

Materials Recovery Facilities and Transfer Stations

Fact Sheet 7

This fact sheet focuses on materials recovery facilities or MRFs and transfer stations.

Transfer Station

As the name suggests, a transfer station is a place where either waste or recyclables can be stored temporarily before it is moved on for treatment or disposal.

MRF

A Materials Recovery facility is a place where recyclables are separated from one another, prior to transportation to reprocessors. They enable mixed recyclables (from commingled collections) to be separated and segregated using a variety of machinery and manual handling,

Recycling is very important and all local authorities are now asking everyone to collect and separate lots of different materials for recycling. Different local authorities have different ways of collecting the materials it needs to recycle. The methods they use depend on what facilities are available in the local area to recycle and reprocess the materials you put out for collection. Some local authorities use bins, boxes or bags into which you can put lots of different materials for recycling. When these materials are collected together, they need to be separated so that the individual materials can go to the appropriate reprocessors.

The Process

The picture overleaf shows what can commonly happen inside an MRF. Each MRF is different and can accept different materials, for which it has been specifically designed. Some of the more common materials that can be separated from a mixed recyclables collection include:

- Paper
- Glass
- Plastic Bottles
- Tins and Cans
- Textiles

Collection and Preparation

Your household rubbish will be collected from your kerbside and taken to the MRF by recycling collection vehicles. The material will be tipped at a central point (the tipping floor) ready to be fed into the facility.

Separation

Once your recyclables have been deposited into a storage pit, they are slowly fed onto a series of conveyor belts to begin their trip around the facility. Each area in the plant helps to separate one type of recyclable material from another. There are a number of different ways in which this can happen. Here are a few of the more common methods:

- **Screens/Trommels** can help to remove the larger pieces of recyclables (cardboard, glass etc.)
- **Magnetic separation** can remove the ferrous metals (cans made of tin)
- **Eddy current separation** can remove the non ferrous metals (cans made of aluminium)
- **Optical separation** can separate certain types of plastics such as the different types of plastic bottles that can be collected, or glass.
- **Air classification** can help to separate light and heavy materials (paper for example)

Recycling and Reprocessing

Once separated, some of the materials can go on for further recycling. For example the glass collected can go on to a reprocessor where it be used as low grade aggregate (a material often used in the construction of roads as a substitute for sand).

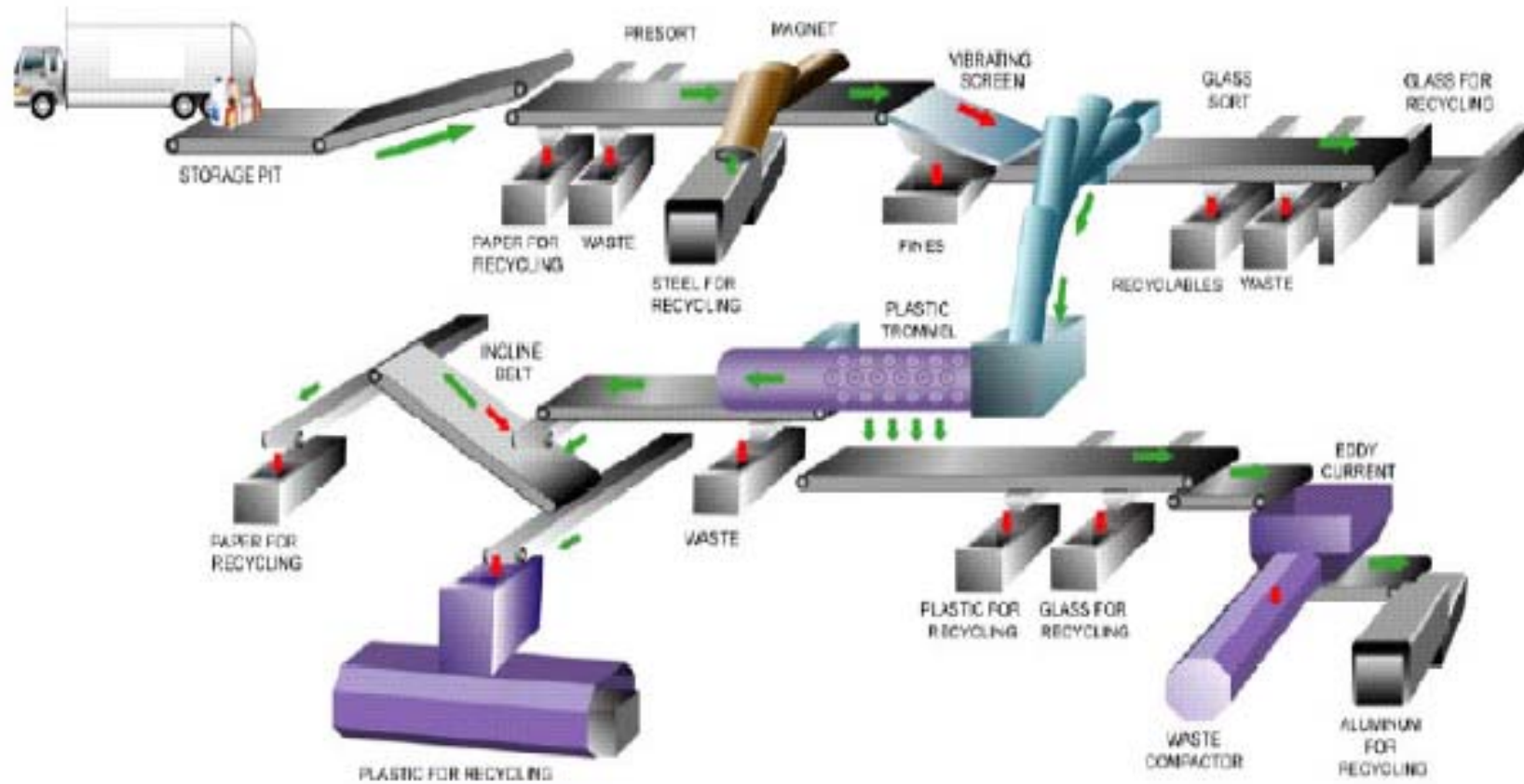
Each of the material streams are collected independently at the end of the MRF and can be compacted and baled. This way they can be transported easily and then taken to a reprocessing facility so that they can be turned into new products.

