDERATIONS

3. WASTE STORAGE

- Consider the location of the facilities:
  - **(1)** Internal to the building
  - **(2)** External → bin enclosures, housing systems, underground refuse systems, side-loader bins

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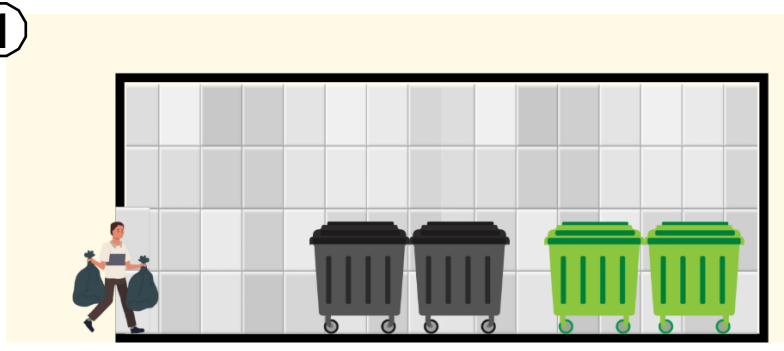

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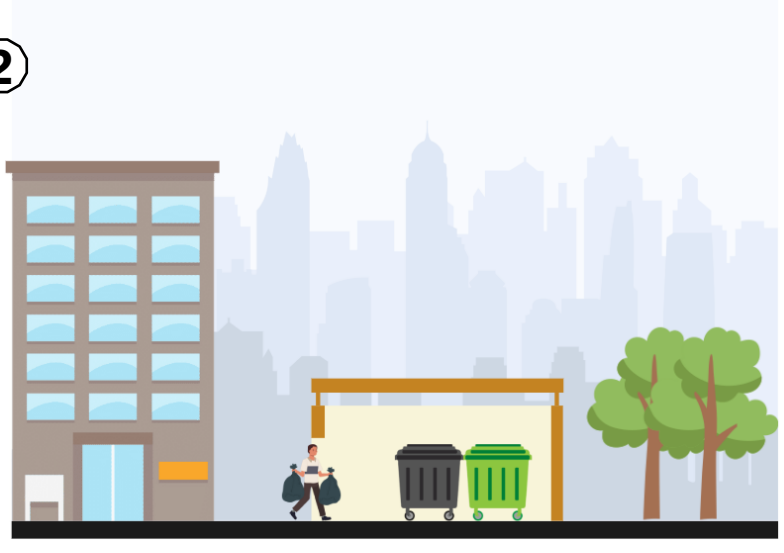
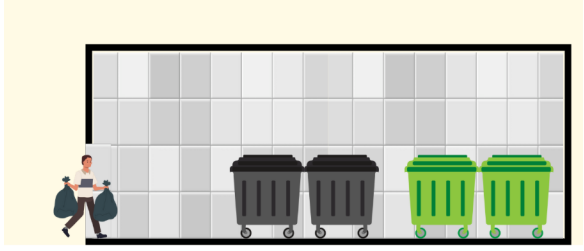
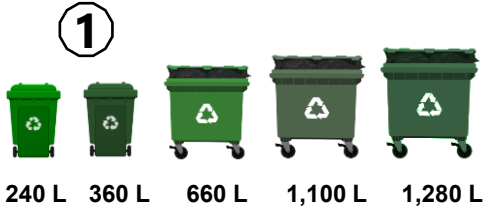


