

# **WASTE MANAGEMENT GUIDELINES FOR BUILDING PLAN SUBMISSION**

## **1. INTRODUCTION**

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

The purpose of a refuse 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 refuse in a sanitary manner, preventing odours, flies and rodents;
- (iii) to make the stored refuse accessible to all waste collection technologies.

## **2. BRIEF DESCRIPTION OF SOME OF THE SERVICES OFFERED**

- 2.1 Round collected refuse (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 residential and business areas by means of 240-litre 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 5m<sup>3</sup> up to 30m<sup>3</sup> 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.

## **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;

2.2 what type of building is planned?

e.g.: FACTORY;

3.2 indicate whether there are existing buildings which are being altered or added to, or

weather the submission is for an entirely new building/s

e.g. (i) ALTERATIONS

(ii) ADDITIONS

(ii) NEW BUILDING;

3.3 street names, kerb lines, entrances, and neighbouring property erf numbers should also be included;

3.4 the zoning of the stand/s;

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

3.6 the designer's (company) name and telephone numbers.

#### **4. CALCULATING THE SIZE OF A REFUSE AREA**

##### **4.1 Calculating the volume of refuse that will be generated.**

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

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

f(g) = generation factor

FA = floor area

Generation factor

<b>Type of building</b>	<b>f(g) Generation factor (m<sup>3</sup>/100m<sup>2</sup>/week)</b>
Factory	0.472707
Warehouse	0.379058
Flats	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<sup>2</sup>).
- 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 refuse and can be left out of the equation unless the basement is used for purposes other than parking).

Example:

Calculate the volume of refuse generated by a block of flats with ground floor shops.

Combined floor area of all the flats = 3000m<sup>2</sup>

Combined floor area of all the shops = 500m<sup>2</sup>

Flats:  $3000\text{m}^2 \times 0.1425\text{m}^3/100\text{m}^2/\text{week} / 100 = 4.28\text{m}^3/\text{week}$

Shops:  $500\text{m}^2 \times 0.92353\text{m}^3/100\text{m}^2/\text{week} / 100 = 4.628\text{m}^3/\text{week}$

Estimated volume of refuse =  $4.28\text{m}^3/\text{week} + 4.628\text{m}^3/\text{week} = 8.91\text{m}^3/\text{week}$

## 4.2 Determining the floor area of the refuse storage area

It takes roughly four 240 litre bins to store 1m<sup>3</sup> of uncompacted refuse, and about one square metre of floor area to store a 240 litre bin.

Example

$8.91\text{m}^3/\text{week} \times 4\text{ bins}/\text{m}^3 = 35.63\text{ bins}$  say 36 bins.

This would require a 36m<sup>2</sup> refuse room.

## 5. CONSTRUCTION OF THE STORAGE AREA

5.1 The refuse 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 refuse 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 refuse area must not enter the gully.

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 gully is likely to be subject to blockage by spilt refuse. It is therefore recommended that a litter basket/catcher is installed to prevent blockages.

**For an example of a refuse area design please see “Annexure A”**

5.2 Special considerations for bulk 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 refuse area, it must just be large enough to accommodate the refuse generated.

**For the dimensions of the different vehicles in use please see “Annexure B & C”**

## **6. POSITIONING OF THE REFUSE AREA**

6.1 The preferred position of a refuse area is close to the main entrance to the property.

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 refuse storage area. However, if the complex is large and relatively large volumes of refuse is generated on a regular basis, a formal refuse 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 refuse 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 refuse storage area. It is generally advisable to make provision for a bulk container or two.

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 storage 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 refuse area will be required. It will be the responsibility of the individual owner/tenant to bring their bins to the kerb side of the nearest public road. Again it will be the responsibility of the owner/tenant to retrieve the bin after the bins have been emptied.

### 8.2 Middle Size Complexes

Complexes of 10 to 20 units are best serviced by a single centralised refuse storage area suitably positioned near a public street in order to allow unhindered access for refuse 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 refuse while standing in the street.

