Improved Landfill Management

Site Selection, Planning and Approvals

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Landfill Site Selection

- Appropriate siting is the primary environmental control
- Preliminary investigation of possible sites to identify those with the best potential for development with minimum risk to the environment
- More suitable sites require fewer engineering and management controls
- · Rank sites in preference order

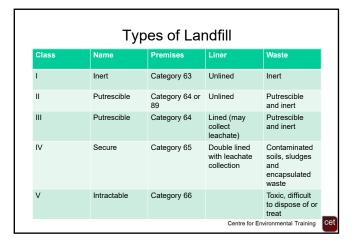
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Landfill Site Selection

- · Screen potential sites
- Extractive industry sites (quarries, mines)
- Sites suitable for trench and fill or mound landfills
- · Consider type of landfill:

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Aspects to consider

- · Community needs
- · Landfill type
- · Groundwater
- · Alternative potential uses for the site
- · Buffer distances
- Geology
- · Flora and fauna
- Infrastructure
- · Surface water
- · Land ownership

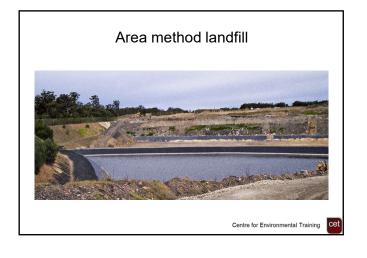
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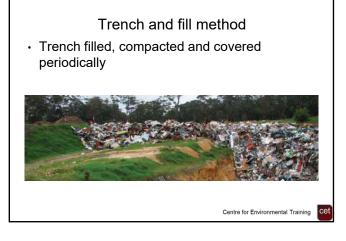
Landfill Types

- Area method, where an existing hole such as a former quarry is filled - preferred
- Trench-and-fill method, where a hole is dug and backfilled with waste using the excavated material as cover - alternative
- Mound method, where most of the landfill is located above the natural ground level avoid
- Valley or change of topography fill method, where a natural depression is filled - avoid

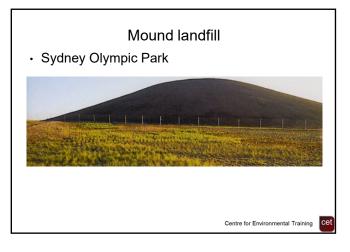
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Groundwater

- Leachate contamination of groundwater difficult to remediate
- Avoid areas where groundwater is beneficially used
- Landfill should not be below water table
- Preferably >2 metres above water table
- · Naturally attenuating clay soils preferred

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Consider alternative uses

- Other land use than landfill may be preferable
- Potential for utilisation and rehabilitation of former extractive industry sites





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Buffers

- · To manage odours and landfill gas risks
- · Fire, noise, litter, safety
- · Consider possible future zoning changes of surrounding land during likely life of landfill
- · Consider buildings and structures

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Buffers

- · Maintain appropriate buffer distances to sensitive receptors:
- · Not suitable in drinking water source areas
- Separation from water table (2-3 metres minimum)
- · Class II/III landfills not within 100 metres of surface waters or in 1 in 100 year ARI flood plains
- At least 700 metres downgradient of groundwater
- Suitable buffers from building or structures (200-500 metres)
- Suitable buffers from airfields (1.5-3.0 kilometres)



Geological setting

- · Require stable landform
- · Long term integrity of liner and cap
- · Avoid faulted and earthquake prone areas
- Consider slope stability
- · Avoid Karst (limestone) areas
- · Avoid shrink-swell clays

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Other considerations

- · Flora and fauna
- · Infrastructure availability; road, rail access, traffic, power, water
- >100 metres from surface waters
- Avoid >1%AEP (1 in 100 year) flood areas
- · Land ownership
- · Community engagement

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Approval

Requires:

- · Best practice design
- · Best practice operation
- · Best practice rehabilitation and aftercare
- · Planning and approval takes a long time
- Is costly
- · A diminishing number of sites are approved

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Swanbank landfill, QLD – former coalmine



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