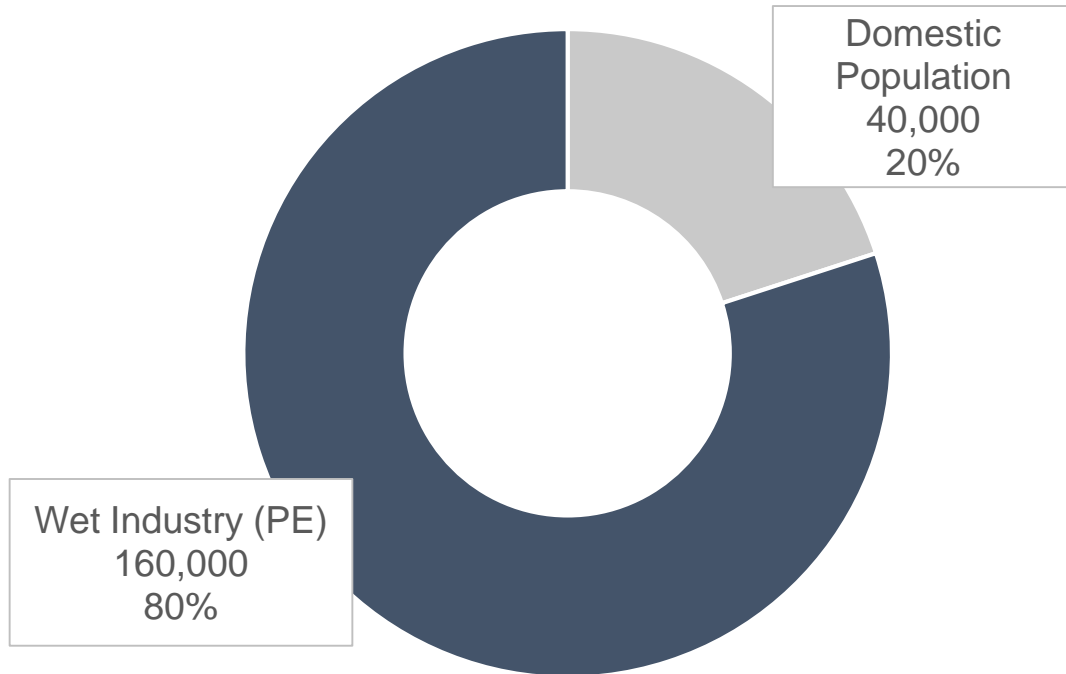


Protecting the Plant: The Whanganui Trade Waste Strategy

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Cardno



Whanganui's History of Wastewater Treatment



Pre 1984

No Treatment – River Discharge

1984

Screened Sewage to Long Ocean Outfall

2007

Pond-Based WWTP Commissioned

2018

Activated Sludge WWTP Commissioned

Whanganui's battle of the stench continues

29/03/2013



NEW ZEALAND / REGIONAL

Ponganui image affecting business

2:23 pm on 24 February 2013

Share this

Some businesses in Whanganui say they're losing customers because of the foul smell emanating from the town's wastewater plant.

There have been problems with the plant since before Christmas and most recently sewage and untreated waste water was pumped into the ocean for two days.

with its sewage plant

Pong replaced with stench

Whanganui regional council will take the Whanganui district council to the High Court over its failure to fix the Ponganui wastewater plant.

The council says the Ponganui wastewater plant is a "major asset" and that it is a "major asset" and that it is a "major asset".

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'Ponganui' delivers summer stench



Mayor Helen 'Pong' Wright

IT'S A STENCH

WHANGANUI BUSINESS will get no respite from a foul smell wafting from the town's wastewater plant, with the council warning the town will continue "for some time".

Whanganui Mayor Helen Wright said a new dumping of raw sewage into the ocean was a "major asset" and that it is a "major asset".

The city's wastewater plant would struggle to process the raw sewage, meaning the smell - which had plagued the city for almost three weeks - was likely to continue for some time.

The only alternative to dumping in the ocean would be to the sewage directly into the Whanganui River or the ground - but that is not a viable option.

The mayor said the council had not yet been able to identify the industry or business responsible for the dumping, but would conduct a major review of

advanced waste treatment in the area.

Mayor Helen Wright said the smell, which has caused the city to be nicknamed 'Ponganui', stemmed from a treatment facility that was not fully operational.

The council has commissioned the plant to provide an official apology and compensation to residents, and says it may also be an offensive gesture.

Businesses in the town said the smell was a particular problem, with Christmas and people being to keep their doors and windows shut despite hot weather to avoid the smell. The city's police and fire services were also called in yesterday.

The only smell in slightly better weather, but yesterday it was dangerous and the day before it was too

WWTP Upgrade Scope

Cardno was engaged to resolve odour issues at wastewater treatment plant, with an upgrade solution that:

- Minimised odour as much as possible
- Utilised existing assets
- Met existing discharge limits

Various factors outside the WWTP design need to be mitigated to ensure that the above scope is met.

