



Reliable Odour Control on a Bunnings Budget!

Keywords: odour abatement and control

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The Client – Mt Isa City Council

SPS1 OCU off Miles St



Fun facts about Mount Isa:

- Remote QLD community of around 18,500
- It's a 20-hour drive from Brisbane! From Sydney to Melbourne and back
- Kalkadoon country - was a valued trade network across the Lake Eyre basin
- 2nd largest city (by land area) in Australia
- The city covers approximately 43,000km² !
- Township divided by the Leichhardt River
- Glencore operates Mount Isa Mines
- Mt Isa City Council:
 - Responsible water and wastewater assets
 - Difficult to maintain local resources
 - Local businesses who are keen to be supported!

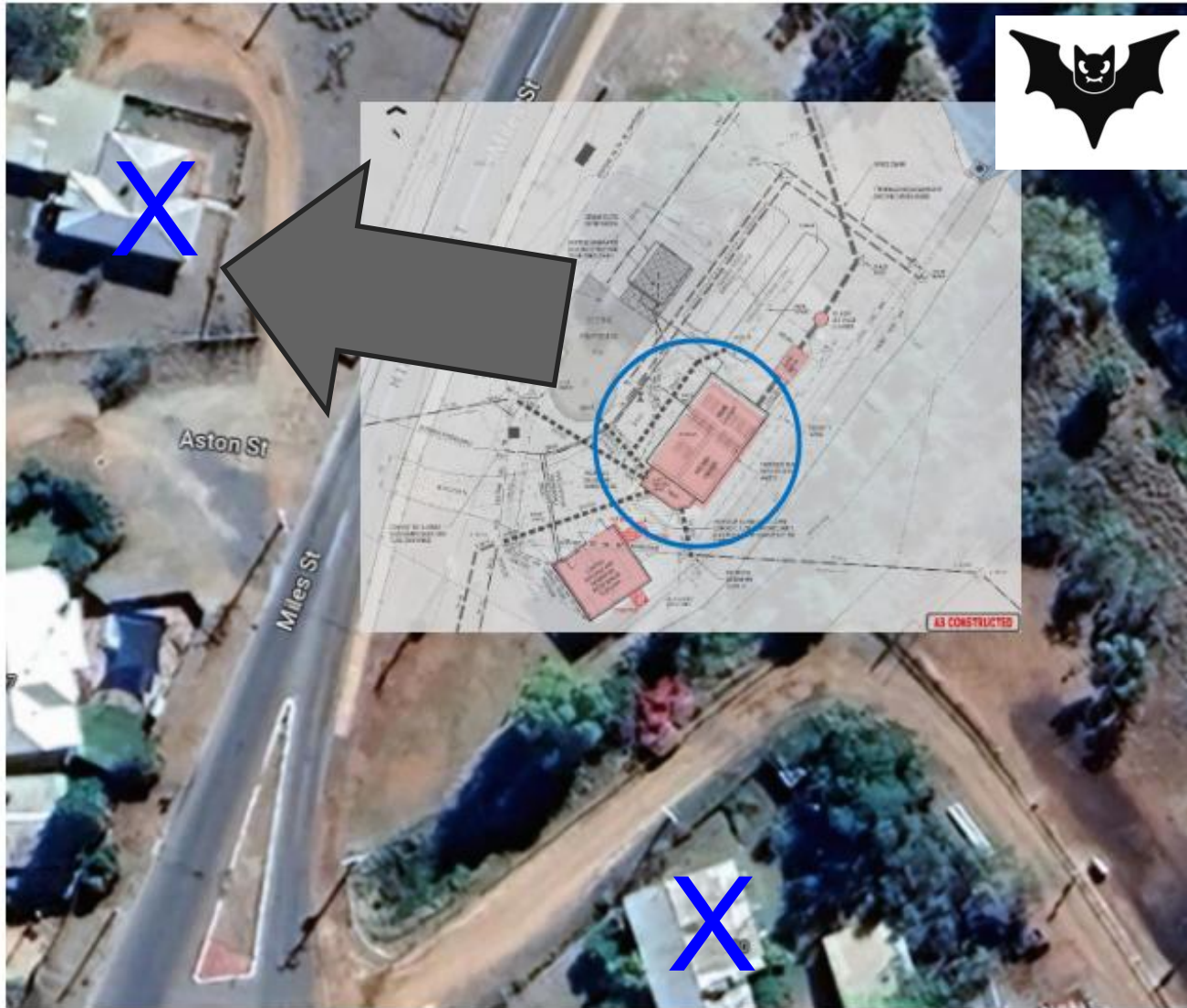
