

Underground Bins

FACT SHEET

RESIDENTIAL FLAT BUILDING WASTE
COLLECTION INFRASTRUCTURE

Overview

For multiple bin units, large capacity mobile garbage bins (up to 1300 litres) are placed below ground on a platform. The platform is raised to street level using hydraulic lifts. The hydraulic lift can be powered either on-site using mains power supply or by vehicle. Single unit bins are lifted out of the ground by specialised vehicles with a crane for emptying. Disposal inlets sit above ground and can be designed for varying capacities.



Raised Platform showing Underground Bins

Source: Wastedrive and EcoPunto

Technical Information

- Single unit, 2 and 4 bin configurations are available and multiple units can be co-located
- Compatible with MGBs up to 1300 litres capacity for multiple bin units, or 2 to 3 cubic metre capacity for single bin units
- Inlets have a capacity of 45 to 80 litres
- Multiple bin unit comes complete and housed in a pre-cast concrete pit
- Multiple bin capping platform is waterproof and can be insulated to prevent odour generation
- Civil engineering works for multiple bin unit must incorporate appropriate water proofing measures and smooth path must be provided for transfer to collection point
- Operation of the hydraulic lift platform can be 'active' with a mains power electricity connection or 'passive' with hydraulic power supplied by the collection vehicle
- Multiple bin unit has key access control with control panel and remote control option or automatic vehicle lock
- Compatible with user recognition system and pay by weight technology
- Requires maintenance every 3 months, plus an oil level check and lubrication of parts once monthly
- Requires an excavation depth of 2 to 2.5 metres
- Indicative dimensions (in metres) for a single unit is 1.85 x 1.85, with a standard bin height clearance
- Indicative dimensions (in metres) for 2 and 4 bin configurations are 2.2 x (2.8 to 5.0) (w x l), with a 3.5 metre height clearance

Suitable Building Types

Best suited to medium density residential areas (i.e. low to medium-rise residential flat buildings) where above-ground storage space for bins is limited, and/or where commercial dumping of waste into residential bins is common.

Education Needs

Residential education to target:

- Disposal of loose recyclables and small to medium sized bags of garbage as residents travel in and out of their building and past disposal inlets
- Disposal of hazardous wastes such as batteries, and also bulky items such as large cardboard boxes, via other building collection systems to prevent dumping of waste around the disposal inlets
- Source separation of recyclables and disposal of recyclables as loose items without containment in plastic bags.

This project is a NSW EPA Waste Less, Recycle More initiative funded from the waste levy.

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Case Studies

The City of Sydney Council installed underground bins in a cul-de-sac in Darlinghurst NSW to service a number of low-rise residential buildings where there had previously been overflowing of bins due to limited waste capacity and misuse of residential bins by nearby businesses. The system includes 3 garbage inlets and 2 recycling inlets, with 5 x 1100 litre bins replacing the existing 22 x 240 litre bins. Pin number access to the underground bins was issued to the residents. Dumping of waste from surrounding businesses no longer occurs.

Cambridgeshire District Council, UK, collect residential waste from underground bins in Eddington, the University of Cambridge's new district. Single unit underground bins will replace the need for around 9,000 wheelie bins. A sensor in each bin notifies council when capacity is reached and triggers the dispatch of a specialist vehicle with crane-lift ability.



Raised Hydraulic Platform, Sydney



Crane-lift Truck for Single Bin Units, Portugal

Strengths

- Improved visual amenity and reduced odour and vermin with containment of waste underground
- Multiple waste streams can be co-located for source separation of recyclables
- Garbage and recycling inlets are exchangeable (so long as appropriate signage is provided and residents are educated on new arrangements)
- Safe and easy to use
- Bins can be accessed from both front and back depending on design
- Pin access system can be incorporated to prevent dumping of commercial waste into bins
- Reduced potential for stolen or vandalised bins given underground storage
- Hydraulic lift 2 and 4 bin configurations are compatible with existing waste collection vehicles

Weaknesses

- Limited ability to manage sudden changes in waste volumes except through greater collection frequencies
- Power or parts failure requires suitably trained personnel to resolve issue
- Moderate civil works required to excavate and install the underground unit
- Manual handling of bins by staff on / off raised platform is required during collections
- Hydraulic platform must be raised before emptying bins which can add time to waste servicing
- Power supply is required to raise the hydraulic platform
- Requires removal of dumped waste from top of hydraulic platform prior to collections
- High upfront costs to install multiple bin unit and ongoing maintenance costs

Compliance

- Weather proofing of the unit and associated parts, and investigation of drainage patterns is required as part of the installation
- Confined space permit needed to enter the underground hydraulic pit to perform maintenance
- Maintenance and user protocols need to be developed
- Electronics components require suitably trained staff to maintain

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