- #1 - Management the significant trade waste dischargers



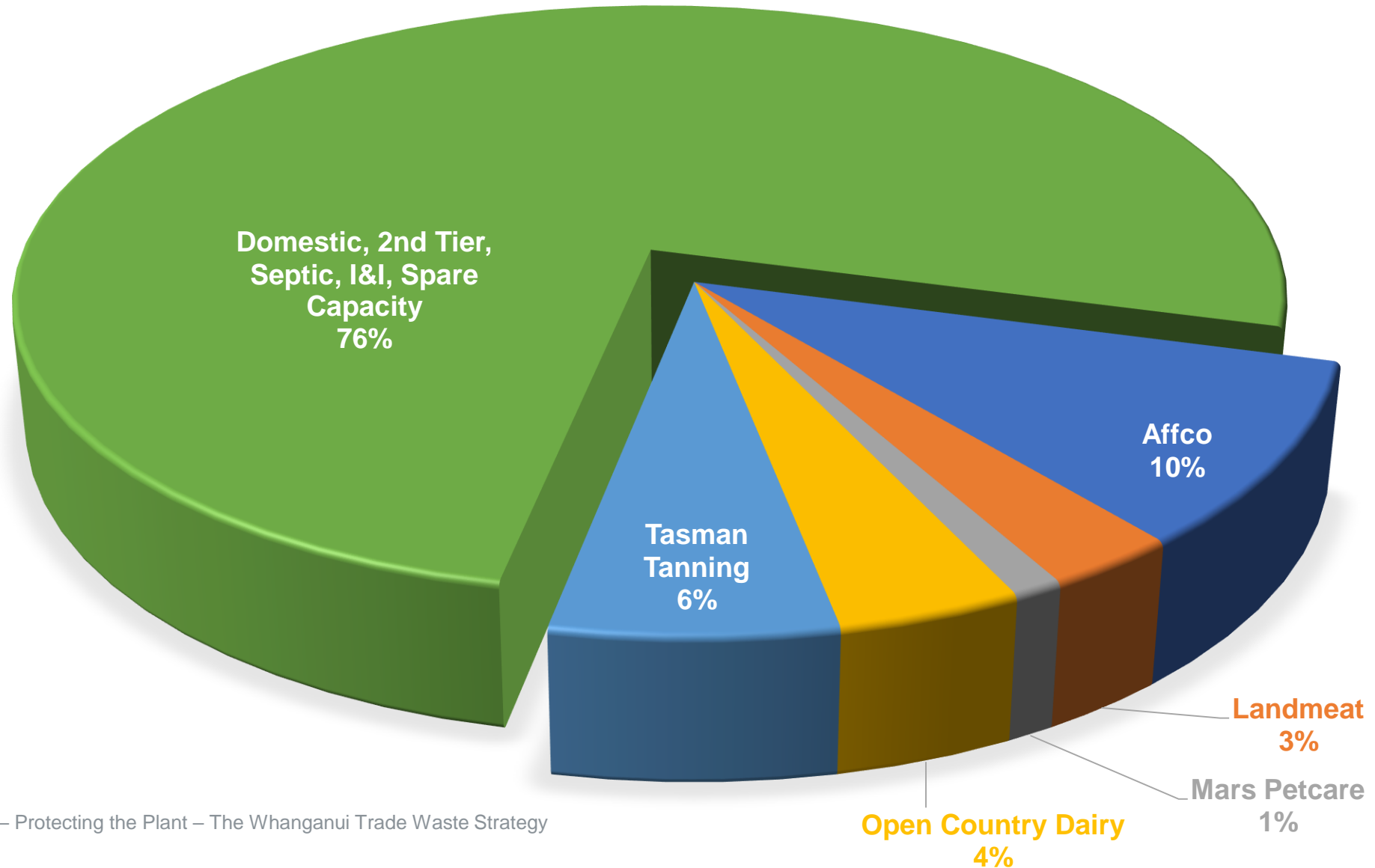
Trade waste predominantly primary industries with very high organic and solids loads

The significant trade waste dischargers are the following:

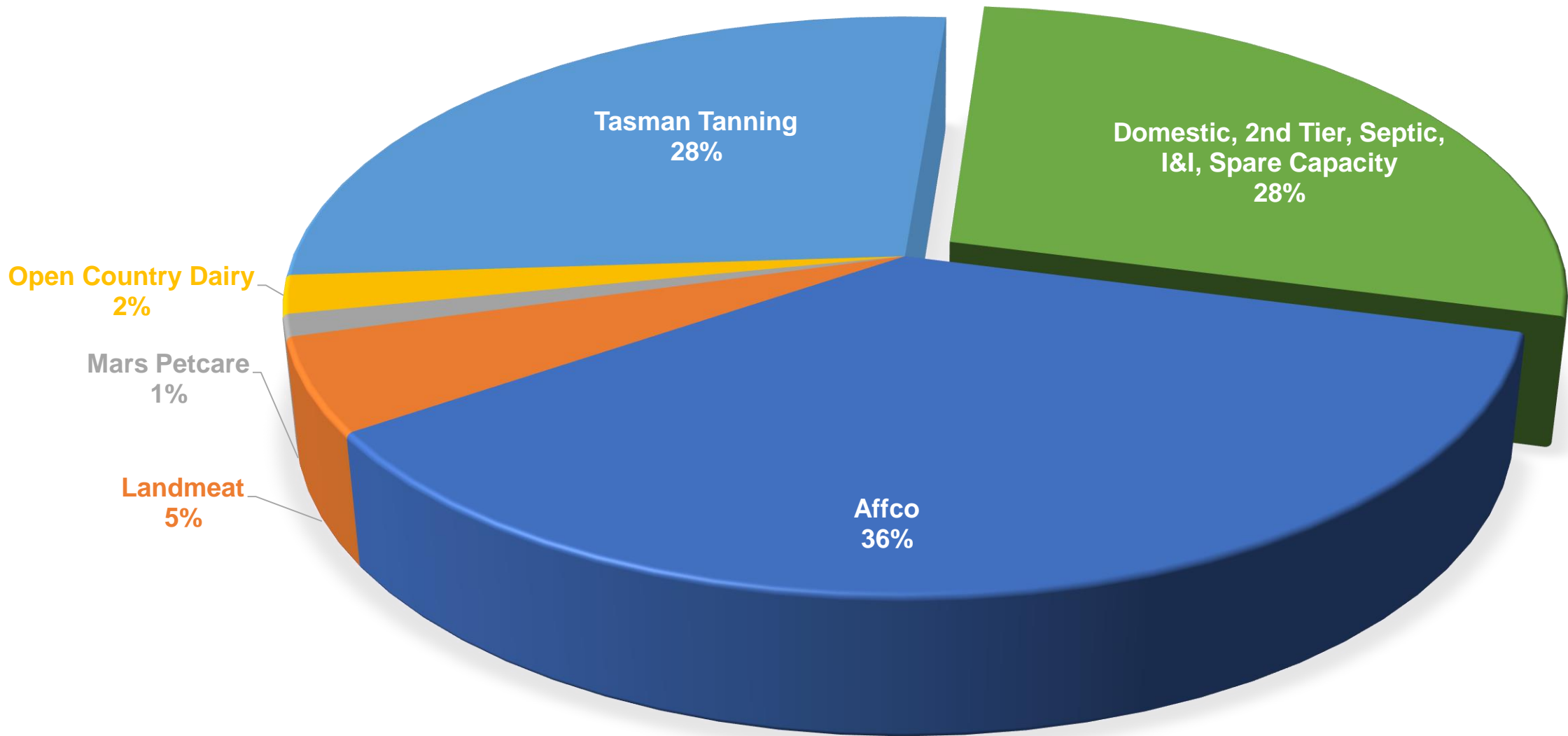
- | | | |
|----------------------|--|-----------|
| ▪ AFFCO | Ovine and bobby calf processor with a rendering facility | 250 staff |
| ▪ Tasman Tanning | Raw hide wet processing, tanning and leather production | 250 staff |
| ▪ Land Meat | Ovine and porcine processor with a rendering facility | 150 staff |
| ▪ Open Country Dairy | Milk processing facility - whole milk powder | 30 staff |
| ▪ Mars Petcare | Pet food production facility | 75 staff |



