WASTE MANAGEMENT GUIDELINES FOR BUILDING PLANS (BP) AND SITE DEVELOPMENT PLANS (SDP) SUBMISSION

1. INTRODUCTION

The provision of efficient and effective waste removal services in the City of Johannesburg is top priority for Pikitup and waste minimisation and recycling are key components of an integrated waste management plan. This plan offers, among others things, the storage and removal of recyclables from the waste stream in order to reduce waste volumes to landfill sites, which are fast running out of airspace.

These guidelines will assist in the design of a practical waste management plan/ building waste management plan in order to comply with the City of Johannesburg's by-laws and policies as well as national requirements regarding temporary storage and management of waste.

The purpose of a waste storage area is:

(i) To ensure that all buildings in the City of Johannesburg are clean, healthy and habitable;

(ii) to enable the storage of all waste in a sanitary manner, preventing odours, flies and rodents;

(iii) to ensure that building waste are well managed during the construction's phase;

(iv) to make the stored waste accessible to all waste collection technologies and;

(v) To make provision for an on- site sorting and storage facility to ensure that waste are separated at source for recycling before the residuals are taken to the landfill for disposal.

2. BRIEF DESCRIPTION OF SOME OF THE SERVICES OFFERED

2.1 Round collected waste (RCR) – domestic and non-hazardous business waste is collected by means of a routine collection operation once a week. At present the service is provided in all formal and informal residential and business areas by means of 240litre wheeled bins.

2.2 Business waste, collected once a week using either 240 litre bins or bulk containers.

2.3 Bulk services – a wide range of bulk containers of 5m³ up to 30m³ as well as the containers from large static compactors are included. Containers can be placed, permanently on a premise or on request and can be collected according to a prearranged schedule.

2.4 Dailies (wet waste) – Putrescible waste generated by hotels, restaurants, food shops, hospital kitchens, and canteens must be collected daily to prevent the waste from decomposing and presenting a nuisance and health risk.

2.5 Recycling material- household recycling material to be collected by reclaimers, entrepreneurs and NGOs and private recycling companies.

2.6 Medical waste/ health risk waste- to be collected by any licensed appointed service provider.

3. GENERAL INFORMATION REQUIRED ON A PLAN

The information required on a plan would be:

3.1 Where is the development situated?
e.g. ERF 406 INDUSTRIA;

3.2 What type of building is planned?
e.g: FACTORY;

3.3 Indicate whether there are existing buildings which are being altered or added to, or
Whether the submission is for an entirely new building/s
e.g.
(i) ALTERATIONS
(ii) ADDITIONS
(ii) NEW BUILDING

3.4 Street names, kerb lines, entrances, and neighbouring property erf numbers should also be included;

3.5 The zoning of the stand/s;

3.6 The number of living units that the complex consists of (in the case of a residential complex);

3.7 Method of recycling to me use.

3.8 The Architect (company) name and telephone numbers.

3.9 Waste management calculations.

3.10 Vehicle tracking curves.

3.11 A waste management plan indicating the volumes and type of waste that will be generated during the construction phase and thereafter on how this waste will be disposed of.

4. CALCULATING THE SIZE OF A WASTE AREA

4.1 Calculating the volume of waste that will be generated.

The formula for calculating the volume of waste generated per week is:

$$f(g) \times FA / 100 = \text{volume } (m^3)/\text{week}$$

f(g) = generation factor
GFA = Gross floor area

Type of building	f(g) Generation factor ($m^3/100m^2$/week)
Factory	0.472707
Warehouse	0.379058
Residential	0.1425
Offices	0.2258
Shops	0.92353

- Determine the contributing floor area.
- Find the appropriate generation factor.
- Multiply together.
- Divide by 100 (Remembering that the formula is per 100 m^2).
- Do this for every one of the different floor uses.
- Add all the volumes together.

Note:
(Parking basements do not generate an appreciable amount of waste and can be left out of the equation unless the basement is used for purposes other than parking).

Example:

Calculate the volume of waste generated by a block of flats with ground floor shops.
Combined floor area of all the flats = 3000m^2
Combined floor area of all the shops = 500m^2

Flats: 3000m^2 × 0.1425m^3/100m^2/week / 100 = 4.28m^3/week

Shops: 500m² × 0.92353m³/100m²/week / 100 = 4.628m³/week
Estimated volume of waste = 4.28m³/week + 4.628 m³ /week = 8.91m³/week

4.2 Determining the floor area of the waste storage area

It takes roughly four 240 litre bins to store 1m³ of uncompacted waste, and about one square metre of floor area to store a 240 litre bin.

Example
8.91m³/week × 4 bins/m³ = 35.63 bins say 36 bins.
This would require a 36m² waste room.

