

Albury Waste Management Centre Leachate Treatment System

October 2022

Background



- Albury Waste Management Centre opened in 1978
- 4th largest landfill in NSW – 200,000 tonnes
- Service population 180,000
- Accept material six council areas VIC/NSW
- Council owned and operated facility
- Operate on 120 hectares
- Residential and Commercial drop off facility

Key Site Infrastructure



- Inert and putrescible cells
- Recycling Centre /Preprocessing Shed and Upcycle Shop
- Solar farm – 4,000 panels
- Push Pit

Key Site Infrastructure



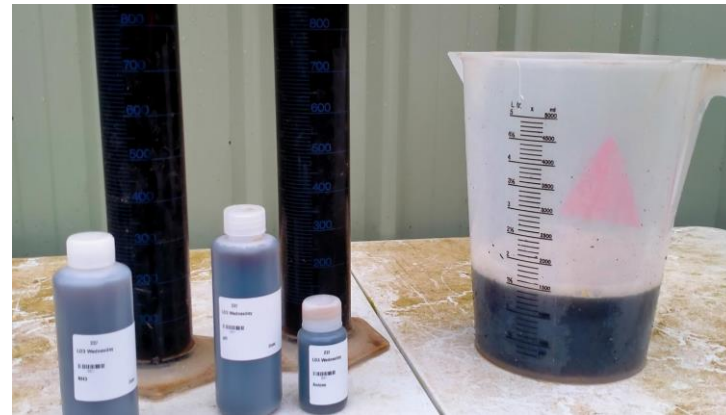
- Methane capture system
- EV charging station
- Gatehouse and 3 weighbridge system
- Education Centre
- Bulking up of Organics

Original Leachate Management



- Gravity fed Leachate capture system - installed in 1980
- Two clay lined dams
- Liquid piped/aggregate drain to storage dams from putrescible area
- Liquid aerated during storage using homemade spray system
- Managed by evaporation

Problems



- Clear that leachate ponds would not manage the future requirements
- Needed to upgrade or find better solution to manage the leachate generated
- Determine if liquid was suitable to be sent to sewer
- Needed to upgrade the existing ponds
- More storage space
- Holding leachate back in cells due to lack of available storage

Key Stages



- **Stage 1** – Construct a new Concrete Storage Dam/transition to leachate transfer air pumps
- **Stage 2** – Investigation and Research future Treatment Plant
- **Stage 3** – Development and Construction of a Leachate Treatment Plant & reline two clay dams
- **Stage 4** – Initial Operation
- **Stage 5** – Up-spec treatment plant to cater for increase in volume – yet to be determined

Stage 1 Construct New Concrete Dam & Air Pump Transfer System



Stage 2 Investigation and Research Treatment Plant



- Research undertaken by an external consultant
- Findings – identified ammonia biggest concern
- Findings – as a method of treatment micro-organisms could be used to remove ammonia
- Findings – Volume exceeded existing three ponds
- Determine if liquid was suitable to be sent to sewer
- Determine trade waste parameters

Stage 3 Development of Leachate Treatment Plant



- RFT external contractor design and construct treatment plant
- Trade Waste Application
- Constructed a sewer line approx. 1km to nearest connection point
- Relined the two clay dams with HDPE

Stage 3 Development of Leachate Treatment Plant



- Construction of treatment plant commenced in 2019/2020
- Existing 2 clay dams and 1 concrete dam formed part of the treatment plant infrastructure
- Treatment in a Sequence Batch Reactor
- Concrete dam utilized as Sequence Batch Reactor

Stage 3 Development of Leachate Treatment Plant



- New Transfer and release pumps were installed at poly lined dams
- Full control room constructed
- New pump well constructed
- Full SCADA system integrated

Commissioning and start up by Contractor



- Start up by Contractor 2020
- Entailed seeding and commissioning
- Return activated sludge used to culture organisms
- Culturing of organisms took 4 weeks
- Process initially failed and needed to be undertaken again.

Treatment Process



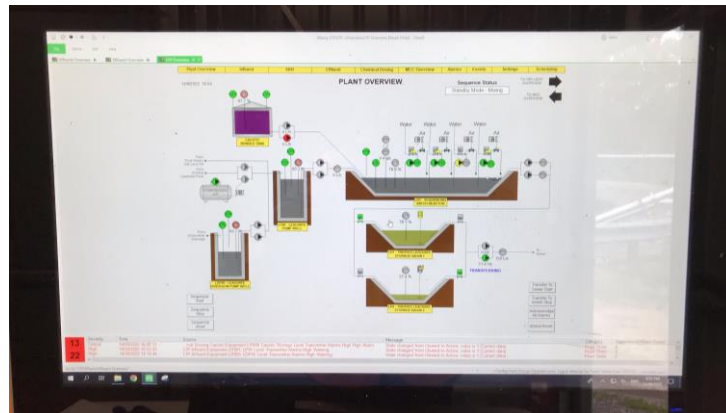
- Leachate transfers from cell to pump well
- Pumping cuts off 12,500 litres
- Leachate transfers to SBR
- System mixes SBR contents
- SBR contents Aerates for 4.5hrs
- PH levels are monitored and adjusted using caustic soda as needed
- SBR contents settle
- Treated liquid decants to HDPE lined dams
- Treated liquid samples tested at NATA accredited laboratory
- Results must comply with trade Waste requirements
- Treated leachate released to sewer system

Stage 4 – Initial Operation by Council



- Ownership in 2021
- Treatment occurring
- Regular test results
- Liquid released to sewer
- System failed biologically
- Reseeding was required
- SBR dam required a total cleanout
- System returned to full operation
- Process working for several months

System Issues



- Process began to falter
- Monitoring regime not sufficient
- Reseeding
- Specialist consultant was engaged
- Pumps found to have priming issues
- Discovered the systems oxygen intake was too high
- Investigation revealed the intake venturi pipework integrity was compromised

Refinement



- Engaged local pump specialists
- Process Engineer engaged
- Automated pump primers/pipework replaced with stainless steel
- Optimisation of the plants operation
- Fencing for safety

Future Operations Management



- Managing in house within Council
- Specialist Waste-water resource to oversee the process
- Supported by an onsite operator
- Allow full 7-day monitoring of the system
- Plan to achieve more consistent batching

Costings



- Concrete Dam Build \$126k
- Air driven pump system \$10.5k
- Sewer line \$300k
- Treatment Plant \$1.6M
- Consultancy and Engineering Fees \$300k
- Fencing \$50k
- Pipework Upgrades \$20k
- Smaller Venturi \$10k
- Pump Self Primers Install \$6k
- Reseeding \$60k
- Total \$2.48M

Lessons Learned



- Under specified the capacity for the processing rate
- Too low of a release limit to sewer
- Local suppliers
- Experienced Waste-Water Operators
- Timely results - laboratory
- Durability of parts of the plant insufficient
- Extreme wet conditions experienced over a long term impact the system

Questions?

- Rohan Smith

Contact

- Mobile – 0429 993 462
- Email –
rohan.smith@alburycity.nsw.gov.au