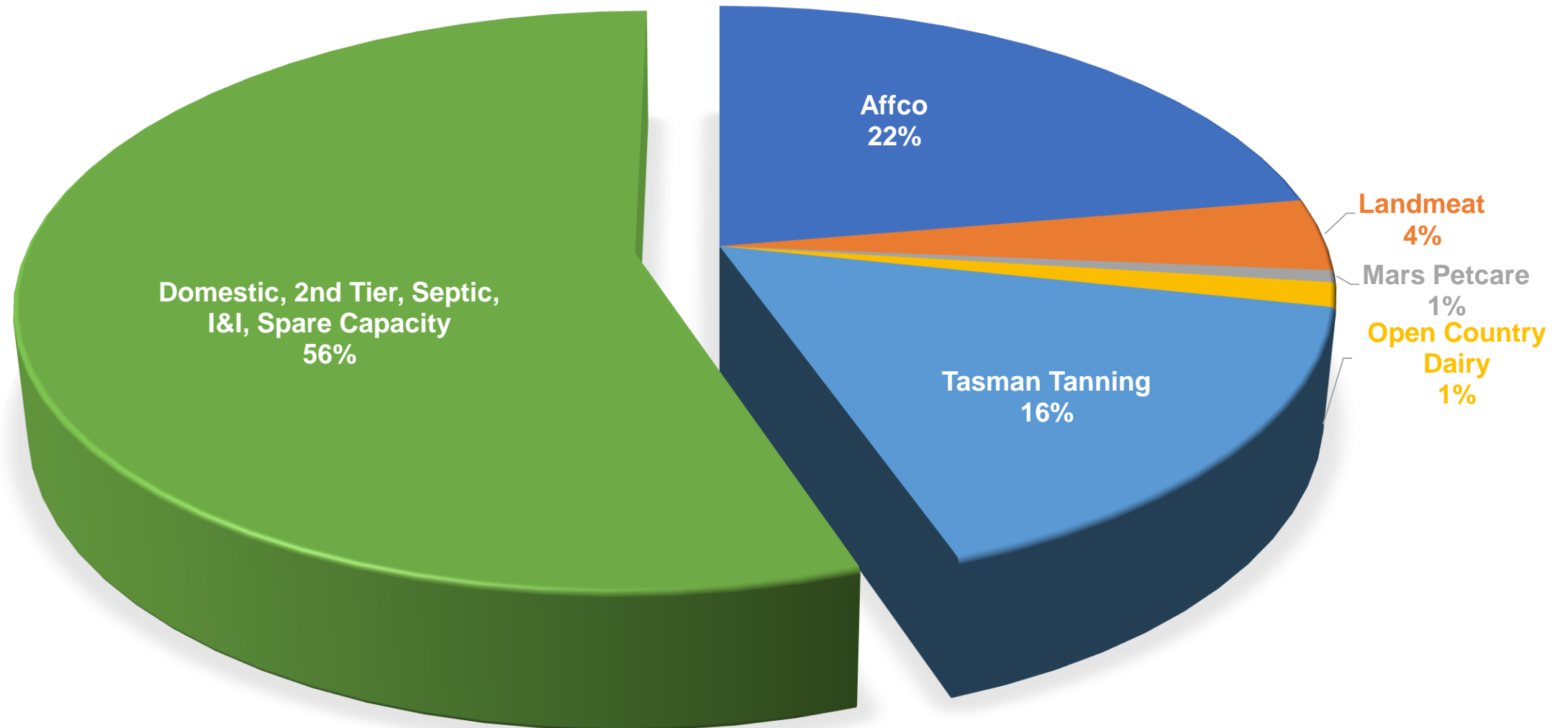
Average Daily Flow Split (28 MLD)



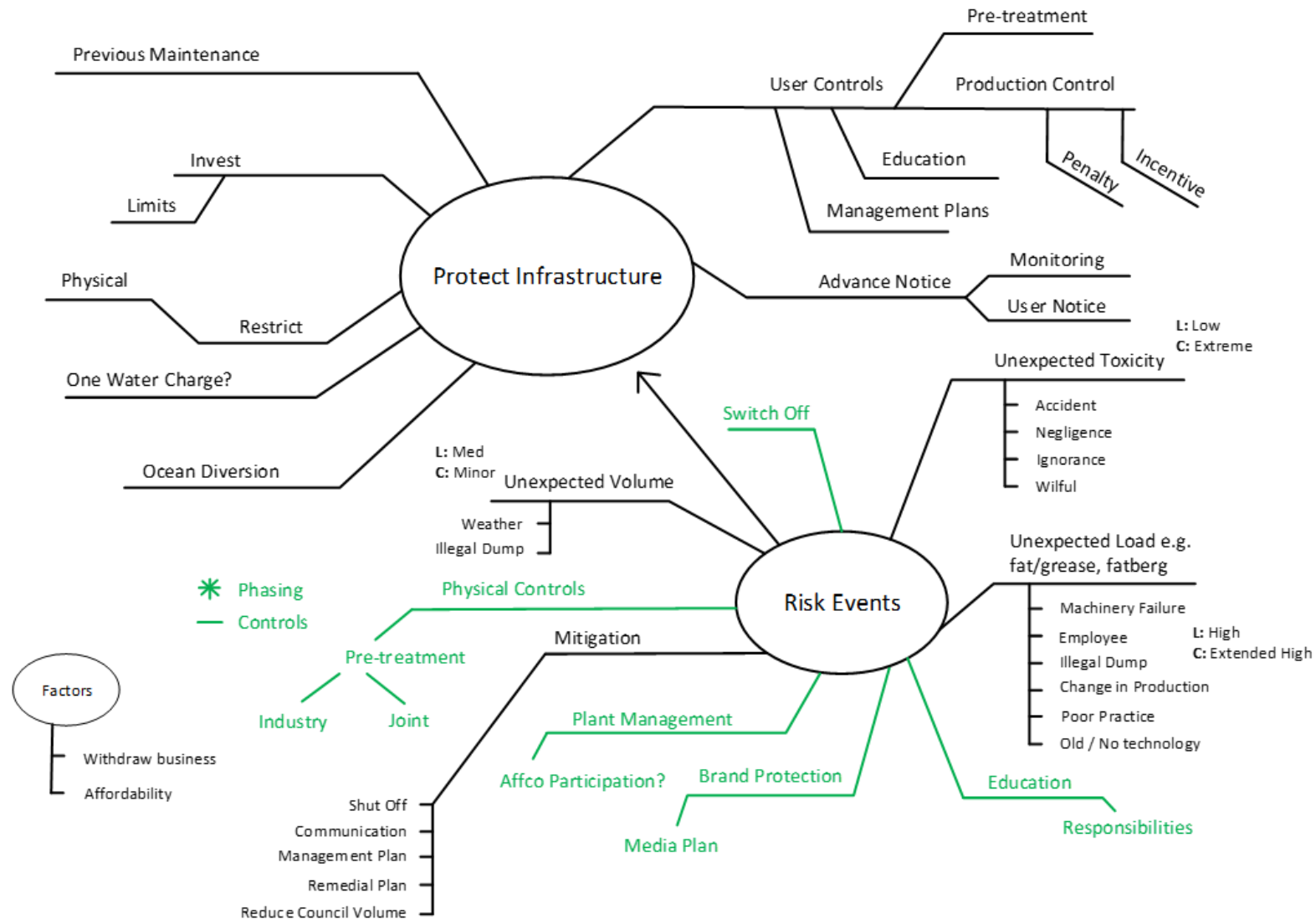
Average Daily COD Load Split (33 T COD/day)



