

# LFG & Odour

- LFG production models developed for valley 1 and valley 2
- Valley 1 peaked at just over 520m<sup>3</sup>/h in 2015
- Valley 2 peaks at just over 520m<sup>3</sup>/h around 2024
- Currently, Valley 2 should be producing about 200m<sup>3</sup>/h, ie. increasing
- Lower than expected levels of CH<sub>4</sub>, which corroborates Phoenix report, noted to be increasing slightly in more recent monitoring events (weather dependent)
- High landfill temperature a significant driver of gas generation and rate of emission
- Covering of tanks and leachate infrastructure has mitigated the odour problem to a certain degree, however, landfill remains a significant source of emissions
- Progressive rehabilitation (capping) with temporary cover to specific areas (eg. leachate drainage layer) with active LFG extraction & combustion considered to be most appropriate & practical solution, especially over short-medium term. Consideration to be given to H<sub>2</sub>S removal prior to combustion. (USEPA – preferable to uncontrolled LFG emissions).

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- Prevention of  $H_2S$  emissions:
  - Diversion of all gypsum & high sulphate wastes
  - Moisture control near surface of landfill: minimise working face area, grading working face to encourage runoff, phasing and progressive capping of side slopes, use of suitable cover materials to assist in attenuating & absorbing  $H_2S$ , continuous removal and treatment of leachate.
- Controlling  $H_2S$  emissions:
  - Effective leachate management & treatment
  - Cover soil amendments to provide a concentration gradient & reduce  $H_2S$  through precipitation, adsorption or oxidation. Could include introduction of dry MSW, compost/biocover, concrete fines, lime & metallic materials, especially elemental iron. A substantial unsaturated zone is important.
  - Capping systems to prevent SW infiltration & a barrier to LFG venting
  - LFG collection & flaring, potentially including pre-treatment.

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- Temporary or permanent closure option?
  - Closure would not necessarily impact positively on existing situation with respect to waste mass already in place & could hinder remedial measures currently being implemented, including pH adjustment which would appear to be gradually affecting the whole waste mass.
  - Exclusion of aluminium wastes & high sulphate wastes, along with other potentially heat generating wastes
  - Inclusion of targeted waste streams for insitu treatment of H<sub>2</sub>S emissions would build up & restore the landfill's buffering capacity as well as treating the waste mass in place.
  - Ongoing development of suitable unsaturated zone considered to be vital, while the capture, extraction and destruction of the LFG being emitted via preferential pathways is considered to be complimentary to this.

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