Any materials that have been collected with the recyclables by accident and cannot be recycled are separated and bulked together. These materials must be disposed of and can be sent to an energy from waste facility, or other treatment facility or to a landfill site. It is important to try and recycle the correct items in your kerbside collection bin box or bag so that there is limited material that has to be sent for treatment and disposal.

Location

Facilities of this type would again expect to have lots of vehicle movements (similar to a landfill site) both to and from the plant and so should be sited close to established road/rail infrastructure.

MRF Layout



MRF Impacts

Any new house or industrial facility constructed will have some impact on the environment. This section considers some of the specific potential environmental impacts that a Materials Recovery Facility, as discussed in this fact sheet, might have.

Environmental Impacts and Benefits

Disposing of green waste and kitchen waste (biodegradable waste) in a landfill site can cause the release of methane, which is one of the most powerful greenhouse gases. This is why targets have been set by the EU (European Union) that require us to divert the biodegradable part of our household rubbish away from landfill.

Odour/Dust/Litter

All waste treatment facilities are strictly regulated and will have systems in place to limit odour. MRFs are enclosed and would be fitted with ventilation and filter systems to prevent odour and dust from escaping.

The Environment Agency strictly monitors operation and good practise during operation. Good design of the plant during the planning stage can stop odour, dust and litter at the site.

Noise

The main noise coming from these facilities will be produced from vehicle movements and from the mechanical processing of the waste and air ventilation systems. As with all industrial facilities, hours of operation will be limited to times of the day that will not cause a nuisance to the local community.

Vehicle Movements

Vehicle movements are required so that your waste can be collected either from the kerbside outside your house or from your local civic amenity site and taken to the site. All vehicle movements produce carbon dioxide, which is a greenhouse gas 21 times less powerful than methane (produced in landfill sites as waste breaks down without the help of oxygen).

During the planning stages for the facility, the number of proposed vehicle movements will be taken into consideration and the access to the site and its impact on the local community will also be assessed.

Vehicle movements from the site could be reduced if the facility was located with other waste management treatment facilities, or near to a rail line or canal. Alternatively, siting a reprocessing facility such as a paper mill next to the MRF site would ensure a local demand for the products and limit onward transportation.

Emissions & Health

One of the emissions produced by this process is carbon dioxide gas. This is released by vehicle movements needed to collect waste from the kerbside and from civic amenity sites. This can be reduced by using alternative fuel sources to power the collection vehicles.

Dust and Bio-aerosols (biological particles) could be produced as the waste is transferred from the collection vehicles into the facility and from movements within the facility. The impact of this is limited by staff working at the facility wearing the correct protective equipment.

The facilities are enclosed thus limiting emissions to the environment and have efficient ventilation systems. Emissions are strictly regulated and controlled by the Environment Agency.

The Department for Environment, Food and Rural Affairs have recently commissioned a review of the effects of waste management. It concluded that although the information is incomplete and not ideal, the weight of evidence from studies so far indicates that present day practice for managing solid municipal waste has, at most, a minor effect on human health and the environment, particularly when compared to other everyday activities.

Visual Impact

As can be seen from the pictures, these facilities look no different to other industrial facilities. The UK currently has quite a few MRF facilities in operation and there are many more in Europe.

Planning conditions will suggest that any new facility built should be in keeping with the surrounding area whether that is an industrial estate or a rural setting.

Costs

If the biodegradable fraction (green waste and kitchen waste) of our rubbish cannot be diverted from landfill, then the EU will fine the UK for every tonne of waste it continues to send to landfill. To avoid the fines and to find more sustainable ways of dealing with our waste, local authorities are considering a number of different options to treat their waste.

There is no right or wrong combination of options and each local authority might have a different set of facilities depending on local circumstances. These facilities will cost a lot of money and it is important that all the options are evaluated when the decisions are made. The cheapest option is not necessarily the best and what seems like a good option for the present might not be a good choice in 10 or 20 years' time.

The cost of a treatment facility can be dependant on many things; the cost of land, the current collection system, what other facilities your local authority is considering and whether this option will work well with them are just a few of the considerations.

Where does this fit in?

This treatment will not act as a stand-alone treatment and will need other types of facilities to be able to treat its outputs. These treatment facilities can either be built on a site on their own or can be positioned next to each other on a larger site.

The location and type of facility that your local authority chooses will be dependent on a number of factors including available land, transport access, how close the site is to local houses and how much it will cost.

What can I do?

You are producing the waste that your local authority has to deal with and treat. To help your local authority and the environment, there are a number of ways you can make a difference.

Firstly, think about the rubbish that you produce at the moment, and consider how you could reduce it. Can you recycle or compost more of your waste?

Secondly, take an interest in what your local authority is considering. They will be making some tough decisions soon about how your waste will be treated over the next 20 to 30 years. Take part in any consultation process, find out more about what they are considering and tell your neighbours! We all produce rubbish and we need to start taking responsibility for how we dispose of it. To find out more about what your local authority are considering, get in touch with them or read their proposed waste strategy. Your opinion counts!



For additional information visit:
www.wasteawarenesswales.org.uk