5. CONSTRUCTION OF THE STORAGE AREA

5.1 The waste area:

- must be walled in by a 1.8m high wall;
- must have a 1.2m wide door;
- the door must be solid so that the waste is not visible;
- must have a tap and floor level gully (wash-down gully);
- the gully must drain to the sewer and not to the storm-water system or to the road;
- storm-water from outside the waste area must not enter the gully; and
- must make provision for recycling bins, sorting area including storage for green waste

If the storage area is roofed or if the storage area is in a room or basement within the building, adequate ventilation must be provided.

The drainage gulley is likely to be subject to blockage by spilt waste. It is therefore recommended that a litter basket/catcher is installed to prevent blockages.

For an example of a waste area design please see "Annexure A"

5.2 Special considerations for skip container services are;

- The servicing trucks are approximately 10.7m long and loading takes place from the back of the vehicle for Rear-end-loaders (REL) and from the front for Front-end-loaders (FEL);
- for REL compactors a clear headroom height of 5.0m is required;
- for FEL compactors a clear headroom height of 7.7m is required, (be careful of overhead electrical conductors);
- Sufficient, manoeuvring space in front of the containers must be provided. Ask your traffic engineer to put some vehicle tracking curves on to see if a vehicle can turn around in the available space. It will be handy to show the vehicle tracking on the site development plan;

- There is no minimum size for a waste area. It must just be large enough to accommodate the waste generated on the premises and the sorting and storage of recyclable waste.

For the dimensions of the different vehicles in use please see "Annexure B & C"

6. POSITIONING OF THE WASTE AREA

6.1 The preferred position of a waste area is close to the main entrance to the property or public access road.

6.2 If skips are to be used, it is also desirable to load them from inside the property as this allows the truck some manoeuvring space away from the street to prevent the possibility of accidents.

7. SOME SPECIAL CASES

7.1 Public Parking Garages:

Parking garages provide very little waste and can be ignored in the waste generation calculations unless they are used for purposes other than parking. Each type of use should then be assessed on its own merits.

7.2 Places of Worship

Premises such as churches, mosques and temples, do not require a waste storage area. However, if the complex is large and relatively large volumes of waste are generated on a regular basis, a formal waste storage area should be considered. Note, that if the premises are also used for, say a community centre, crèche, or other means of financial gain, a waste storage area must be provided.

7.3 Mini-Factories or Warehouses

For mini-factory or warehousing space for rental, the complex must be considered as a whole and be provided with a single centralised waste storage area. It is generally advisable to make provision for a bulk container or two depending on the volume of waste to be generated.

Recyclable waste such as metal shavings or plastic off-cuts may not enter the general waste stream and must be recycled. Space should be provided for the storage and sorting of these types of waste.

8. TOWNHOUSES, CLUSTER HOUSING, BLOCKS OF FLATS ETC:

These developments range in size from just a few units to several hundred units. The internal roads are often developed as private roads and will not become Council-owned property, and may not be open to general public access.

8.1 Small Complexes

For complexes smaller than 8 to 10 units, no waste area will be required. It will be the responsibility of the management of the complex to bring their bins and recyclable waste to the kerb side of the nearest public road. Again it will be the responsibility of the management of the complex to retrieve the bin after the bins have been emptied.

Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source to be recycled. Space should be provided for storage of these types of waste.

8.2 Middle Size Complexes

Complexes of 10 to 20 units are best serviced by a single centralised waste storage area suitably positioned near a public road in order to allow unhindered access for waste removal. The **Johannesburg Road Agency** requires **Pikitup' s** trucks to load from inside the property in order to minimise the danger to traffic as well as nuisance value of a vehicle loading waste while standing in the street. Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source and recycled. Space should be provided for sorting and storage of recyclable waste.

8.3 Big Complexes

These are complexes of around 20 to 160 units. In these complexes the collection of waste becomes a logistical problem if a well thought out waste management plan is not in place.

240 litre bins can still be used. Collecting and storing the bins can become a problem because of time and space constraints. (First option)

An alternative would be to provide a waste area design with a service entrance and collections area. These should be provided according to JRA standards. Bins can be emptied more regularly than only once a week and will allow more flexibility for the internal collection of the waste. With this method, the owners will ensure that bins are at the collection area. (Second option)

The third option would be for a waste vehicle to enter the property and to collect the waste from each individual property. For this option certain criteria has to be met.

- The road widths must be such that a waste compactor vehicle can negotiate the roads without hindrance. (Minimum 5.5m blacktop width).
- A compactor vehicle must be able to turn around in the cul-de-sacs with ease. (blacktop diameter 21m) The compactor vehicles will not reverse up or down a street to collect the waste.
- The layer work supporting the paving must be of such strength that it will be able to support a compactor without suffering any damage. (vehicle mass 26 tonnes G.V.M)
- The structural design for the paving and/or roads must be included in the design drawings laid before the Council for approval.
- An indemnity must be signed by the responsible person or body corporate indemnifying the Council or its service provider from any claims for structural damage that might be done to the paving. A copy of the indemnity must be provided to Pikitup for safe keeping.
- The Council or it service provider must in these cases have access to the property to remove the waste. If access is denied for whatever reason, the waste will have to stand over till a later opportunity.
- The Council or its service provider will not be responsible for any breach in security.
- Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source and recycled. Space should be provided for the sorting and storage of these types of waste.