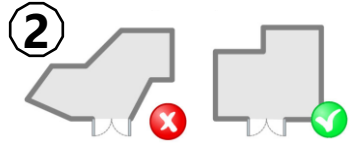
5 KEY DESIGN CONSIDERATIONS

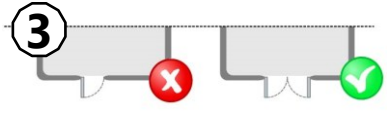
3. WASTE STORAGE

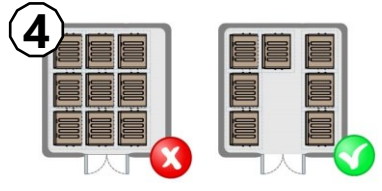


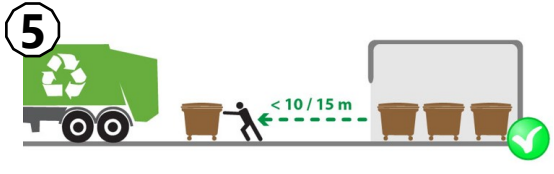
- **Internal to the building**
- **(1)** Consider the most efficient container size (from waste generation model)
- **(2)** Room shape: Avoid irregular shapes
- **(3)** Provide double doors (min 1.4 – 1.5 m door width clearance)
- **(4)** Room size: Allow for circulation and bin movement space
- **(5)** Consider horizontal distance to collection point(s) <= 15 m
- **(6)** Consider compaction options to reduce the volume of waste when necessary
- Adequate ventilation, lighting, drainage, signage







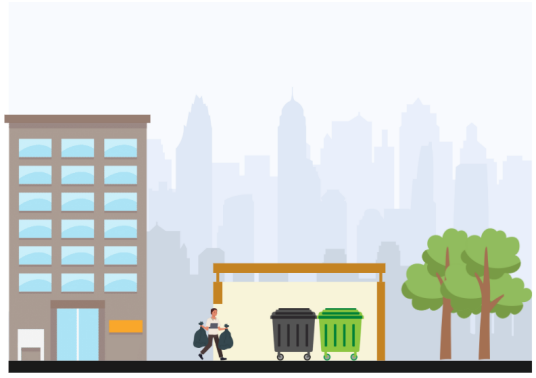




5 KEY DESIGN CONSIDERATIONS

3. WASTE STORAGE

- **External to the building**
- **(1)** Evaluate and implement the most efficient system:
  - bin housing
  - bin enclosure/sheds
  - Underground refuse systems (URS)
  - Side loading containers (in public realm)
- **(2)** Distance from the building façade
- **(3)** Hardstanding surface paths to facilitate wheeling of bins
- **(4)** Consider a location which is convenient for residents and waste collection vehicles/crews alike to access