The Site – SPS1



SPS1:

- Conjunction of **four** sewers:
- DN300 rising main, and
- Three gravity sewers:
 - 2 x DN450
 - 1 x DN150

The Site – SPS1



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***Large bat colony
within 100m to the NE***

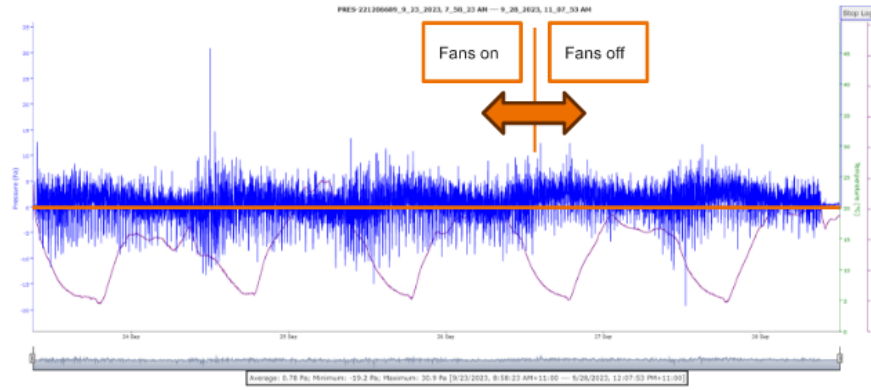
***Closest receptors 30m
west and 100m south***

***Main complaints from
west of the pump station***



Site Issues

- Unlocatable air inlets
- Wet well with little to no foul air extraction
- H₂S attack in switch room





OCU performance Issues

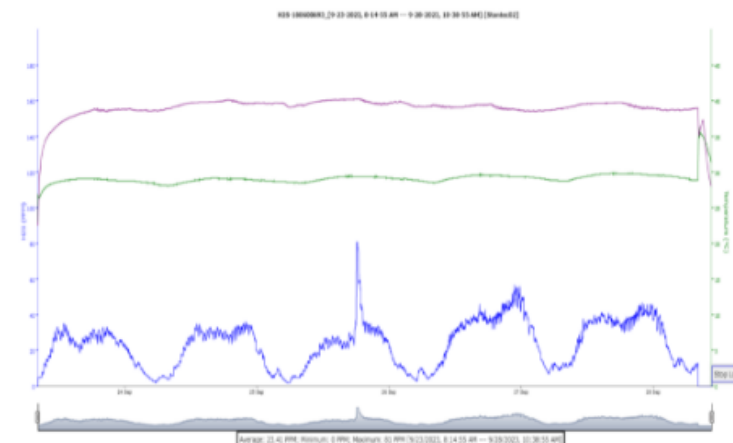
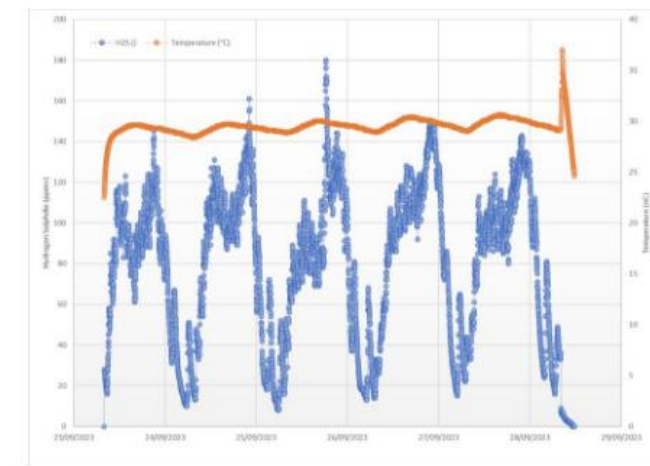
- Open bed “Bioamp 600” biofilter
- OCU increasingly unreliable and difficult to maintain
- No compliance
- Poor distribution of foul air and irrigation

