

PLATE 7 VERMICULTURE

1. Suitable for the following sludge types:

- untreated primary
- lagoon stabilised
- anaerobically digested
- aerobically digested
- ATAD
- Dual digested
- WAS from IDEA, BNR, CAS and EA

2. Dewatering requirements:

- the process itself requires as low as 10% dry solids content but this would impact negatively on transport costs
- higher solids content is preferable from a transport cost perspective

3. Stabilisation requirements:

- one required
- high temperature is not critical in the stabilisation process
- aerobic stabilisation for WAS from IDEA, CAS, BNR or EA preferred.

4. Process description

Vermiculture is the process by which organic material is fed to a variety of worm species with the purpose of converting the organic material into increased worm biomass and an odourless humus material called vermicast which is the excreta from worms.

Vermiculture produces a soil conditioner and plant growth medium with a wide range of applications including broad acre farming, turf farming, horticulture, viticulture and seedling propagation. The worm biomass is sold for bait, animal feed and domestic and small composting systems.

There are three vermiculture facilities in operation in Australia, two in Queensland and one in NSW. The largest vermiculture facility operating on wastewater sludge is at Redland near Brisbane, Queensland. It has a sludge treatment capacity of 250 tonnes/week and is operated by *Vermitech*. The dewatered sludge (a mixture of WAS from BNR and anaerobically digested) is blended with green waste prior to feeding it to the vermiculture. Other facilities currently operating are at Scone (150m³/week capacity) and Warwick (100 m³/week capacity).

The process could be suitable for all plant sizes but out contracting of the operation is most likely because of the specialised expertise which is required to manage process.

5. Biosolids Classification (EPA Victoria Draft (2002) Guidelines for Environmental Management)

No biosolids classification exists for vermicast under the EPA Victoria Draft (2002) Guidelines.

6. Market for final product

Vermicast is mainly targeted for use at high value horticulture, viticulture and seedling propagation. It is recommended to be used in conjunction with standard farm practice, or as an additive to seedling and potting mixes for the nursery industry.

7. Benefits

- no stabilisation of sludge required
- not a high level of dewatering required
- valuable marketable product
- can be performed on site
- odour free process

8. Costs (Vermiculture)

Vermitech indicates that the cost will depend on:

- size of plant
- length of contract
- whether it is BOO, DC or DBO
- site condition

Based on their experience, the costs for whole of life are approximately in the range \$45-\$75 per wet tonne of sludge.

9. Limitations

- limited general experience available
- a specialised process that would require contractor requires an additional green waste source

10. Product sale

The price of the Vermicast produced is approximately \$80/tonne. The sale of the biosolids can be used to off set part of the processing cost for the sludge.