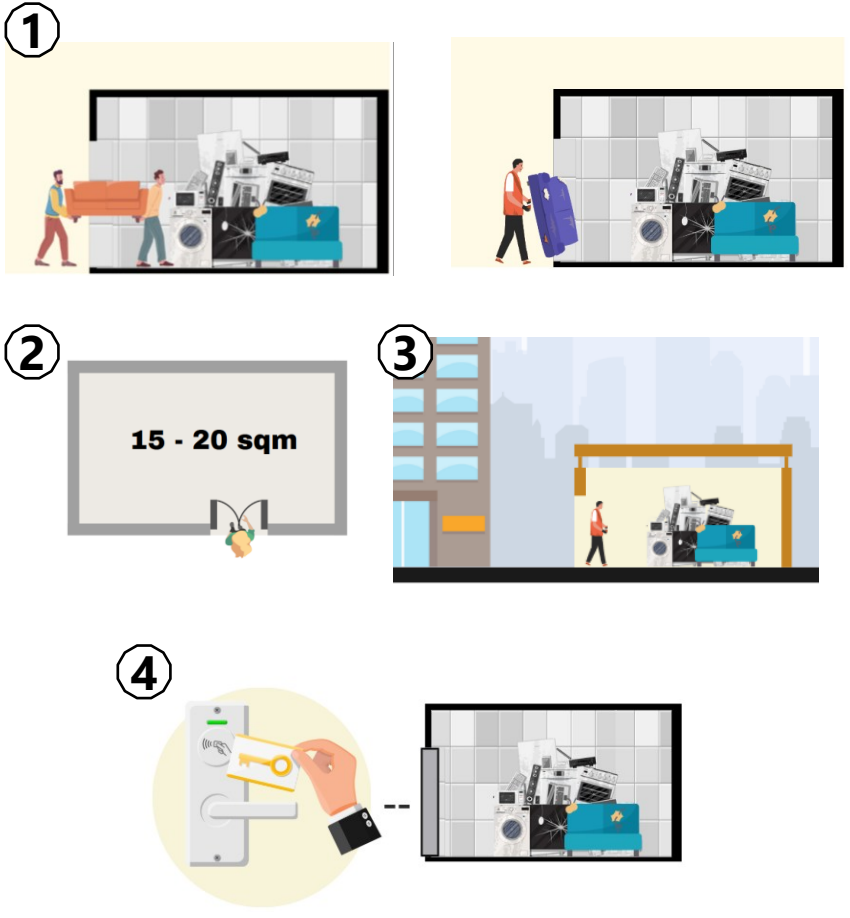


Source of bin shed/housing images: MetroStor
Source of URS image: Contenur

5 KEY DESIGN CONSIDERATIONS

3. WASTE STORAGE

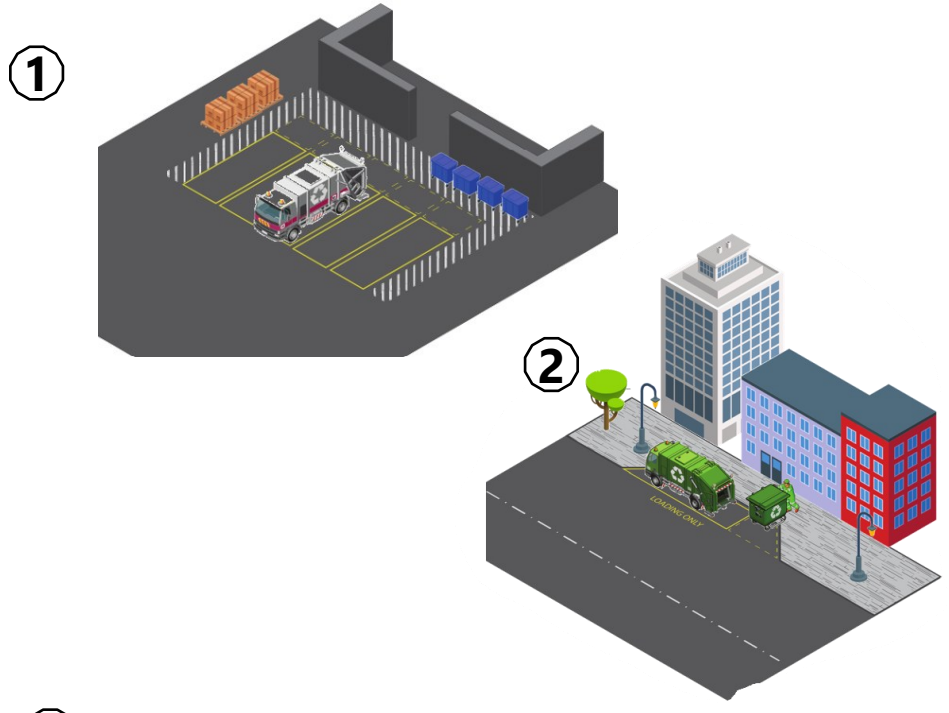
- **Bulky Waste Storage**
- **(1)** FM managed, or Residents managed?
- **(2)** Where possible, provide a separate, dedicated store room (c. 15 – 20 m^2)
- **(3)** If external to the building, provide a shed to avoid dumping on public areas
- **(4)** If managed by residents, consider systems to control access and avoid unauthorised dumping