H₂S Influent loadings

- Wet well 1:
 - H₂S: 78ppm avg, 180ppm peak
- Wet well 2
 - 21ppm avg, 85ppm peak

Boundary conditions

- H₂S average: 73.4 ppb
- H₂S peak: 1,780ppb



Boundary levels above detectable limits – leading to odour complaints

Study objective/intention

Replace with a solution that:

- needed minimal operator attendance
- used as many items as possible that 'could be bought at Bunnings

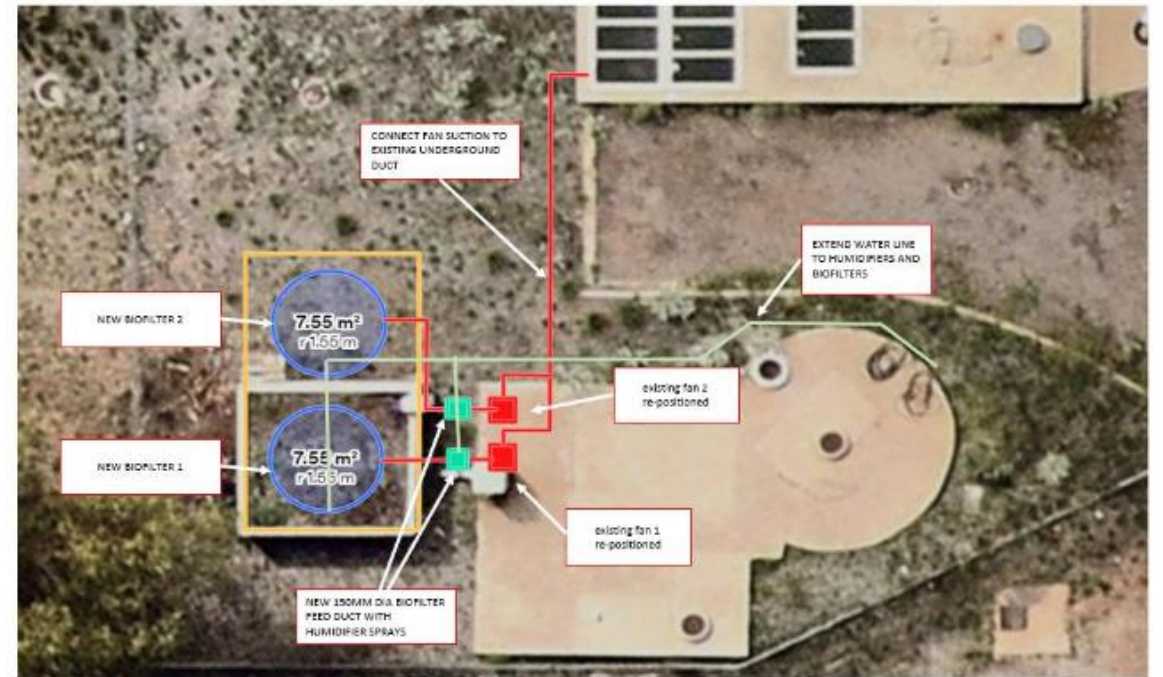


Stantec's involvement

- Study the existing system and site services
- Prepared a detailed report with recommended actions
- Prepared a detailed performance specification for residual works

