REHABILITATION

A landfill site is an area of land that is engineered to contain waste and minimise environmental impacts of waste degradation. As the landfill site, or a portion of it, is completed, rehabilitation and after-care management commences. This is because many negative impacts of landfilling occur long after it has closed, and while these can now be mitigated by good design and management of the landfill, best practice rehabilitation and long-term aftercare of the site minimises its potentially detrimental impacts. Best practice for rehabilitation and aftercare must be considered very early in the design and operation phase of the landfill site.

Modern landfills must have special approval to be placed in their locality to ensure appropriate soils and health and safety measures are taken, and that their design allows for progressive rehabilitation. This means that while wastes are placed in a new cell, the old landfill cell commences rehabilitation, Depending on the life span of the new cell, a new cell may also begin construction at the same time. Progressive rehabilitation allows for:

- Economic recovery during the landfill's lifetime
- Optimum collection and treatment of landfill gas during peak generation times
- Demonstration to residents that the site is being rehabilitated
- Minimal generation of leachate and offensive odours.

Landfill sites undergo long-term 'settlement' as its contents decompose and consolidate. This means that surfaces warp and change due to waste compressing under its own weight and the weight of the material or 'cap' on top (such as gravel). This creates significant differences to the final surface profile and the potential after-uses for the site. Settlement of a site is dependent on many factors such as proportion of putrescible wastes and moisture content, thickness of the landfill, how long wastes were placed in the cell and the degree of compaction.

Common after-uses of landfill sites include recreational and sports grounds, public open space and golf courses. Depending on the age of the landfill and the type of waste disposed of, some landfills have been developed for commercial or industrial building development.

The Homebush Bay Rehabilitation Project is perhaps the most famous example of landfill rehabilitation in Australia because it went on to successfully house the 2000 Olympics. Since the 1900s, the Homebush Bay site was used as a waste dump by private and local government waste operators, including the dumping of industrial chemicals. The rehabilitation project involved 220 hectares restored to a suitable condition for public use, including the installation of 7.5km of leachate drains, creation of 75 hectares of wetlands and the planting of over 10,000,000 native plants (Waste Service NSW).

On the other hand, some landfill sites have caused major problems with issues such as groundwater contamination. What we need to do is be aware of the issues involved in landfill rehabilitation and work toward creating less waste in the first place, therefore diminishing potential disasters before they occur.

Reference: Waste Service NSW, online at http://www.wasteservice.nsw.gov.au/dir138/aptrixpublishing.nsf/Content/Publications_Landfills

WHAT CAN I DO?

Consuming only what is necessary, avoiding over packaging and reusing/recycling where possible all lessen our landfill burden, as well as meaning less natural resources are being extracted.

If you are involved in a landfill rehabilitation, it is wise to develop a conceptual rehabilitation plan as part of the initial landfill design. A rehabilitation plan encompasses:

- After-use options for the site
- Necessary operational aspects including timeframes so as to ensure the highest value after-use can be achieved
- Surface contours before and after the landfill's settlement
- Materials and specifications required for the final cap
- Environmental performance control or monitoring features.

Proposals for the use of rehabilitated landfill site must also allow for changes in community attitudes or planning requirements due to the long periods between commencement of landfilling and safe and effective rehabilitation.

MORE INFORMATION

- http://www.epa.vic.gov.au/Waste/landfill.asp - discusses the interconnection between landfill design, operation and rehabilitation
- http://technology.infomine.com/enviromine/issues/rehabilitation.html - Infomine provides an array of information on mining and landfill rehabilitation
- http://www.uic.com.au/nabarlek.htm - an simple but in depth look at the rehabilitation of the Nabarlek uranium mine
- http://www.kimseed.com.au/mining/supply.html - an interesting site explaining planting and seed selection for waste dumps, tailings dams and general mine rehabilitation