5 KEY DESIGN CONSIDERATIONS

4. WASTE COLLECTION

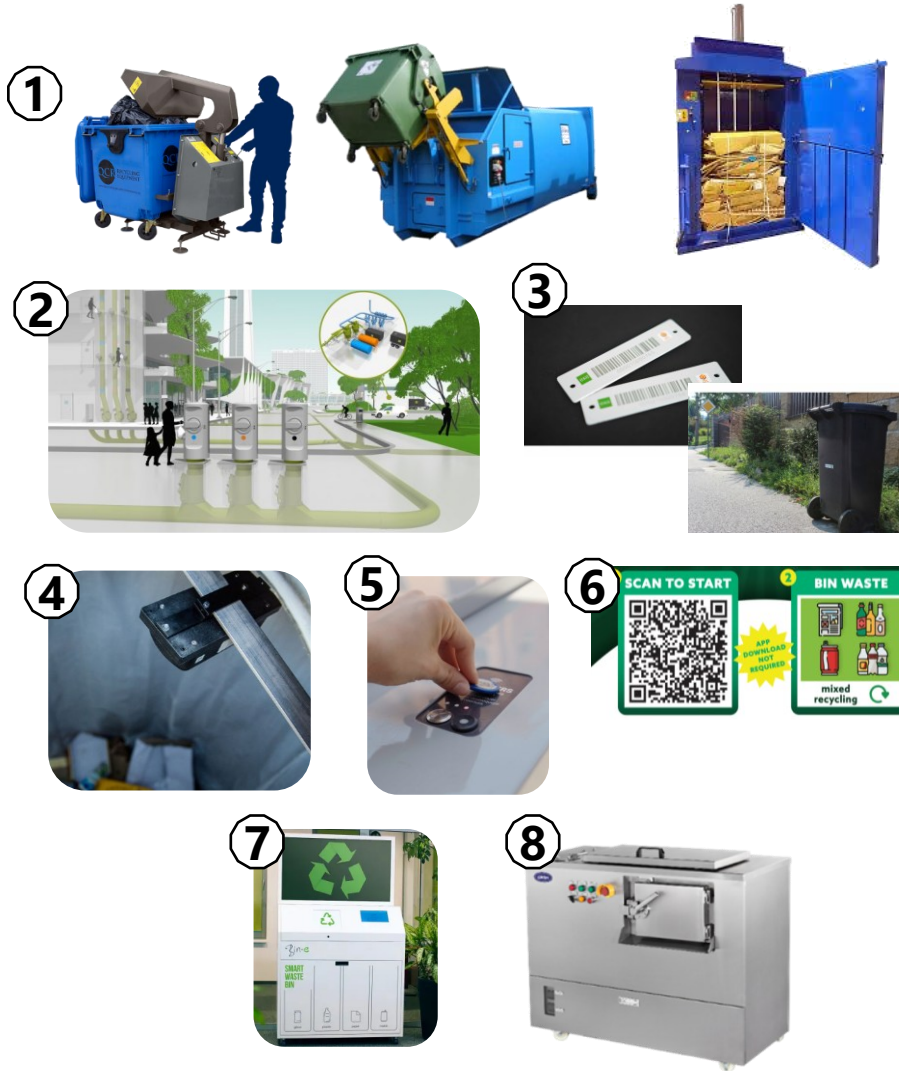
- Location of collection point
  - Off-street (Service yard) – **Preferable**
  - At street level (off/on carriageway layby)
- **(1)** Service yards – Provide:
  - Adequate loading bay capacity
  - Adequate vehicle manoeuvring space (Swept path analysis)
  - Space for bin movement and circulation
- **(1)** On-street laybys – Provide:
  - Adequate layby capacity
  - Ensure routes to building are adequate and discreet, free of obstacles. Dropped kerbs etc.
- **(3)** Consider bin presentation rooms/staging areas if the collection point if further than ~ 15 m from the bin storage area



5 KEY DESIGN CONSIDERATIONS

5. TECHNOLOGIES AND INNOVATION

- Consider the use of technologies and innovative systems to increase efficiency
- **(1)** Volume reduction equipment (compactors, balers, etc.)
- **(2)** Vacuum Waste Collection Systems
- **(3)** RFID enabled bins
- **(4)** Bin fill sensors
- **(5)** Identification systems for bins → PAYT
- **(6)** Digital Reward Systems
- **(7)** AI assisted bin sorters
- **(8)** Organic waste treatment (in vessel composting, small scale AD etc.)



Source of images: QCR recycling, ENVAC, PDE, Materials Handling, Sesoneo, Peasy, ID waste, Bin-E, Oklin

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