Average Daily TSS Load Split (15 TDS/Day)



Trade Waste – What is the Real Problem?



We determined that the highest priority principle in relation to the new WWTP is:

“The Wastewater Treatment Plant and our community is at risk from an unexpected prolonged load that could be avoided by industry.”

WDC needed a strategy to manage Trade Waste Dischargers:

- Primary function: Protect the performance of the Council asset:
 - No damage to the assets
 - No more odour events (prevent ‘the return of the pong’)
 - Resource consent compliance
- Secondary function: charge fees to recover costs on a fair and justified basis

- > A trade waste strategy was commissioned in 2017/18 and completed the following:
 - > New trade waste bylaw
 - > Classification of trade waste dischargers
 - > Negotiation and issuance of new discharge permits
 - > (including discharge limits, charging basis, and monitoring requirements)
 - > Implementation of online monitoring of trade waste, to allow real time decisions to be made to ensure that the WWTP is protected
 - > Future option of installing 'process protection units' if industry prove to be non-compliant on a consistent basis

WDC Trade Waste (TW) Bylaw mirrors the NZ Model General Trade Waste Bylaw
Classifications

- Permitted | Conditional | Prohibited

Conditional 'Discharge'

- Mass limit for any constituent that risks WWTP compliance
 - Odour potential | effluent quality | biosolids quality
- Flow measurement mandatory
- The monitoring strategy is as follows (in order of priority):
 - A continuous online quality monitoring system
 - composite sampling (flow proportional preferred over time interval)
 - Grab samples

The Trade Waste Discharge Permits included the following items:

- Discharge limits
- Charging basis
- Monitoring requirements

All of which needed to be negotiated with the Tier 1 trade waste dischargers

Negotiations, a real chance to:

- Mend broken past relationships that led to negative outcomes for all
- To build collaborative relationships that lead to successful outcomes
- 'Protecting the plant' not maximising cost recovery
- We sort professional negotiation strategy advice



Proposed two limits for each constituent:

Annual (365-day) rolling average loads

- Mainly for cost estimation purposes
- Higher trade waste cost if exceeded

Maximum (7-day) rolling average loads

- Calculated from plant maximum acceptable load
- Allowance for industrial seasonal variations while protecting plant
- Needs to be met at all times

A 'wait and see approach' to unknown consequence constituent limits:

- O&G – how fast will O&G build up under the primary pond cover and the cost of removal
- Sulphide/Sulphate – at which limits will there be network odour issues
- Chromium – how much actually ends up in the biosolids

Trade Waste Discharge Permits – Charging Basis

Council's principles in funding the new Whanganui WWTP are:

- To protect the plant and receiving environment
- Fair and equitable
- Robust
- Transparent
- Certainty
- Economy
- Durable



WWTP capital cost

- Definition of design basis of each process unit
(Flow | Organic | Solids)