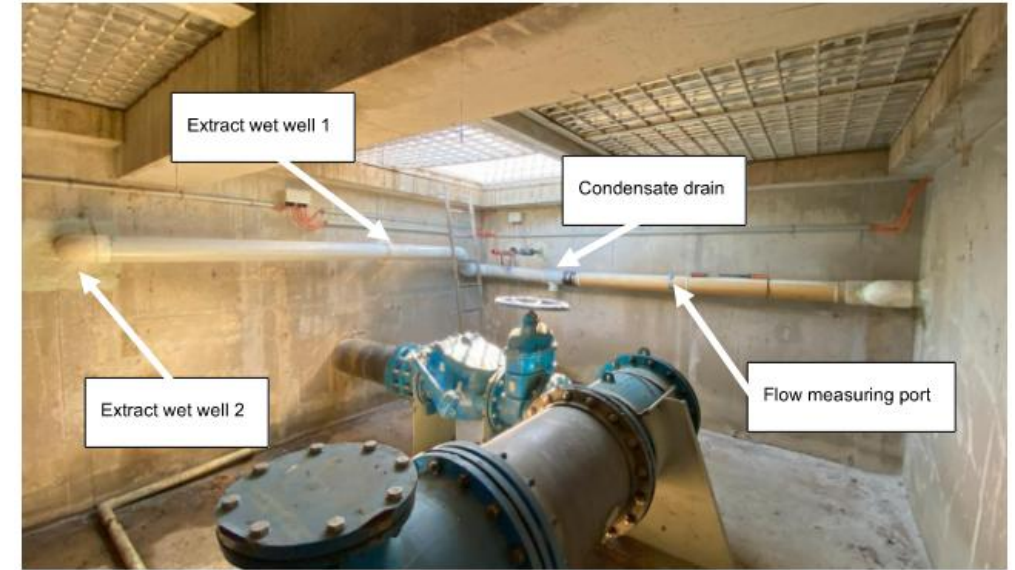
OCU upgrade options

- Repair existing unit
- Rebuild like for like
- Install two above ground (poly tanks)



Aboveground tanks were preferred

Aboveground organic biofilters



Airflow: **2,000m³/hr**

Odour Compounds	Concentration	
	Annual Average (ppm _v)	Summer Peak (ppm _v)
Hydrogen Sulphide (H ₂ S)	80	200
Mercaptans (R-SH)	2	5
Ammonia (NH ₃)	0.5	1
Dimethyl Sulphide (DMS)	1.5	5
Volatile Organic Compounds (VOC)	1	5

General site upgrades:

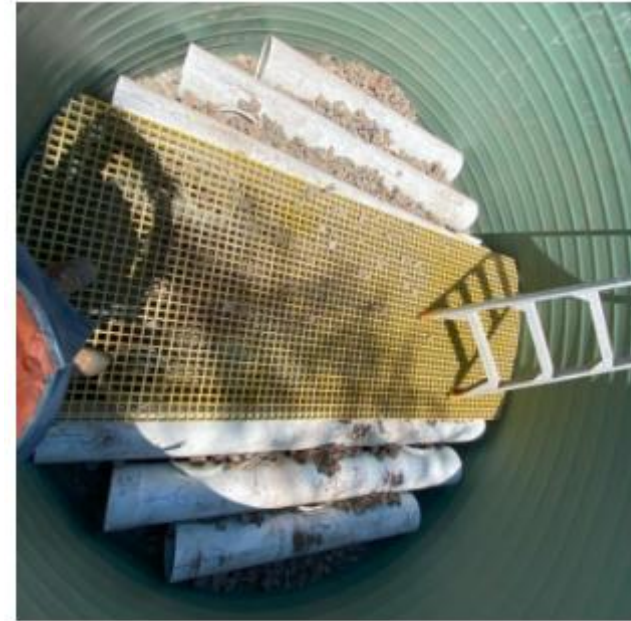
- Locate and repair air inlets
- Refurbish wet well sealing
- Refurbish extraction ductwork

Biofilters – media and internals



1.2m deep media comprising:

- 200mm 60/40 mix of pine nuggets and compost
- 400mm 50/40/10 mix pine chips, compost and lime
- 300mm pine chips
- 300mm pine nuggets



DN50 irrigation pipe with media support at 300mm





Commissioning and Testing

To confirm operation, testing confirmed:

- gas flowrate to the biofilters
- vacuum pressure under wet well covers
- hydrogen sulphide removal
- inlet air humidification

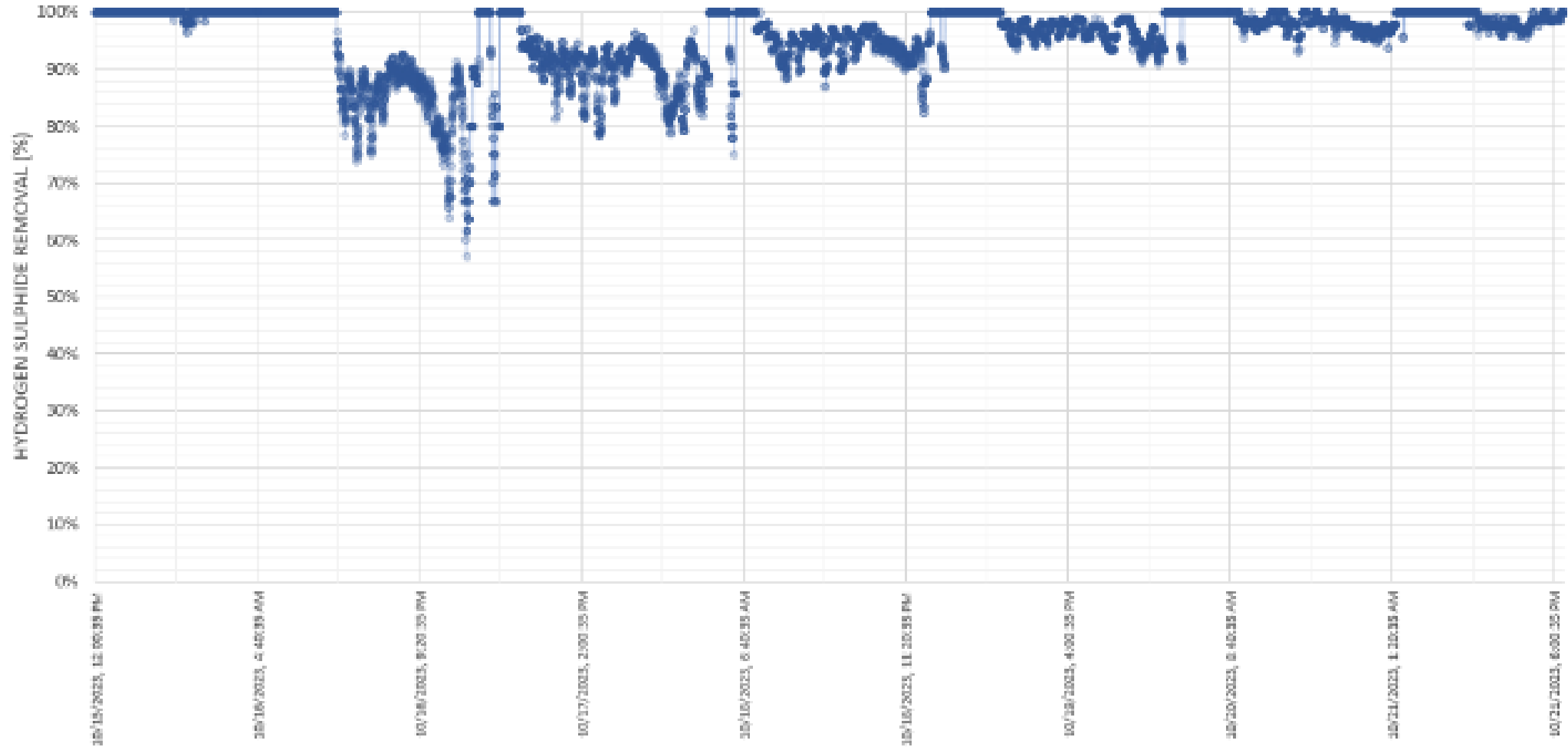
Overall:

- ✓ Results indicated a healthy biomass of thiobacillus in 4 days
- ✓ Biomass expected to continue to improve, provided $>90\%RH$ inlet stream was achieved
- ✓ The results demonstrated the media volume and bed constituents were suitable for SPS01





Commissioning and Testing

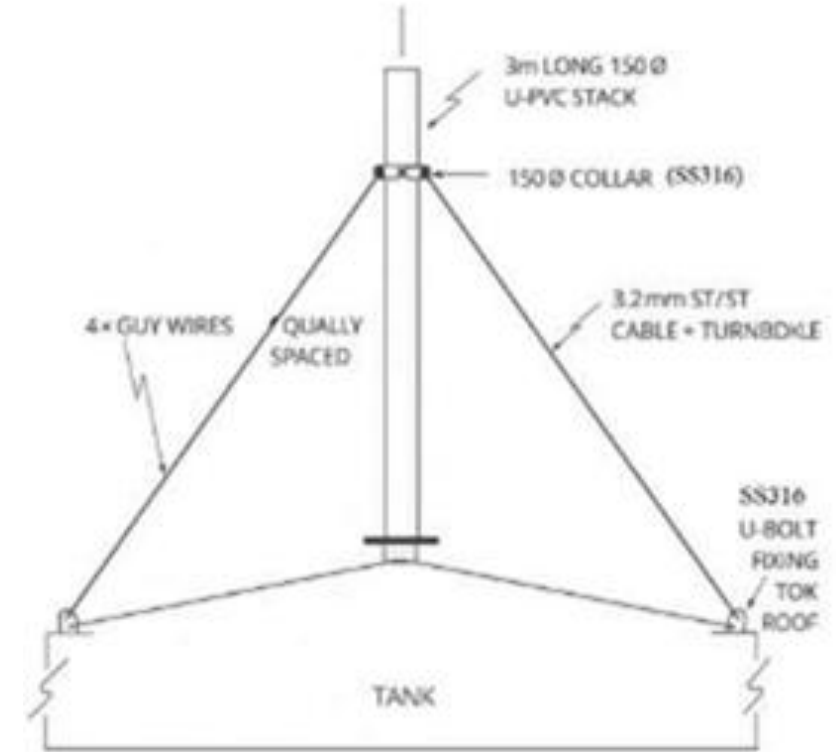




Further remediation works

Additional remediation works recommended to complete the works:

- Upgrading fans to SEAT25 units with 1.5kW motor, ensuring right hand/left hand orientations as needed
- 3m stacks to be fitted to each biofilter roofs
- Replaced spray nozzles with full cone atomization nozzles for better %RH
- Other minor items:
 - Add an aluminium slip collar to the biofilter roofs with SS316 bolts
 - Tapping and fitting of new threaded plugs for biofilter fan drains
 - Nozzle seals to be replaced with Sikaflex Tank N
 - Air inlet non return valves located and replaced
- Also:
 - Electrical conduits sealed with expanding foam
 - Sewer smoke testing
 - Structural condition assessment of wet well



Proposed new stacks to vent off tops of biofilters

Most items able to completed by local plumbers and electricians.



Outcomes

- Upgrade delivered in 10 days
- Largely using locally sourced materials
- Gave Council a system that:
 - ✓ met the right conditions
 - ✓ maintains a healthy biomass
 - ✓ removes odorous contaminants
 - ✓ minimal operator involvement

Ongoing operator needs:

- Periodically check and adjust inlet air flowrate and humidity
- Regularly check negative pressure under covers
- Annually check biofilter media, replace every 4 to 6 years
- Operator investigation within an hour of any odour complaint
- Maintain a complaints log





Outcomes

The built system illustrates how similar remote odour management solutions

economical

reliable

use local suppliers





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Any other questions?

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