For a copy of the indemnity form please see "Annexure F"

An indemnity can only be provided by a legal persona. Where there is a Body Corporate (as in Sectional Title) that body becomes the legal persona.

These requirements will increase development costs.

Please note that before a certificate of occupancy can be issued Pikitup will inspect the development and if satisfied, will issue a certificate of compliance.

8.4 Very big complexes

For these, options 2 and 3 for the big complexes would work well.

The alternative solution is to provide a static compactor in the waste area that will compact the waste into a container. This is the most effective use of space as the waste is compacted to a sixth of un-compacted volumes.

The space required for a static compactor is determined by the dimensions of the plant installed and the number of containers to be serviced. The main

requirement as far as collection is concerned, is that of sufficient space to manoeuvre the collection vehicle. Take care that adequate side room is provided and the minimum height clearance is complied with. It is also desirable to load the bins from inside the property as this allows the truck some manoeuvring space away from the street to prevent the possibility of accidents and a service entrance should also be provided.

Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source to be recycled. Space should be provided for the sorting storage of recyclable waste.
Please note that before a certificate of occupancy can be issued Pikitup will inspect the development and if satisfied, will issue a certificate of compliance.

9. COMMERCIAL AND INDUSTRIAL WASTE STORAGE

9.1 Commercial Waste Storage

For shopping centres an effective waste management plan is essential as the types of waste generated varies greatly and has to be handled differently.

The putrescible waste will be collected on a daily basis by Pikitup. Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source to be recycled. The money earned from recyclables could help to cut down on the cost of disposal. Enough demarcated waste area will however have to be provided for the sorting and storage of the recyclable waste.

Because of the amounts of waste generated at shopping centres, serious consideration should be given to the installation of a static compactor. There are sound financial reasons to do so, as the cost of disposing of one load of compacted waste is far less than the cost of 6 loads of uncompacted waste.

Shopping centres with a number of restaurants can all make use of the same waste area. It would be advisable to have the waste bins marked in order to avoid confusion and for record keeping purposes. Waste areas and bins that are used for putrescible waste should be cleaned regularly to prevent odours.

Recycling drop off containers should be provided and be part of the shopping centre design. Drop off point should be accessible to the public and it will also serve as a place where the community will dispose their recyclable waste.

Please note that before a certificate of occupancy can be issued Pikitup will inspect the development and if satisfied, will issue a certificate of compliance.

9.2 Industrial Developments

The preferred method of waste storage is in bulk containers or 240 litre bins. All industrial developments require a waste area supplied with a tap and gully draining to sewer. The waste area must be large enough to accommodate a skip if that will be the preferred way of storing the waste. If more skips are used to store recyclables these must also be housed in the demarcated waste area.

No collection will be allowed from the street to avoid unnecessary obstructions on traffic or pedestrians.
Recyclable waste such as papers, glass, cans, plastics, e-waste and green (organic) waste may not enter the general waste stream and must be separated at source to be recycled.

Please note that before a certificate of occupancy can be issued, Pikitup will inspect the development and if satisfied, will issue a certificate of compliance.

For dimensions of the different types of skips see "Annexure D & E"

10. RECYCLING OF RECOVERABLE MATERIALS

The materials most likely to be suitable for recovery are metals, glass, plastics, paper, cardboard, packaging materials, oil and e-waste.

Currently policy favours all owners and occupiers to practice the "separation of recyclable waste at source".
The revenue thus generated can be used to offset the cost of removal of the remaining waste. For business this can be a substantial cost saver.

It must be remembered that until the resource materials are removed from the premises, it is technically still "waste" and must be stored in a suitable manner with storage requirements similar to those for general waste. A suitable place must be allocated for the sorting and storage of recyclable waste.

WARNING: If the occupation of the premises changes and this results in little or no recycling being done, or should the occupier be unable to sell the recovered materials and requests Pikitup to collect them for disposal as waste, then the combined areas of "waste area" and "recycling area" must be both sufficient and accessible to Pikitup so that the service can be rendered.

11. HAZARDOUS WASTE

No hazardous waste may enter the general waste stream.

Hazardous waste is a waste with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous waste is classified as follows:

- **Ignitability** - Ignitable wastes, such as wastes oils and solvents, can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C.

- **Corrosivity** - Corrosive wastes, such as battery acid, are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels.