WWTP variable operating costs

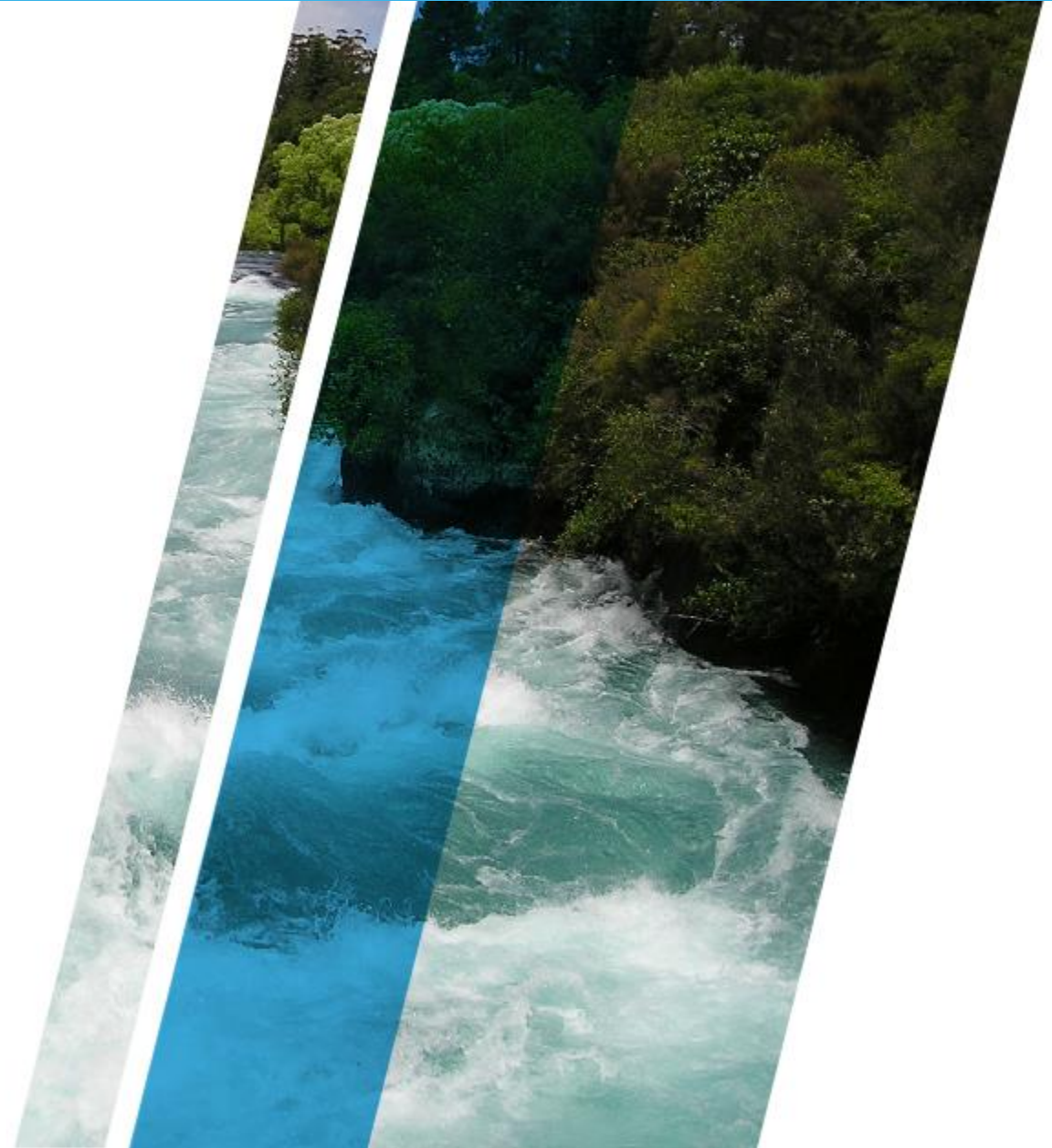
- chemicals | electricity | gas | biosolids transport and disposal

WWTP fixed operating costs

- electricity and gas line charges | repairs and maintenance | WWTP personnel | biosolids monitoring costs

Trade waste fixed operating costs

- trade waste officer | monitoring costs



Capital cost allocation options:

- Proportional cost: based on historical or consented flows/loads
- Marginal cost: Trade waste capital cost allocation = actual – domestic only WWTP

Targeted rate vs fee and charge:

- Targeted rate - set by Local Govt Act – a fixed rate based upon factors (e.g. measures, valuations) assessed at year end
- Fee and charge – set by Bylaw and/or consultation - must be based on recovering no more than reasonable cost

User group	Capital borrowings	WWTP Fixed OPEX	WWTP Variable OPEX	Wastewater Network
Tier 1 trade waste	Targeted rate for marginal cost set by historical flow	Targeted rate for marginal cost set on consented load	Fees and charges for marginal cost set on actual load discharged	Targeted rate for marginal cost set by consented flow
Tier 2 trade waste Septic tank waste	Marginal cost included in fees and charges			
Domestic	Covered by “pan tax”			

The installation of S::Can units (by DCM Process Control)

- Aim: to allow real time information to allow better WWTP operational decisions

Installation units:

- A permanent unit on the combined wastewater stream at Beach Road PS
- A permanent unit on the AFFCO trade waste discharge
- A portable unit that can be used to monitor discharges all other trade waste sites, to ‘finger-print’ their wastewater regularly to calibrate the main Beach Road S::Can unit for seasonal variation, processing changes etc.