### 8.3 Big Complexes

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

Although a refuse area and 240 litre bins can still be used, collecting and storing the bins can become a problem because of time and space constraints.

An alternative would be to provide a refuse area designed for skips, preferably the 5m<sup>3</sup> front-end-loader types. These come with lids so that the odours from the refuse can be contained. These bins can be emptied more regularly than only once a week and will allow more flexibility for the internal collection of the refuse as not all the refuse has to be at the kerbside by 7:00 on collection day. With this method, the owners will store the refuse in 85 litre bins fitted with bin liners, at their homes and then take the bin liners to the refuse area and deposit the full bin liner inside the skip. The cost of the bin liners will have to be borne by the residence.

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

- The road widths must be such that a refuse 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 refuse.
- 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 its service provider must in these cases have access to the property to remove the refuse. If access is denied for what ever reason, the refuse will have to stand over till a later opportunity.
- The Council or its service provider will not be responsible for any breach in security.

**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.

#### **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 refuse area that will compact the refuse into a container. This is the most effective use of space as the refuse is compacted to a sixth of uncompacted volume.

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 chief 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.

## **9. COMMERCIAL AND INDUSTRIAL REFUSE STORAGE**

### **9.1 Commercial Refuse 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 dally basis by Pikitup. The cardboard and other recyclable waste can be recycled and the money earned will help to cut down on the cost of disposal. Enough space will however have to be provided for the storage of the recyclables.

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 refuse area. It would be advisable to have the refuse bins marked in order to avoid confusion and for record keeping purposes. Refuse areas and bins that are used for putrescible waste should be cleaned regularly to prevent odours.

### **9.2 Industrial Developments**

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

**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 and cardboard packaging materials.

Currently policy favours all owners and occupiers to practice “recycling at source”.

The revenue thus generated can be used to offset the cost of removal of the remaining refuse. 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 “refuse” and must be stored in a suitable manner with storage requirements similar to those for general refuse. If the developer anticipates a recycling programme at the premises, a note suitably placed on the building plans with an indication of the storage/collection facilities is required.

**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 the Council to collect them for disposal as refuse, then the combined areas of “refuse area” and “recycling area” must be both sufficient and accessible to the Council so that the service can be rendered.

## 11. **HAZARDOUS WASTE**

No hazardous waste may enter the general waste stream. Hazardous waste must be collected and stored in a safe manner in order to prevent pollution of the environment and must then 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 on it.

We require a well thought out waste disposal plan on a SDP drawing, indicating the position of the refuse 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. 8m<sup>3</sup> open skips or front-end-loader skips or weather 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.

## WASTE MANAGEMENT

<b>CONSTRUCTION PHASE</b>			
	TYPE OF WASTE	EXPECTED VOLUME (m <sup>3</sup> )	DISPOSAL METHOD
1	BUILDERS' RUBBLE		
2	EXCESS EXCAVATION SPOIL		
2	GENERAL WASTE		
3	HAZARDOUS WASTE		
4	OTHER		
<b>OCCUPATION PHASE</b>			
	TYPE OF WASTE	EXPECTED VOLUME (m <sup>3</sup> )	DISPOSAL METHOD
1	GENERAL WASTE		
2	PUTRESCIBLE WASTE		
3	MEDICAL RISK WASTE		
4	HAZARDOUS WASTE		
5	OTHER		

### 13 WHAT IS REQUIRED ONCE BUILDING COMMENCES

Proper control must be exercised over the refuse generated on building sites. Removing illegally dumped builders rubble costs the city council millions of rand 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;
- any one found dumping spoil from excavations on private property without a letter of authorization from the owner of the land will be prosecuted;
- any one found dumping any thing on public property without authorisation will be prosecuted;
- no builder's rubble or spoil from excavations may be dumped in any streambed 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.

This document will be updated from time to time.

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

serving you, saving our enviroment