- **Reactivity** - Reactive wastes, such as lithium-sulfur batteries and explosives, are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water.

- **Toxicity** - Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute ground water.

Hazardous waste must be collected and stored in a safe manner in order to prevent pollution of the environment and must be disposed of at a hazardous waste disposal site.

For the dimensions of the different vehicles in use please see "Annexure C & D"

In shopping centres and other large developments, the most common hazardous waste is florescent lights containing mercury oxide. A florescent light crusher should be installed that can be sealed once full and can then be safely disposed of.

12. WHAT IS REQUIRED ON THE SITE DEVELOPMENT PLAN (SDP)

The SDP is a working drawing and not a sales brochure and should have all the relevant information as required.

Pikitup requires a well thought out waste disposal plan on a SDP drawing, indicating the position of the waste area, the tap and gully, doors as well as the drainage.

Notes can be added indicating the preferred waste removal technology e.g. 240 litre bins. 8m³ open skips or front-end-loader skips or whether Pikitup must enter the complex to collect the waste.

The expected volumes of spoil created during construction and the intended method of disposal of the spoil must be indicated in the notes.

These notes must also describe how builder's rubble will be dealt with. The position of a temporary builder's waste storage area and the method of disposal of the waste should also be shown.

Note: Tip-slips should be kept as proof that builders waste had been disposed of in a lawful and responsible way.

Please put a table like the one shown below on all site development as well as building plans that will show the above required information.

13 GENERAL INFORMATION ON WASTE MANAGEMENT PLAN

13.1 Every receptacle used for the storage and removal of building waste must:

(a) Have clearly marked on it the name, address and telephone number of the person in control of that receptacle;
(b) Be fitted with reflecting chevrons or reflectors which must completely outline the front and the back thereof; and
(c) Be covered at all times other than when actually receiving, or being emptied of waste so that no displacement of its contents can occur.

13.2. Obligation to separate waste into recyclables and non-recyclables

(a) The City Council of Johannesburg may prescribe by a notice published in the Gauteng Provincial Gazette that, from a prescribed date, areas, specified generators or holders of particular categories of waste must for the purpose of recycling, separate those categories of waste and must, store dispose of or treat the separated waste in the manner prescribed in the notice. This is supported by City of Johannesburg Waste Management By-laws.
(b) Failure to comply with a notice published pursuant to sub-section (1) is an offence.
(c) Waste areas to be demarcated in order to cater for the sorting and storage of recyclable waste materials.

13.3 Preparation of a building waste management plan

When any site development plan is submitted to the Council for its approval, the person making the submission must simultaneously submit:–

(a) A building waste management plan setting out the manner in which all building waste and other waste to be generated in the course of

construction will be managed, treated, collected, transported and disposed of; and

(b) Proof that all necessary waste management services for the construction activities will be provided by an accredited service provider.

(c) The building waste management plan referred to in section 12(1) (a) must be referred to Pikitup for approval.

(d) No site development plan may be approved before the building waste management plan has been approved by Pikitup.

WASTE MANAGEMENT

CONSTRUCTION PHASE			
	TYPE OF WASTE	**EXPECTED VOLUME (m^3)**	**DISPOSAL METHOD**
1	BUILDERS' RUBBLE		
2	EXCESS EXCAVATION SPOIL		
3	GENERAL WASTE		
4	HAZARDOUS WASTE		
5	RECYCLABLE WASTE		
6	OTHER		
OCCUPATION PHASE			
	TYPE OF WASTE	**EXPECTED VOLUME (m^3)**	**DISPOSAL METHOD**
1	GENERAL WASTE		
2	PUTRESCIBLE WASTE		
3	MEDICAL RISK WASTE		
4	HAZARDOUS WASTE		
5	RECYCLABLE WASTE		
6	OTHER		

14 WHAT IS REQUIRED ONCE BUILDING COMMENCES

Proper control must be exercised over the waste generated on building sites. Removing illegally dumped builders rubble costs Pikitup millions of rands annually.

To properly control the waste generated on building sites the following is required:

- No builders waste/rubble may be deposited in any location other than a permitted landfill or at a builders rubble processing plant;
- Anyone found dumping spoil from excavations on private property without a letter of authorization from the owner of the land will be prosecuted;
- Anyone found dumping anything on public property without authorisation will be prosecuted;
- No builder's rubble or spoil from excavations may be dumped in any stream or within the 1:100 year flood-line area along a stream;
- All hazardous waste such as silica, asbestos, mercury oxide from florescent tubes etc must be stored separately and disposed of at a hazardous waste disposal facility.
- Popper records must be kept on how all waste generated during the construction phase were disposed of.

This document will be updated from time to time.

We would like to thank everyone for their co-operation in ensuring efficient and safe waste disposal in Johannesburg.

Serving you, saving our environment