Traditional sampling and laboratory analysis to be kept for charging purposes

- May change once trust in online real time monitoring is realised



What if industry still prove to be non-compliant on a consistent basis?

- A process protection unit (a physical control barrier) located on the trade waste discharge pipe would enable Council to still protect the performance of the WWTP.
- If implemented, would erode the focus on building collaborative relationships with industry.

Agreed to postpone installation and reassess after a trial period

- To give industry a chance to prove that they can reliably comply with discharge limits.
- If industry prove to be compliant, then Council would save on installing the additional infrastructure.



> Technology Selection

	COD / BOD ₅	SS	O&G	Nutrients	Capital Cost	Operating Cost	Dry Solids
Coarse Screening	5 – 20%	5 – 30%	Gross fat particles	N/A	Low	Low	3 – 5%
Fine Screening	5 – 20%	5 – 30%	Gross fat particles	N/A	Low	Low	3 – 5%
Inclined Screw Auger	5 – 20%	5 – 30%	Gross fat particles	N/A	Moderate	Moderate	<30%
Hydrocyclone	10 – 30%	15 – 60%	40 – 90%	<25%	Moderate	Low	3 – 5%
Grease Trap / Triple Interceptor	5 – 20%	5 – 20%	20 – 90%	N/A	Low	Moderate	3 – 5%
Gross Pollutant Trap (20-2000 µm)	5 – 20%	5 – 20%	5 – 20%	N/A	Low	Low	3 – 5%
Save-all	20 – 25%	50 – 60%	50 – 80%	N/A	Low	Low	2 – 4%
Baleen Filter	30 – 40%	50 – 65%	60 – 80%	<5%	Moderate	Moderate	8 – 10%
DAF (with no chemicals)	30 – 40%	50 – 65%	60 – 80%	<5%	High	Moderate	3 – 5%
DAF (with chemicals)	30 – 90%	50 – 90%	80 – 95%	<40%	High	High	6 – 8%

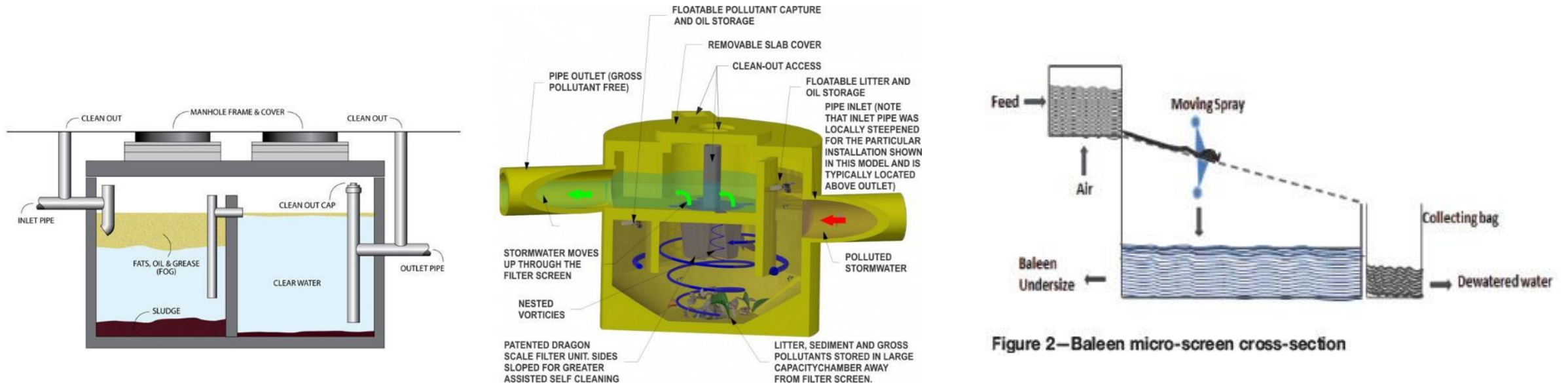


Figure 2 – Baleen micro-screen cross-section

Trade Waste – Process Protection Units

> Location, operation and control options'

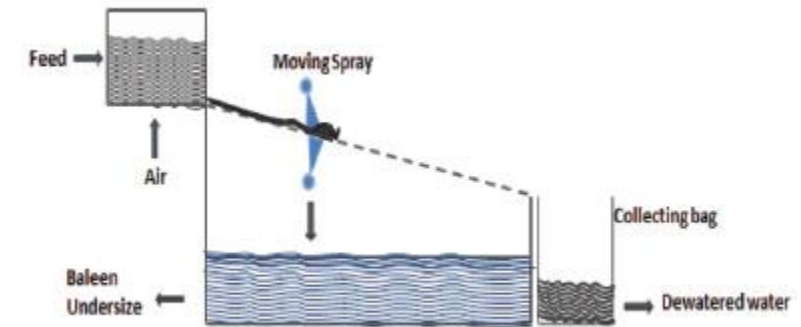
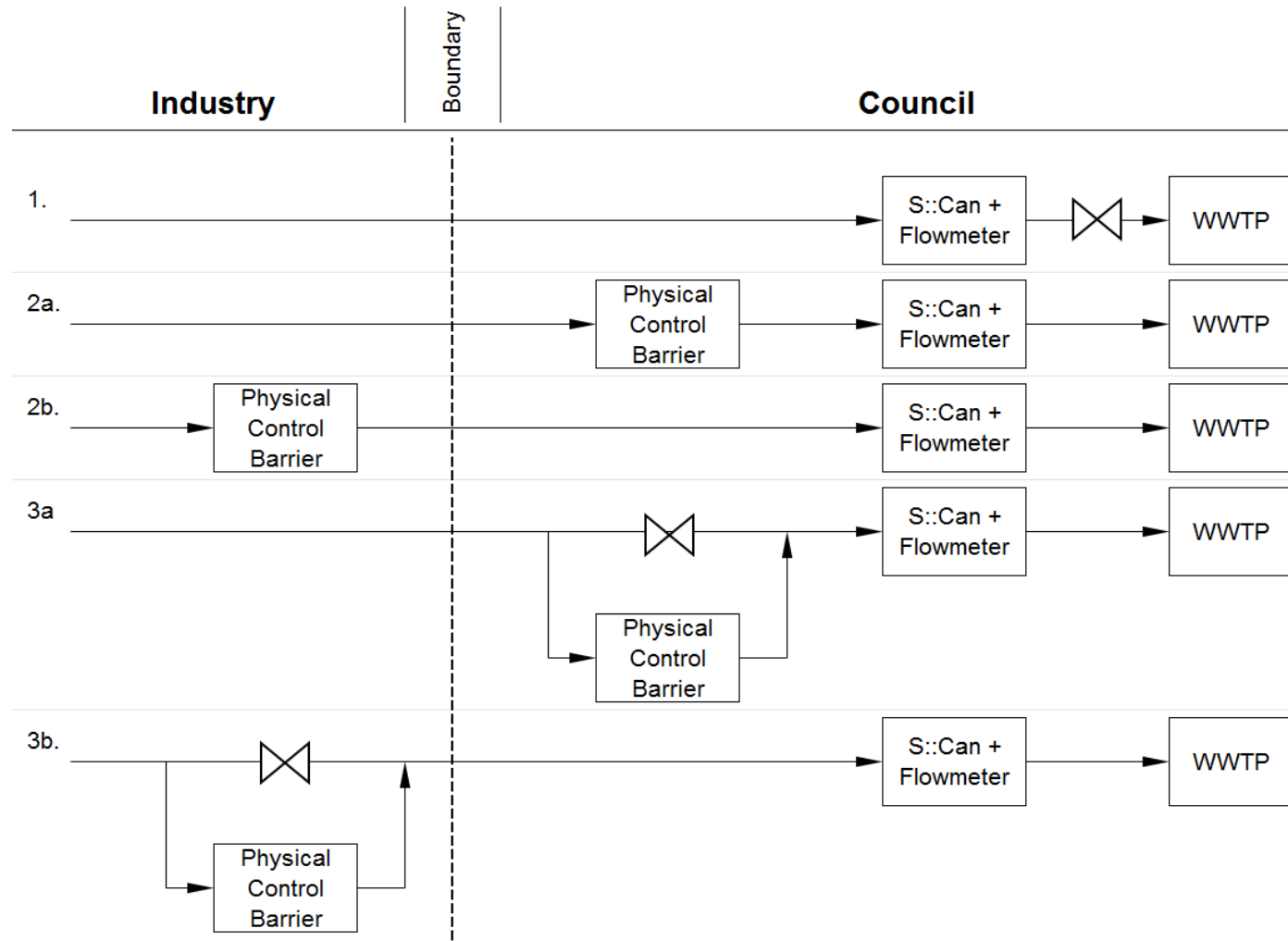


Figure 2—Baleen micro-screen cross-section

S::can
Intelligent. Optical. Online.

We believe that this comprehensive trade waste strategy:

- Significantly reduces the risk of prolonged unexpected loads reducing the wastewater treatment plant performance
- Ensures that the wastewater treatment plant upgrade is affordable to the Whanganui community
- Aims to build collaborative relationships with industry to bring about better outcomes



**WHANGANUI
DISTRICT COUNCIL**
Te Kaunihera a Rohe o Whanganui



QUESTIONS?

